Eighteenth Biennial Report

OF THE

STATE ENGINEER

TO THE

Governor of Colorado

For the Years 1915-1916

DENVER, COLORADO
EAMES BROS., STATE PRINTERS
1916

State Engineer.

LETTER OF TRANSMITTAL

Sir: I have the honor to transmit herewith the Eighteenth Biennial Report of the Office of the State Engineer, for the period from December 1st, 1914, to November 30th, 1916, inclusive.

Respectfully,

ADELBERT A. WEILAND,
State Engineer.

To His Excellency,
GEORGE A. CARLSON,
Governor of Colorado.

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LIST OF OFFICIALS IN CHARGE OF WATER DISTRIBUTION

STATE ENGINEERS OF COLORADO

Since Organization of Department, June 3, 1881.

Eugene K. Stimson	June 1881 to April 1883
Edwin S. Nettleton	April 1883 to April 1887
J. Sire Greene	April 1887 to April 1889
James P. Maxwell	April 1889 to April 1893
Charles B. Cramer	April 1893 to April 1895
Horace A. Sumner	April 1895 to April 1897
John E. Field	April 1897 to April 1899
Addison J. McCune	April 1899 to April 1903
Louis G. Carpenter	April 1903 to April 1905
Thomas W. Jaycox	April 1905 to April 1909
Charles W. Comstock	April 1909 to April 1913
John E. Field	April 1913 to April 1915
Adelbert A. Weiland	April 1915 to April 1917

LIST OF OFFICERS AND EMPLOYEES

State Engineering Department.

Adelbert A. Weiland	State Engineer
Lyman E. Bishop	Deputy State Engineer
Thomas Grieve, Jr.	Chief Hydrographer
J. H. Baily	Hydrographer
M. N. Grant, Jr.	Hydrographer
H. D. Amsley	Hydrographer
H. E. Turner	Hydrographer
R. G. Hosea	Hydrographer for The Colorado Water Users' Ass'n
Josephine Kelly	Office Clerk
C. C. Hezmalhalch	Draftsman
Ellie H. Rhodes	Filing Clerk
Arah Shaw	Stenographer

IRRIGATION DIVISION ENGINEERS

Div. No. 1	Fillmore Cogswell	Denver
Div. No. 2	Edward R. Chew	Pueblo
Div. No. 3	DeWitt A. Norton	Alamosa
Div. No. 4	Heman C. Getty	Montrose
Div. No. 5	A. J. Dickson	Glenwood Springs

WATER COMMISSIONERS.

Div. No.	Dist. No.	Name	Address
1	1	William S. Simpson	Fort Morgan
1	2	J. C. Wylie	Denver
1	3	John L. Armstrong	Fort Collins
1	4	A. D. Alps	Loveland
1	5	A. P. Nelson	Niwot
1	6	Moses Hoover	Boulder
1	7	K. S. Rhea	Golden
1	8	S. F. Couch	Littleton
1	9	J. W. McLean	Morrison
2	10	William Frizzell	Manitou
2	11	A. M. Carpenter	Salida
2	12	F. X. Miller	Canon City
2	13	D. Geroux	Westcliffe
2	14	D. W. Danielson	Pueblo
2	15	R. H. Totten	Rye
2	16	Parson S. Brown	Walsenburg
2	17	S. W. Cressy	Rocky Ford
2	18	H. C. Cossum	Aguilar
2	19	L. W. Hubbartt	Trinidad
3	20	R. W. Maddox	Monte Vista
3	21	Jose De la Luz Marquez	Capulin
3	22	B. W. Harrison	Manassa
1-2	23	Jacob Dessrich	Pine Grove
3	24	J. J. Romero	San Luis
3	25	A. G. Morris	Moffat
3	26	George Burch	Saguache
3	27	Juan Trujillo	La Garita
4	28	J. Roy Hicks	Sargents
4	29	No commissioner	
4	30	William E. Tyner	Durango
4	31	No commissioner	
4	32	No commissioner	
4	33	Orville J. Leggett	Kline
4	34	H. M. Barber	Mancos
3	35	Stephen Calkins	Blanca
5	36	No commissioner	
5	37	E. E. Lea	Gypsum
5	38	Thomas Lawrence	Carbondale
5	39	Isam W. Graham	Rifle
4	40	George Hider	Austin
4	41	W. O. Hersum	Olathe
4	42	J. E. Harris	De Beque
5	43	W. S. Fisk	Meeker
5	44	Arthur Collom	Axial
5	45	S. B. Potter	Rifle
1	46	Clarence A. Manville	Coalmont
1	47	Clarence Boston	Walden

Div. No.	Dist. No.	Name	Address
1	48	R. E. Moan	Glendevey
2	49	No commissioner	
5	50	No commissioner	
5	51	Roy L. Curtis	Granby
5	52	Clarence B. Rundell	Sheephorn
5	53	James H. Macfarlane	Yampa
5	54	E. W. Leggett	Baggs, Wyo.
5	55	No commissioner	
5	56	No commissioner	
5	57	No commissioner	
5	58	J. B. Lansing	Yampa
4	59	J. A. Miller	Gunnison
4	60	H. C. Browning	Norwood
4	61	S. P. Wells	Paradox
4	62	W. O. Brower	Cimarron
4	63	No commissioner	
1	64	T. W. Jenkins	Sterling
1	65	Frank S. Johnson	Wray
2	66	No commissioner	
2	67	Harry A. Pettee	Holly
4	68	J. W. Martin	Ridgway
4	69	No commissioner	
5	70	George F. Newton	De Beque

CHAPTER I

INTRODUCTION

The past two years have seen very little new irrigation development. During the years from 1908 to 1912 there was, in Colorado and the West, an unprecedented growth and development of irrigation projects. Many of them had merit, some were of precarious worth and others were purely financial inflations with no merit at all. The boom in mining stocks and in mining development during the early days, in the West, never reached such flagrant stages as did this inflation of irrigation securities and development. This speculation in lands and water rights was partly fostered and perpetuated by the irrigation district laws on the statute books of Colorado. While these laws are, in a sense, modeled after municipal laws and the organization is intended to work financially as a municipality, the fact is everywhere evident that the irrigation district laws have failed to accomplish the end sought. Such flagrant abuses were practiced under this law, so many districts were organized for no other purpose than to assess lands to pay the salaries of officers of the district, that the depreciation of irrigation securities was inevitable. Promoters, aided and fostered by certain classes,—boomers, real estate men and so-called colonizers,—loaded many acres of Colorado's lands to the hub with worthless irrigation securities. They sowed to the wind, and Colorado, for several years past, has been reaping the whirlwind. Our irrigation securities became a byword and a jest in the financial market. They were repudiated at home and abroad. So worthless were some of the projects that our own financial houses hung their heads in shame when asked about them by eastern capital. This fact is regretable, for, after a few years of winnowing and sifting out the bad projects; after a most trying period of depreciation of the bonds; repudiation of debts; abandonment of projects, the sound irrigation development is beginning to revive. The good project has had to bear the sins and burdens of the bad. This is not fair. Colorado has many excellent propositions that only need financial aid to make them complete successes. The citizens of Colorado should all see to it that our irrigation securities be, in the future, kept free from criticism and that the moneyed interests of the United States are made to appreciate the value of our irrigation securities. The time is now ripe for the placing of our irrigation securities on a par with any other gilt-edge investment and what it needs is the proper presentation of our case to people who are interested in investments.

What has been said relative to our difficulty in financing bona fide irrigation propositions, can be said with equal force about the financing of our drainage districts. It has been exceedingly difficult to secure money for the reclamation of our lands that have

been rendered untillable on account of seepage and alkali. It is now becoming less difficult to finance our drainage districts, and, as a result, some quite satisfactory work is being done in the reclamation of our seepage lands. Much more yet remains to be done, and the investor should be made to appreciate that one of the best investments obtainable is in drainage securities whether private or district.

While no great development has been carried on in the past two years, yet it is gratifying to see great progress in our irrigation development. It is one thing to get the physical structures built and to place the water available to the farmer; it is another thing to secure the proper settler who will develop the land into a paying farm. Within the last two years, the farmers under our new irrigation projects and, in fact, under all of our irrigation projects, have been getting a better hold on the physical conditions to be met and are learning more scientific farming. They are also learning the value of water and the proper methods of applying the same to crops as relates to time and quantity.

Many of our farms, under the irrigation propositions in the state, are too large. What we need is farms cut up into smaller units with a substantial farmer on each smaller unit. It is the accomplishing of the development of our irrigated area that takes the time and, after all, leads to the greatest results. It has been variously estimated that a farmer and his family is worth at least $5,000 per year to the commonwealth in which he lives. The present irrigable area in the State of Colorado is not far from 3,000,000 acres of land. The average holding of our present farmer is in the neighborhood of 100 acres. Assuming that there are practically 30,000 farmers in the State of Colorado, their average worth to the state is approximately $150,000,000. The size of each farm can be reduced to at least 50 acres, for with 50 acres of irrigated land, any farmer can make a good living for his family. Every effort should be made to reduce the acreage of each farm and increase the number of farmers. In other words, we should have on our irrigated lands in the state at least 60,000 heads of families. This would add to the wealth of the state each year an additional $150,000,000. The State of Colorado can afford to spend a large amount of money each year to get in contact with the class of people that should be located on our irrigated farms, and it would be a far-sighted and winning policy for the State of Colorado to make some large provision for the intensive settlement and cultivation of our irrigated lands.

Chapter 124 of the Session Laws of 1915 provides that "No * * * biennial report of any officer shall hereafter be printed at the expense of the state until the Governor has designated * * * how much * * * and how many copies thereof shall be printed." In preparing this biennial report the State Engineer submitted 742 pages of manuscript to the Governor for his approval. Shortly thereafter the State Auditing Board, having available only a lim-

ited amount of funds for printing biennial reports, ordered all work on biennial reports temporarily stopped pending the receipt of an opinion requested from the Attorney General interpreting Chapter 124, quoted above. The Attorney General held that Chapter 124 amended, but did not repeal, the existing statutes governing biennial reports, and that Section 4710 R. S. 1908 was still in full force and effect. This section provides, "that no report shall exceed three hundred printed pages." Accordingly, the biennial report was returned to the State Engineer, with instructions to cut the same to 300 printed pages. To comply with these instructions the original manuscript, as finally returned to the printer, consisted of 360 pages. On account of the cutting in the size of the report it has been necessary to omit the following chapters, which were originally submitted for publication:

Recommended Legislation.

Hydrographic Department.

Regulations for Filing Claims to Water Rights, and Plans and Specifications for Construction of Dams.

Data on Irrigation and Drainage Districts in Colorado.

Compromise Contract between United States Irrigating Company and Graham Ditch Company. Kansas-Colorado Interstate Litigation.

Reservoir Supervision—Construction and Failures.

Standley Lake Dam.

Administration of Water in Water District No. 23.

Losses of Sanchez Reservoir Water in Culebra River.

Drainage in Colorado.

Pumping Water for Irrigation.

All Discharge Measurements in connection with the Hydrographic Data.

These chapters are on file in the State Engineer's office, and can be consulted by those interested.

It is sincerely regretted that it was impossible to publish this biennial report in its entirety, and it is hoped that our Legislature will enact statutes and provide adequate means so that the next biennial report of the State Engineer can be published in its entirety, and be a report which will reflect credit to the State of Colorado. During the biennial period just passed some 15,000,000-acre feet of water was distributed by the State Engineer to the water users of the state, and the market value of this water is at least $40,000,000. Considering this item alone, the State Engineer's biennial report should not be limited to any specified number of pages.

CHAPTER II

FINANCIAL

The Twentieth General Assembly made appropriations for the State Engineer's office as follows:

State Engineer, salary	$ 6,000.00
Two Deputies, State Engineer, salaries	5,400.00
Traveling and contingent expenses of Engineer and Deputies	2,800.00
Draftsman, salary	3,000.00
Chief Hydrographer, salary	3,600.00
Four Hydrographers, salaries, at $125.00 per month	12,000.00
Hydrographers' expenses	4,000.00
Chief Hydrographer's expenses	1,200.00
Stenographic services	2,600.00
File Clerk, salary	2,400.00
Clerk, salary, December, 1914	100.00
Incidental expenses	3,000.00
Irrigation Division Engineers—	
Division No. 1, salary	5,000.00
Division No. 2, salary	5,000.00
Division No. 3, salary	3,000.00
Division No. 4, salary	3,000.00
Division No. 5, salary	3,000.00
Division Engineers' expenses	5,000.00
One automobile	750.00
Total	$70,850.00

From these funds balances were turned back to the General Fund as follows:

Deputies, salaries	$ 852.00
Traveling and contingent expenses, Engineer and Deputies	47.64
Hydrographers, salaries	545.71
Chief Hydrographer, expenses	29.73
Hydrographers, expenses	796.82
Stenographic services	148.36
Incidental expenses	17.91
Division Engineers, expenses	151.30
Total	$2,589.47

This leaves the amount expended by the State Engineer's office for the biennial period, $68,260.53.

As a credit against this there has been transmitted to the State Treasurer for fees received in this office during 1915-1916, the sum of $13,814.03, making the net cost of operating this office, $54,-446.50.

In addition to the sums expended from funds appropriated for this office, the sum of $8,275.68 has been spent from the Water Defense Fund for the salaries and expenses of two hydrographers. Of this amount $3,275.68 was for traveling expenses.

As against this there was turned into the General Fund $796.82 from the hydrographers' expense fund.

From this it will be seen that the amount appropriated for hydrographers' expenses is inadequate, and should be increased from $4,000.00 to at least $6,000.00 for the biennial period.

Following is a detailed statement of the expenditures and receipts of the various funds handled by this office:

STATE ENGINEER—SALARY.

Appropriated		$6,000.00
Jno. E. Field	$1,150.00	
A. A. Weiland	4,850.00	
Total	$6,000.00	$6,000.00

DEPUTY STATE ENGINEER—SALARY.

Appropriated		$5,400.00
A. F. Hewitt	$ 834.00	
R. I. Meeker	600.00	
Lyman E. Bishop	3,114.00	
Balance in fund	852.00	
Total	$5,400.00	$5,400.00

TRAVELING AND CONTINGENT EXPENSES, STATE ENGINEER AND DEPUTIES.

Appropriated		$2,800.00
R. I. Meeker	$ 108.38	
Jno. E. Field	103.90	
A. A. Weiland	1,620.65	
Lyman E. Bishop	387.28	
Central Garage	374.40	
Pueblo Chieftain	25.20	
Rocky Mountain News	25.20	
Denver Times	25.20	
Pueblo Star Journal	25.20	
Montrose Press	21.70	
South Park Merc. Co.	5.25	
Geo. M. Robinson Instr. Works	30.00	
Balance in fund	47.64	
Total	$2,800.00	$2,800.00

DRAUGHTSMAN—SALARY.

Appropriated		$3,000.00
O. L. Nelson	$2,187.50	
H. R. Harrison	687.50	
C. C. Hezmalhalch	125.00	
Total	$3,000.00	$3,000.00

CHIEF HYDROGRAPHER—SALARY.

Appropriated		$3,600.00
Thos. Grieve, Jr.	$3,600.00	
Total	$3,600.00	$3,600.00

HYDROGRAPHERS—SALARY.

Appropriated		$12,000.00
D. L. Bundy	$ 500.00	
G. P. Woodhall	500.00	
C. C. Hezmalhalch	1,750.00	
H. D. Phelps	302.42	
Lucretia Prentiss (Industrial Commission)	700.00	
M. N. Grant, Jr.	875.00	
Margaret Wilkinson (Secretary of State)	67.74	
L. S. Fimple	225.80	
Josephine Kelly (clerical service)	1,300.00	
M. E. Bunger	645.83	
H. R. Harrison	1,525.00	
J. H. Baily	812.50	
C. L. Chatfield	1,625.00	
H. D. Amsley	625.00	
Balance in fund	545.71	
Total	$12,000.00	$12,000.00

STENOGRAPHIC SERVICES.

Appropriated		$2,600.00
Anna O. Finch	$ 503.33	
Ruth Moore	51.64	
Arah Shaw	1,846.67	
Elsie B. Mellor	50.00	
Balance in fund	148.36	
Total	$2,600.00	$2,600.00

CLERK—SALARY.

Appropriated		$ 100.00
May A. Bradford	$ 100.00	
Total	$ 100.00	$ 100.00

FILE CLERK—SALARY.

Appropriated		$2,400.00
Ellie H. Rhodes	$2,400.00	
Total	$2,400.00	$2,400.00

INCIDENTAL EXPENSES.

Appropriated		$3,000.00
Gage readers' salaries	$2,547.80	
Norman Mills, for feeding state team	45.00	
Chas. H. Yust, repairing gaging station	23.10	
W. R. King, repairing gaging station	6.25	
Kremmling Lumber & Supply Co., lumber for new gage	20.64	
Julien P. Friez & Sons, tape for automatic gage	6.25	
Wm. Ainsworth & Son, repairing transit	12.00	
W. H. Kistler Stationery Co.	21.00	
Cardwell Blue Print & Supply Co., 18" level	135.85	
Cardwell Blue Print & Supply Co., repairs for current meter	25.20	
Cardwell Blue Print & Supply Co., level rod and tripod	24.50	
Lallie Surveying Instr. Co., water level gage	40.00	
Cardwell Blue Print & Supply Co., architect's level and level rod	74.50	
Balance in fund	17.91	
Total	$3,000.00	$3,000.00

TRAVELING EXPENSES FOR HYDROGRAPHERS.

Appropriated		$4,000.00
H. D. Amsley	$ 267.51	
G. P. Woodhall	12.05	
C. L. Chatfield	314.30	
Norman Mills, feed state team, etc.	100.90	
M. N. Grant, Jr.	528.38	
D. L. Bundy	169.60	
C. C. Hezmalhalch	346.47	
Central Garage	113.41	
Geo. Tritch Hardware Co.	35.75	
M. E. Bunger	154.16	
H. R. Harrison	457.66	
J. H. Baily	471.29	
Ford Motor Co.	231.70	
Balance in fund	796.82	
Total	$4,000.00	$4,000.00

TRAVELING EXPENSES CHIEF HYDROGRAPHER.

Appropriated		$1,200.00
Thos. Grieve, Jr.	$1,170.27	
Balance in fund	29.73	
Total	$1,200.00	$1,200.00

ONE AUTOMOBILE.

Appropriated		$ 750.00
Hussie Automobile Co.	$ 750.00	
Total	$ 750.00	$ 750.00

IRRIGATION DIVISION ENGINEER, DIV. NO. 1—SALARY.

Appropriated		$5,000.00
F. Cogswell	$5,000.00	

IRRIGATION DIVISION ENGINEER, DIV. NO. 2—SALARY.

Appropriated		$5,000.00
E. R. Chew	$ 752.68	
C. W. Beach	288.97	

The legal appointee to this office is in litigation and a complete statement cannot be furnished at this time.

IRRIGATION DIVISION ENGINEER, DIV. NO. 3—SALARY.

Appropriated		$3,000.00
F. W. Swanson	$1,000.00	
D. A. Norton	2,000.00	
Total	$3,000.00	$3,000.00

IRRIGATION DIVISION ENGINEER, DIV. NO. 4—SALARY.

Appropriated		$3,000.00
H. C. Getty	$3,000.00	

IRRIGATION DIVISION ENGINEER, DIV. NO. 5—SALARY.

Appropriated		$3,000.00
Theodore Rosenberg	$1,951.62	
A. J. Dickson	1,048.38	
Total	$3,000.00	$3,000.00

IRRIGATION DIVISION ENGINEER, DIV. NO. 1—TRAVELING EXPENSES

Appropriated		$1,000.00
F. Cogswell	$ 961.64	
Balance	38.36	
Total	$1,000.00	$1,000.00

IRRIGATION DIVISION ENGINEER, DIV. NO. 2—TRAVELING EXPENSES

Appropriated		$1,000.00
E. R. Chew	$ 815.91	
C. W. Beach	90.12	

The legal appointee to this office is in litigation and a complete statement cannot be furnished at this time.

IRRIGATION DIVISION ENGINEER, DIV. NO. 3—TRAVELING EXPENSES

Appropriated		$1,000.00
F. W. Swanson	$ 129.21	
D. A. Norton	870.07	
Balance	.72	
Total	$1,000.00	$1,000.00

IRRIGATION DIVISION ENGINEER, DIV. NO. 4—TRAVELING EXPENSES

Appropriated		$1,000.00
H. C. Getty	$1,000.00	

IRRIGATION DIVISION ENGINEER, DIV. NO. 5—TRAVELING EXPENSES

Appropriated		$1,000.00
Theodore Rosenberg	$ 498.57	
A. J. Dickson	389.21	
Balance in fund	112.22	
Total	$1,000.00	$1,000.00

DISTRIBUTION OF FEES RECEIVED IN THE STATE ENGINEER'S OFFICE DECEMBER 1, 1914, TO NOVEMBER 30, 1916, INCLUSIVE.

Filing claims to water rights		$11,083.00
Postage		21.19
Blue prints		1,356.54
Certifications		425.00
Sale of "Irrigation Law"		40.00
Rating ditches		172.60
Examination of plans for dams		436.00
Examination of reservoir dams		138.70
Office labor		56.00
Filing of transfer decrees		80.00
Sale of old typewriter		5.00
Remitted to State Treasurer	$13,814.03	$13,814.03

CHAPTER III

WATER RIGHT DECREES

During the past biennial period all of the water right decrees issued by the District Courts of this state and on file in this office, have been indexed by the present State Engineer.

The statutes of this state require that certified copies of all water right decrees entered by the District Courts be forwarded to the office of the State Engineer by the clerk of the District Court issuing such decrees. There is on file in the office of the State Engineer at this time some fourteen thousand decrees which have been entered by our District Courts. While the statute requires that as soon as a decree has been issued, a certified copy be filed in the office of the State Engineer, yet it is known that in numerous instances decrees have been entered and no copy of this decree is on file in this office.

Each separate decree on record in the office of the State Engineer has been indexed in two different ways. For one of these systems a card index has been made for each of the seventy water districts of the state. A separate card giving the pertinent and salient points of each decree has been made, and these cards are filed alphabetically in the proper water district. In compiling this card index, white cards 4 by 6 inches were prepared, having definite headings, and these cards were filled in on the typewriter, one card for each decree. The white cards are of two different kinds, one for ditch decrees and the other for reservoir decrees.

Plate I shows one of the ditch decree cards, and Plate II the reservoir decree cards.

These white cards represent a transaction by the District Courts of this state, whereby water is decreed or taken from one of the natural streams of this state, and credited to a specific ditch.

The statutes of this state authorize the transfer of water from the ditch to which it was originally decreed, to another ditch. To provide for this contingency, and to properly index all of the transfer decrees which are a matter of record in this office, cards similar to the ditch and reservoir cards shown in Plates I and II, were provided. Plate III shows one of the transfer cards in its original color, blue, which represents a transfer of water FROM the particular ditch in question. Similarly, Plate IV shows a transfer card in its original color, pink, which card is used in crediting a transfer of water TO the particular ditch in question.

By means of the white cards crediting a ditch with water from a stream, in question, the blue debit cards transferring water from the ditch, and a pink card crediting or transferring water to the ditch, it is now possible, after all of the indexing has been completed and all of these cards filed alphabetically in their proper district, to, by means of these cards, determine the present status of the water rights of any particular ditch.

Plate V is a reproduction of the method adopted for the second system of indexing. Under this system the ditches in each district are arranged chronologically in the relative orders of their priorities. The original sheet from which Plate V was made is 14 to 16 inches, and these sheets are bound in a loose leaf ledger. The two systems of indexing adopted permit additions to them as new decrees are filed in the office.

The work of indexing these decrees was inaugurated in June, 1915, and completed during the fall of 1916. During this period a total of thirteen thousand nine hundred and fifteen (13,915) decrees were indexed. The distribution of these decrees is shown in Table I.

TABLE I

DECREES INDEXED AND ON RECORD IN THE OFFICE OF STATE ENGINEER.

DISTRICT	Ditch Decrees	Reservoir Decrees	Ditch Transfers
1	223	120	14
2	80	30	24
3	109	21	74
4	110	18	56
5	169	67	2
6	122	66	22
7	122	34	72
8	212	25	6
9	31	9	10
10	32	....	....
11	323	13	28
12	639	....	143
13	549	5	14
14	73	10	62
15	217	6	8
16	417	22	....
17	36	10	4
18	29	....	....
19	167	4	78
20	470	....	90
21	105	....	17
22	187	....	17
23	480	....	24
24	140	8	....
25	280	....	38
26	280	....	82
27	99	....	....
28	230	....	....
29	183	....	....
30	104	....	....
31	.....	....	....
32	....	....	....
33	80	....	2
34	95	1	....
35	96	2	43
36	256	14	2
37	470	6	10
38	406	13	2
39	232	16	30
40	574	....	....
41	108	....	66
42	123	....	44
43	183	21	2
44	244	11	10
45	110	12	6
46	312	13	36
47	383	....	....
48	90	21	....
49	....	....	....
50	40	....	....
51	282	13	1
52	72	9	....
53	222	12	4
54	53	....	....
55	....	....	....
56	11	....	....
57	146	33	6
58	334	22	7
59	223	....	....
60	70	....	....
61	21	....	....
62	132	....	....
63	....	....	....
64	65	6	20
65	19	3	....
66	....	....	....
67	46	3	4
68	190	34	....
69	....	....	....
70	90	6	....
Total	11,996	739	1,180

STATE ENGINEER OF COLORADO

DITCH DECREES

DISTRICT NO. 7 DIVISION NO. 1 COUNTIES CLEAR CREEK, JEFFERSON, GILPIN, DENVER AND ADAMS.

Page	Priority Number	NAME OF DITCH	APPROPRIATION Source	Date	Amount Claimed Sec. Ft.	LOCATION Sec.	Twp.	Range	P M	TRANSFERS Amount Cubic Ft.	Amount Sq. Ft.	REMARKS
59	1	Wadsworth	Clear Creek	Feb 25/60	3.31	17	3 S	69 W	6th	0.28		
60	2	Lees & Baugh	Clear Creek	May 15/60	5.0	20	3 S	69 W	6th	0.21		
61	3	South Side	Clear Creek	May 16/60	2.0	21	3 S	69 W	6th	1.00		
61	4	Brown's Island	Clear Creek	May 19/60	0.9	21	3 S	69 W	6th	0.90		
62	5	Onelette	Clear Creek	May 31/60	15.0	21	3 S	69 W	6th	7.11		
62	6	Wannemaker	Clear Creek	Jun 1/60	8.0	27	3 S	70 W	6th			
63	7	Sherick	Clear Creek	Jun 14/60	1.12	20	3 S	69 W	6th	1.12		
63	8	Lees Island	Clear Creek	Jun 30/60	0.5	20	3 S	69 W	6th			
64	9	The Golden Canal Company's	Clear Creek	Jul 1/60	39.8	27	3 S	70 W	6th			
89	1	Manhart	Ralston Creek	Aug 31/60	0.8	12	3 S	69 W	6th			
90	2	Swadley & Longen	Ralston Creek	Apr 10/61	5.5	4	3 S	69 W	6th			
65	10	Cort, Graves & Hughes	Clear Creek	Apr 30/61	7.0	14	3 S	69 W	6th			
65	11	Kershaw	Clear Creek	May 2/61	16.0	7	3 S	68 W	6th	7.00		
66	12	Claus & Gough	Clear Creek	May 13/61	9.9	24	3 S	69 W	6th	9.90		
66	13	Swadley	Clear Creek	May 14/61	6.0	20	3 S	69 W	6th	4.47		
90	3	Haines	Ralston Creek	May 30/61	1.31	3	3 S	70 W	6th			
67	14	Lee	Clear Creek	Jun 2/61	1.12	20	3 S	69 W	6th	1.12		
91	4	Piquette	Ralston Creek	Jun 6/61	2.03	3	3 S	70 W	6th	0.68		
68	15	Miles & Eskins	Clear Creek	Jun 11/61	4.0	19	3 S	69 W	6th	0.39		
68	16	Fisher	Clear Creek	Jun 29/61	36.0	8	3 S	68 W	6th	5.00		
69	17	Graves North	Clear Creek	Jun 30/61	1.75	14	3 S	69 W	6th			
70	18	Clear Creek & Platte River	Clear Creek	Nov 1/61	49.5	4 5	3 S	68 W	6th			See Card
71	19	Rocky Mountain	Clear Creek	May 1/62	9.21	26	3 S	70 W	6th			
91	5	Brainard Tucker	Ralston Creek	May 1/62	2.93	2	3 S	70 W	6th			
72	20	Slater	Clear Creek	May 16/62	1.8	30	3 S	69 W	6th			
66	21	Swadley	Clear Creek	Jun 1/62	9.0	20	3 S	69 W	6th	3.43		Add. Decree
92	6	Bunny & Ballinger	Ralston Creek	Jun 6/62	2.7	3	3 S	70 W	6th	0.90		
72	22	Sayer & Lees	Clear Creek	Jun 14/62	7.0	16	3 S	69 W	6th			
89	7	Manhart	Ralston Creek	Jun 20/62	0.2	12	3 S	69 W	6th			Add. Decree
73	23	Sanderson & Slater	Clear Creek	Jul 1/62	0.9	20	3 S	69 W	6th			
74	24	Wolff	Clear Creek	Jul 4/62	3.06	15	3 S	69 W	6th			
75	25	Wolff North	Clear Creek	Jul 5/62	2.0	14	3 S	69 W	6th			
75	26	Wadsworth & Graves	Clear Creek	Jul 10/62	1.35	14	3 S	69 W	6th			
76	27	Lee, Stewart & Eskins	Clear Creek	Apr 17/63	2.18	27	3 S	70 W	6th		8.60	
147 155		Boyles	Clear Creek	May 15/63	1.5	18	3 S	68 W	6th			
77	28	Graves South	Clear Creek	May 21/63	3.0	14	3 S	69 W	6th			
78	29	Bluff	Clear Creek	May 26/63	2.6	15	3 S	69 W	6th			
78	30	Juchems & Onelette	Clear Creek	May 28/63	3.22	16	3 S	69 W	6th	1.61		
78	31	Sanderson	Clear Creek	May 31/63	1.0	19	3 S	69 W	6th			
80	32	Slater & Moody	Clear Creek	Jun 20/63	4.0	20	3 S	69 W	6th	2.75		

Until this index of the water right decrees was compiled, the office of State Engineer was badly crippled by not having this information in usuable form. It is now possible to answer personal inquiries and correspondence relative to the particular status of any ditch with considerable satisfaction. The only weakness existing is due to the incompleteness of the files of the decrees on record in the office of the State Engineer. Every attempt has been made to obtain from the clerks of the District Courts copies of all decrees not on file in this office. In some instances, requests for copies of these decrees have brought the desired results, but in the majority of instances it has not been possible to obtain copies of the decrees which are lacking.

It is believed that the chronological indexing of water right decrees should be published by districts, and that these published decrees should be available for sale by districts at a nominal sum to the public. Our Legislature will be requested to loan this office two thousand five hundred dollars ($2,500.00) for the purpose of publishing these decrees, this loan to be repaid by receipts from the sale of the published decrees. It is believed this loan could be repaid in three or four years at the most, for water users, attorneys and engineers interested in the use and administration of the waters of this state would undoubtedly be anxious to secure copies of the districts in which they were interested.

CHAPTER IV

CLAIMS FOR APPROPRIATIONS OF WATER

During the biennial period there have been filed in this office 826 maps claiming water for 724 ditches and 173 reservoirs. The total claimed for ditches is 6,120.28 cubic feet per second. The total amount claimed for reservoirs is 72,280-acre feet.

The estimated cost of ditches for which claims have been filed during 1915 and 1916 is $1,865,599, and the estimated cost of reservoirs is $1,576,126. These estimates are as stated on maps filed. In most cases the estimates thus given are too low.

The following tables show for each district for each irrigation division and for the entire state, the number of claims filed for ditches and reservoirs, the amount of water claimed for them and the estimated cost of construction:

DIVISION NO. I

District Number	No. of Ditches	Total amount claimed for Ditches, Cubic feet per second	No. of Reservoirs	Total amount claimed for Reservoirs, Cubic feet	Estimated cost of Construction of Ditches	Estimated cost of Construction of Reservoirs
1	14	73.37	13	215,226,169	$ 8,835.00	$ 15,342.00
2	7	54.00	3	1,480,841	4,500.00	850.00
3	7	53.76	5	23,126,715	5,450.00	7,950.00
4	6	23.87	2	4,872,530	8,650.00	1,300.00
5	8	21.37	1	755,038,226	5,650.00	450,000.00
6	20	233.01	5	153,345,225	372,600.00	265,231.00
7	10	181.48	7	161,501,269	17,775.00	42,500.00
8	7	28.73	2	17,458,789	2,200.00	18,600.00
9	6	5.50	1	70,253,000	17,300.00	30,500.00
23	6	111.00	1	62,025,000	17,700.00	2,500.00
46	3	33.50	1	6,696,800	1,700.00	500.00
47	10	151.51	1	283,462,000	20,725.00	12,000.00
48	5	215.00	0	0	11,400.00	0
64	21	264.48	6	51,122,067	9,595.00	12,950.00
65	2	6.00	0	0	200.00	0
Total	132	1,451.58	48	1,805,608,631	$ 564,280.00	$ 860,223.00

DIVISION NO. II

District Number	No. of Ditches	Total amount claimed for Ditches, Cubic feet per second	No. of Reservoirs	Total amount claimed for Reservoirs, Cubic feet	Estimated cost of Construction of Ditches	Estimated cost of Construction of Reservoirs
10	8	16.78	6	68,648,936	$ 26,600.00	$ 138,650.00
11	14	85.63	0	0	45,348.00	0
12	13	61.32	0	0	8,000.00	0
13	4	26.30	0	0	1,715.00	0
14	29	419.70	7	18,037,527	33,160.00	14,600.00
15	6	23.00	2	20,598,014	2,156.00	6,826.00
16	24	281.99	14	76,797,982	10,955.00	15,650.00
17	11	83.00	4	148,199,505	3,650.00	85,400.00
18	4	69.15	1	3,892,500	2,700.00	250.00
19	34	529.68	5	28,248,963	29,270.00	4,900.00
49	1	9.78	0	0	2,200.00	0
66	1	20.00	0	0	1,500.00	0
67	20	276.71	6	92,461,474	12,478.00	43,550.00
Total	169	1,903.04	45	456,884,901	$ 179,732.00	$ 309,826.00

DIVISION NO. III

District Number	No. of Ditches	Total amount claimed for Ditches, Cubic feet per second	No. of Reservoirs	Total amount claimed for Reservoirs, Cubic feet	Estimated cost of Construction of Ditches	Estimated cost of Construction of Reservoirs
20	4	100.00	3	112,452,816	$ 2,657.00	$ 20,500.00
21	1	19.50	....	.....	1,500.00	.....
22	0	0	0	0	0	0
24	1	9.73	....	.....	2,000.00	.....
25	10	159.64	....	.....	11,875.00	.....
26	8	65.55	....	.....	4,500.00	.....
27	4	101.20	....	.....	15,700.00	.....
35	2	16.80	....	.....	800.00	.....
Total	30	472.42	3	112,452,816	$ 39,032.00	$ 20,500.00

DIVISION NO. IV

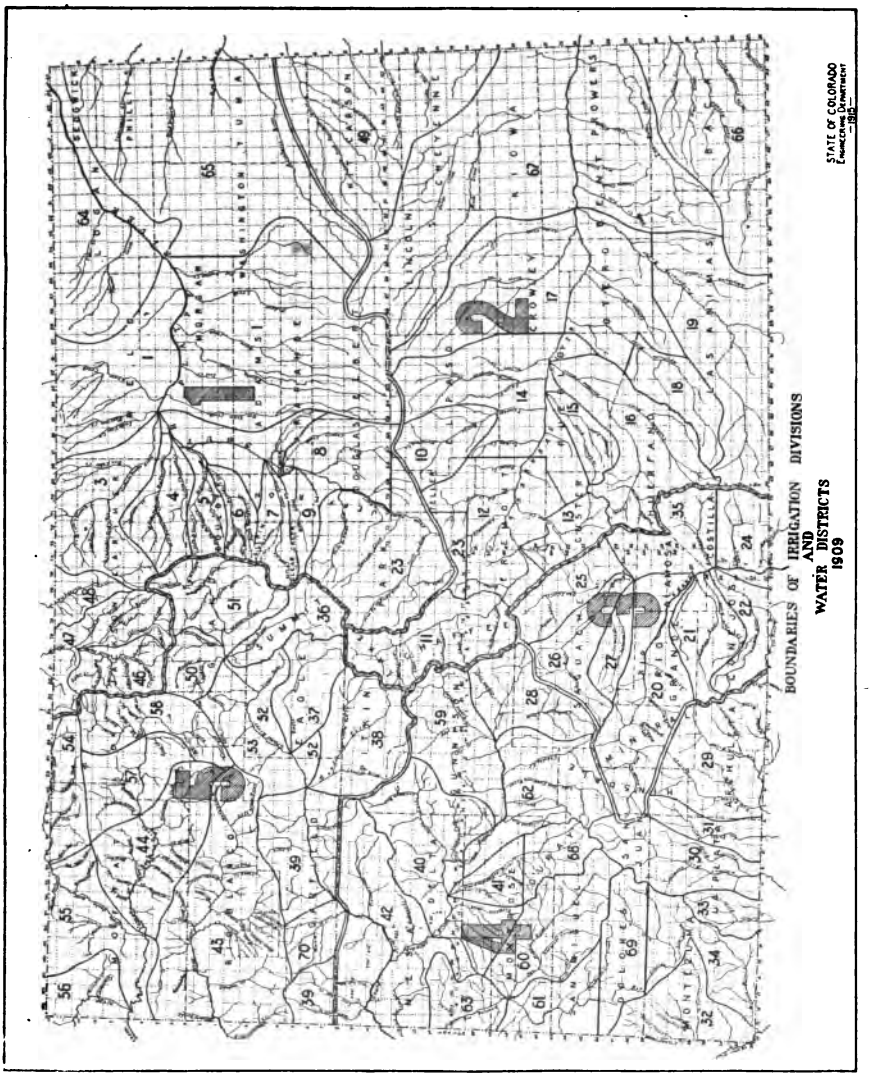
District Number	No. of Ditches	Total amount claimed for Ditches, Cubic feet per second	No. of Reservoirs	Total amount claimed for Reservoirs, Cubic feet	Estimated cost of Construction of Ditches	Estimated cost of Construction of Reservoirs
28	21	168.30	0	0	$ 17,700.00	0
29	3	5.60	0	0	825.00	0
30	5	13.00	0	0	1,250.00	0
31	3	5.50	0	0	400.00	0
32	11	29.50	3	33,647,676	1,525.00	$ 4,630.00
33	10	50.00	0	0	7,000.00	0
34	9	178.50	0	0	453,650.00	0
40	14	96.45	1	62,025,000	30,450.00	35,000.00
41	2	4.50	0	.....	250.00	0
42	34	123.40	6	97,581,421	14,318.00	30,900.00
59	17	101.63	0	0	12,225.00	0
60	28	143.95	2	16,960,428	32,475.00	6,400.00
61	6	62.96	1	5,825,600	80,936.00	4,000.00
62	20	84.23	2	5,299,487	13,920.00	900.00
63	8	31.21	0	0	2,825.00	0
68	7	54.50	1	6,731,146	2,300.00	5,000.00
69	0	0	0	0	0	0
Total	198	1,153.28	16	228,070,758	$ 672,049.00	$ 86,830.00

DIVISION NO. V

District Number	No. of Ditches	Total amount claimed for Ditches, Cubic feet per second	No. of Reservoirs	Total amount claimed for Reservoirs, Cubic feet	Estimated cost of Construction of Ditches	Estimated cost of Construction of Reservoirs
36	12	102.75	4	90,498,218	$ 11,387.00	$ 121,250.00
37	10	29.02	3	7,527,310	22,389.00	8,190.00
38	18	87.89	3	2,491,376	22,441.00	1,400.00
39	9	55.23	10	100,035,523	5,285.00	41,758.00
43	28	110.59	2	24,868,795	8,097.00	5,000.00
44	31	318.99	14	49,980,177	119,645.00	13,724.00
45	10	32.33	0	0	9,155.00	0
50	2	14.00	1	70,871,300	300.00	15,000.00
51	2	25.00	5	7,433,925	3,150.00	6,900.00
52	1	2.70	0	0	150.00	0
53	14	60.71	1	661,450	8,130.00	600.00
54	14	68.02	3	17,098,911	13,975.00	50,800.00
55	6	27.94	1	3,842,250	5,142.00	750.00
56	2	16.80	2	30,152,575	800.00	13,000.00
57	10	51.18	9	42,074,946	3,500.00	14,325.00
58	18	127.86	3	97,968,606	174,800.00	6,050.00
70	8	9.00	0	0	2,160.00	0
Total	195	1,140.01	61	545,505,362	$ 410,506.00	$ 298,747.00

SUMMARY

Division Number	No. of Ditches	Total amount claimed for Ditches, Cubic feet per second	No. of Reservoirs	Total amount claimed for Reservoirs, Cubic feet	Estimated cost of Construction of Ditches	Estimated cost of Construction of Reservoirs
I	132	1,451.58	48	1,805,608,631	$ 564,280.00	$ 860,223.00
II	169	1,903.04	45	456,884,901	179,732.00	309,826.00
III	30	472.42	3	112,452,816	39,032.00	20,500.00
IV	198	1,153.23	16	228,070,758	672,049.00	86,830.00
V	195	1,140.01	61	545,505,362	410,506.00	298,747.00
Total	724	6,120.28	173	3,148,522,468	$1,865,599.00	$1,576,126.00


BOUNDARIES OF IRRIGATION DIVISIONS
AND
WATER DISTRICTS
1909
STATE OF COLORADO

CHAPTER V

ANNUAL REPORTS OF DIVISION ENGINEERS

ANNUAL REPORT DIVISION ENGINEER DIVISION NO. 1, FOR 1915

November 30, 1915.

Mr. A. A. Weiland,
State Engineer,
Denver, Colorado.

Dear Sir: As provided for in Section 12, Chapter 125, page 287, Session Laws of 1903, I herewith submit a report of the work of this division during the past irrigation season. All the other provisions of the above section are more honored in the breach than in the observance. I would recommend that it be amended to read as follows:

> "Section 12. Each irrigation division engineer shall file with the state engineer. on or before December 15th of each year, an annual report, which shall include a tabulated statement of the reports of the water commissioners, as hereinafter defined, and any other information which will tend to improve the distribution and use of water within his division.
>
> "All acts or parts of acts in conflict herewith are hereby repealed."

The annual appeals of District No. 3 from orders of this office relative to the distribution of water, have not been conspicuous by their absence. Inasmuch as appeals have been taken from the same rulings and orders to former state engineers without success, it would appear as though they were simply trying to wipe the slate clean and start anew with fresh appeals.

They have even gone back to the much litigated question of the right to use the appropriation of the Mason and Hottel Mill Race, nights, Sundays and holidays.

If their position in these repeated appeals is well taken, a decision of the District Court would protect their rights for all time, and relieve this office of several very annoying questions in the administration of the irrigation laws of this state.

The right to run water in irrigation ditches for domestic use alone; the right to commence a second filling of reservoirs during any calendar year, when the water is needed for direct irrigation or for the first filling of reservoirs with appropriations of later date; the right to the full amount of a reservoir appropriation in addition to the amount of water in the reservoir on January 1st of each year, and the exclusive right to the use of the seepage water or leakage from ditches and reservoirs, are all questions that should be taken into the courts for a judicial determination of the intent of the law.

The Supreme Court of this state in January, 1915, handed down a decision in Case No. 7562, The Greeley & Loveland Irrigation Company et al. vs. The Farmers' Pawnee Ditch Company.

The majority opinion held that the right of a ditch to divert water for direct irrigation, is limited to a diversion for that purpose, and it is without right to divert and store such waters when by so doing other ditches would be deprived of water to which they were entitled for direct irrigation. The right to store water must be measured by the right to divert water for storage, and not by the physical condition of a ditch with a decreed appropriation for direct irrigation. It must, therefore, logically follow that whenever water is illegally stored in a reservoir, and the outlet conduit from said reservoir is such that the water can be returned to the stream, the division engineer not only has the authority, but it is his duty, to immediately order such illegally stored water discharged from the reservoir and run down the stream to the headgates of the ditches legally entitled to the same.

The dissenting opinion, comparing this case with the so-called "Seven Lakes Case," says:

"The cases are as much alike as two peas, and yet the majority opinion of the court, written by the same judge, never even mentions it."

No doubt the irrigation attorneys, "learned in the law," will also be divided as to whether this decision of the Supreme Court affirms or, indirectly, reverses the decision in the "Seven Lakes Case."

Whatever the ultimate effect of this decision may be upon the "Seven Lakes Case," we are of the opinion that this office has no authority to distribute any water under the latter, without an order from the court.

During the past seven years the ruling of this office has been that temporary storage of water in reservoirs to be used later in the same season for agricultural purposes, will not be permitted when there is objection on the part of other appropriators, until a decision has been rendered by the District Court on the merits of each particular case.

For the information of the water commissioners of this state, past, present and prospective, I would submit the following excerpt from a decision of our Supreme Court, handed down in July, 1915, in Case No. 7867 and Case No. 7874:

Charles W. Comstock, as State Engineer et al. vs. The Fort Morgan Reservoir & Irrigation Company.

> "By virtue of these provisions we have ruled that the several decrees entered in the water districts embraced in an irrigation division, are to be treated as one, and the water distributed accordingly, and that it is the duty of the engineer of an irrigation division to make such distribution by direction to the water commissioners under his control. In other words,

the purpose of the statutory provisions, to which we have referred, is to have the waters of a stream included in two or more water districts, so distributed that the appropriations in the different districts will receive the water to which they are severally entitled in the order of their priority, as established by the decrees in such districts. To attain this end, the division engineer is vested with control over the commissioners in his division. It is his duty to make inter-district distribution of water in his division. This is accomplished by directions to the commissioners under his control, and it follows that when he directs a commissioner in his division to cease supplying water to priorities postdating a specified date, it is the duty of the commissioner receiving such order to obey it, otherwise the purpose of the statute would be defeated, and the waters of a stream included in several districts could not be distributed in accordance with the relative rights of the owners of priorities as established by the decrees in such districts. If, after a commissioner receives an order from the division engineer, there is a rise in the streams in his district, it is his duty to forthwith report that fact to the latter official, but until the order he has received is modified or changed, he is without authority to disregard it, merely because in his opinion it is not necessary. When, therefore, a commissioner refuses or neglects to obey the orders of his superior, in circumstances which indicate an intention to continue that course, he may be compelled in an action by those injured, to distribute the water in his district as directed by the division engineer of the irrigation division which includes his district."

In the above cases the water commissioner of District No. 3 had stated:

> "That he always asserted the right to act with reference to the condition of the stream in connection with the orders of the division engineer, according to his best judgment; that he believed he had this right, but might be mistaken."

There has been no serious trouble over the distribution of water during the past season. After seven years' experience in this office, "appeals" from my rulings are not looked upon as "trouble." The ditches diverting water directly from the South Platte River have been well supplied. There was, however, a shortage on the tributaries, which was in part supplied by seasonable rains, the rainfall being about four inches above normal. The Highland Canal, in District No. 8, of date January 18, 1879, only used reservoir water ten days in July and ten days in September, at the rate of 250 second feet, all drawn directly from Lake Cheesman. This loan of water was partially repaid by a run of water in September and October from Antero Reservoir of 7,911-acre feet. A deduction of 12½% of this amount was made for loss in transit.

On April 1, 1915, there was a break in the dam on the east side of the outlet of Sand Creek Reservoir in District No. 2, with a loss of about 1,500-acre feet of water.

The first use of water for irrigation was reported for the week ending Saturday, May 1st, except in District No. 8, where irrigation commenced about April 17th. There was a reported use of only 5,000-acre feet for irrigation in this division during April. The first use of reservoir water distributed via the river was reported by District No. 3, for week ending May 29th.

On September 28, 1915, the water commissioners in Districts Nos. 1 to 9, both inclusive, were notified that all ditches on the South Platte River proper were supplied. This notice left each water commissioner at liberty to distribute the waters to the ditches and reservoirs of his own district, without reference to the ditches and reservoirs in any other district.

On October 1st, permission was given to store in Lake Cheesman at the rate of 100 second feet, and on October 5th it was given unlimited storage. On October 21st, as soon as Lake Cheesman was reported full, storage was commenced in Antero Reservoir. These orders are still in force, and no doubt will not be modified before next April.

The wet and cold spring months caused crops to be rather late and reduced the first cutting of alfalfa one-half in some localities. Hail and grasshoppers also did a good deal of damage. Taking the division as a whole, it is doubtful if the farmers have ever had any better crops than during the season of 1915.

Fine crops have grown, not only on the irrigated lands, but also on the non-irrigated.

I hereto attach the regular statutory tabulation of the Water Commissioners' annual reports.

Respectfully submitted,

(Signed) F. COGSWELL,
Irrigation Division Engineer, Irrigation Division No. 1.

THE WEEKLY REPORTS OF THE WATER COMMISSIONER OF DISTRICT NO. 3 SHOW THE FOLLOWING AMOUNTS OF WATER BROUGHT OVER FROM DISTRICTS NOS. 47, 48 AND 51, INTO DISTRICT NO. 3, DURING 1915.

	From Dist. No. 47 In Acre Feet	From Dist. No. 48 In Acre Feet	From Dist. No. 51 In Acre Feet	Total
April	0	0	0	0
May	28	2,116	2,008	4,152
June	880	8,066	5,092	14,038
July	1,402	7,290	4,422	13,114
August	224	2,618	686	3,528
September	0	1,078	0	1,078
October	0	0	0	0
November	0	0	0	0
Totals	2,534	21,168	12,208	35,910
Stored in Dist. No. 3, less 5%	0	2,976 In Chambers Lake, Worster, Richards, Douglas and No. 8 Reservoirs	0	2,976
Used for direct irrigation, less 5%	2,534 By North Poudre Valley and Larimer County Ditches	18,192 By Poudre Valley, New Mercer, Larimer County and Larimer and Weld Ditches	12,208 By Larimer County Ditch	32,934

NOTE.—In making this transfer of water 5 per cent. is deducted for loss in transit, except when stored in Chambers or Worster Reservoirs; 4,978 acre feet of the above were diverted from District No. 48 through the Greeley-Poudre Tunnel.

THE WEEKLY REPORTS OF THE WATER COMMISSIONERS SHOW THE FOLLOWING AMOUNTS OF RIVER WATER, IN ACRE FEET, USED IN IRRIGATION DURING 1915.

District	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Totals
1	0	33,170	52,426	44,506	56,758	34,832	19,402	0	241,094
2	0	23,446	68,708	61,184	58,142	43,442	23,906	2,028	280,856
3	0	26,216	96,850	52,074	20,260	12,402	0	0	207,802
4	300	11,910	37,688	35,950	22,612	10,852	2,140	0	121,452
5	0	5,862	31,720	30,310	15,592	9,494	3,138	0	96,116
6	2,400	10,470	39,920	31,350	13,928	6,204	0	0	104,272
7	0	7,170	29,714	33,970	14,638	8,400	4,288	840	99,020
8	2,390	13,558	31,482	20,330	14,704	10,952	8,872	180	102,468
9	0	2,140	10,160	8,490	3,100	3,252	774	0	27,916
64	No. Report	4,270	8,820	31,850	34,328	24,974	940	0	105,182
Totals	5,090	138,212	407,488	350,014	254,062	164,804	63,460	3,048	1,386,178

NOTE.—The annual reports of the water commissioners include many ditches not reported in the weekly reports, hence the totals in this table are less than the totals reported in Column 12 of the Tabulated Annual Reports. While the quantities are approximate, they are the only ones available for each month.

IRRIGATION DIVISION NO. 1

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL RESERVOIR REPORTS FOR THE IRRIGATION SEASON OF 1915.

District	Number of Reservoirs Reported	Area of High Water Line Acres	Capacity in Acre Feet	Quantity of Water in Reservoirs May 1, 1915 Acre Feet	Quantity of Water in Reservoirs Nov. 1, 1915 Acre Feet	Quantity of Water Held Over from Nov. 1, 1914 Acre Feet
1	5	10,094	141,855	123,173	73,760	38,294
2(A)	20	6,978	134,799	79,249	41,321	812
3	58	9,855	158,860	113,344	58,032	49,816
4	15	5,227	94,843	94,843	77,718	32,698
5	19	2,318	38,790	37,810	30,444	16,297
6	29	2,685	42,100	28,841	13,775	16,922
7	39	Not reported	17,911	14,329	12,533	1,741
8	10	410	8,943	8,029	4,829	3,500
9	17	1,502	18,943	18,411	11,356	21,800
23(B)	3	5,910	141,267	101,649	96,330	105,618
46	No reservoirs reported					
47	No reservoirs reported					
48	3	93	175	138	115	69
64(C)	3	6,176	137,782	102,609	48,303	33,789
65	No water commissioner appointed					
Totals	221	51,248	936,268	722,425	469,116	321,769

(A) District No. 2 includes storage in Standley Lake.

(B) District No. 23, Antero Reservoir reported capacity at gage rod of 30 feet at high water line.

(C) District No. 64 includes storage in Point of Rocks and Prewitt Reservoirs.

IRRIGATION DIVISION NO. 1—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1915.

(1) District	(2) Amount of Appropriation in Second Feet	(3) Capacity of Ditches in Second Feet	(4) Length of Main Ditches in Miles	(5) Length of Laterals in Miles	(6) First Day Water Diverted From Natural Streams for Irrigation
1	2,790	2,374	361	310	April 20
2	3,376	2,640	243	Not Reported	May 13
3	3,893	3,451	363	1,294	May 7
4	2,477	2,608	226	131	May 1
5	2,376	1,764	268	247	May 1
6	2,652	2,403	366	103	April 1
7	1,630	1,237	178	72	March 13
8	1,889	950	350	500	April 1
9	396	401	73	49	April 14
23	The New	Water Com	missioner	took charg	e of the dis-
	trict on A	ugust 4th,	at the end	of the irrig	ation season
	in this dis	trict.			
46	1,910	1,922	176	Not Reported	Apr. 12
47	The Water	Commissio	ner only re	ports relati	ve to 29
	ditches ou	t of a total	of 371 decr	eed approp	riations.
	443	613	76	Not Reported	April 25
48	2,452	Not Reported	104	Not Reported	April 1
64	3,069	3,119	256	702	May 11
65	No Water	Commissio	ner appoin	ted.	
Totals	29,353	23,482	3,040	3,408	March 13

IRRIGATION DIVISION NO. 1—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1915.

District	(7) Last Day Water Diverted from Natural Streams for Irrigation	(8) Maximum No. of Days Water Diverted from Natural Streams for Irrigation	(9) Maximum No. of Days Water Carried from Reservoirs	(10) Amount of Water Carried from Reservoirs in Acre Feet (See Note)
1	Oct. 28	192	153	(A) 111,411
2	Oct. 31	172	205	53,174
3	Sept. 30	147	Not Reported	97,480
4	Oct. 31	184	102	41,395
5	Oct. 10	163	84	10,664
6	Oct. 10	193	Not Reported	24,518
7	Oct. 31	233	68	5,756
8	Nov. 3	217	Castlewood Reservoir	3,200
9	Nov. 18	219	Not Reported	15,107
23	.....	.....	Antero Reservoir and Cheesman Lake	19,000
46	July 25	105	No Reservoirs reported.	
47	Nov. 1	190	No Reservoirs reported.	
48	Nov. 10	224	Three small reservoirs	
64	Nov. 1	175	129	70,040
65	No Water Commissioner appointed.			
Totals	Nov. 18	233	205	451,745

NOTE.—The quantities in column (10) represent the reported acre feet in the reservoirs on May 1, 1915, minus the acre feet reported in the reservoirs on Nov. 1, 1915, plus the acre feet diverted from the rivers for storage from May 1st to Nov. 1st.

District No. 2 includes storage in Standley Lake.

District No. 64 includes storage in Point of Rocks and Prewitt Reservoirs and in Julesburg Reservoir.

(a) During August and September 12,000 acre feet were wasted into the river from Jackson Lake in order to repair the riprap; 3,200 acre feet of this wasted water was diverted for storage in Empire Reservoir. The balance of 8,800 acre feet is not included in this amount.

IRRIGATION DIVISION NO. 1—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1915.

District	(11) Average Daily Amount of Water Diverted by Ditches During Season from Natural Streams for Irrigation, Second Feet	(12) No. of Acre Feet Diverted by Ditches During Season from Natural Streams for Irrigation	(13) Total No. of Acres That Can be Irrigated (See Note)	(14) Crops Irrigated, Etc. Alfalfa	(15) Natural Grasses
1	1,027	255,538	146,300	34,147	8,950
2	945	276,576	96,865	22,972	2,490
3	1,188	282,316	391,690	67,115	6,810
4	609	155,614	117,300	29,875	710
5	480	106,219	102,142	28,014	8,186
6	571	94,128	100,387	32,052	12,176
7	480	171,678	112,190	30,885	2,520
8	548	154,721	126,880	16,549	920
9	124	42,358	23,974	7,980	275
23	.....	.....	.....	.....	.....
46	1,442	224,230	89,065	.....	50,744
47	344	64,107	9,870	.....	6,520
48	276	42,459	10,976	6	5,313
64	1,115	144,715	174,455	35,569	19,870
65	No Water Co	mmissioner ap	pointed.		
Totals....	9,149	2,014,659	1,502,094	305,164	125,484

NOTE.—The quantities given in columns (13) to (25) represent the total acreage that can be irrigated or was irrigated, whether the ditches only used the natural flow of streams, or used river and reservoir water combined. The approximate amount of water used in any district, except in District No. 3, will be found by adding together the "No. of Acre Feet Diverted by Ditches During Season from Natural Streams," given in column (12), and the "Amount of Water Carried from Reservoirs in Acre Feet," as given in column (10).

In District No. 3, 32,934 acre feet additional were diverted from Districts Nos. 47, 48 and 51, and used for direct irrigation.

In District No. 7, no water was diverted from District No. 51 and used by the Golden City and Ralston Creek Ditch.

IRRIGATION DIVISION NO. 1—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1915.

CROPS IRRIGATED FROM CANALS IN ACRES. (SEE NOTE.)

District	(16) Cereals	(17) Orchards	(18) Market Gardens	(19) Potatoes	(20) Sugar Beets	(21) Other Crops
1	29,525	115	133	806	19,003	2,614
2	31,941	267	6,733	3,002	15,770	4,572
3	88,861	2,396	1,633	32,580	43,375	3,730
4	58,510	1,670	115	2,570	16,435	2,600
5	36,984	883	1,291	1,347	13,376	3,124
6	33,288	1,748	712	315	7,906	950
7	40,410	3,080	10,785	25	650	270
8	23,218	1,289	1,465	.....	.....	2,028
9	11,110	279	91	1	40	2
23	The Wat	er Commi	ssioner r	eports th	at the hay	crop was
	fair, abo	ut 1½ ton	s per acr	e, and qua	lity bette	r than in
	former y	ears.				
46	502	.....	1	.....	.....	.....
47	80	.....	.....	.....	.....	.....
48	.....	.....	.....	.....	.....	.....
64	26,844	45	129	1,539	18,071	150
65	No Wate	r Commis	sioner ap	pointed.		
Totals	381,273	11,772	23,088	42,185	134,626	20,040

IRRIGATION DIVISION NO. 1—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1915.

District	CROPS IRRIGATED FROM CANALS IN ACRES (22)	(23)	(24)	(25) Total Irrigated	COST—DOLLARS (26) Superintendence	(27) Repairs	(28) Improvements
1				95,283	$13,050	$8,180	$11,150
2				87,747	17,420	5,890	9,895
3				246,500	22,300	15,420	4,500
			Peas				
4			1,235	113,720	10,775	2,925	5,000
5				93,205	5,180	9,346	1,350
6				89,147	3,493	9,698	1,189
7				88,625	3.500	310	2,810
8				45,469	20,553	58	10,044
		Timothy					
9		210		19,988	3,600	2,750	1,680
23							
	Pasture						
46	37,818			89,065			
	Pasture						
47	3,245			9,845		2,100	
48				5,319	250	822	885
64				102,217	6,587	8,200	1,661
65	No Wa	ter Com	missi	oner appoi	nted.		
Totals..	41,063	210	1,235	1,086,140	106,708	65,699	50,164

ANNUAL REPORT

DIVISION ENGINEER, DIVISION NO. 1

November 30, 1916.

Mr. A. A. Weiland,
State Engineer,
Denver, Colorado.

Dear Sir: I herewith submit my report of the work of Irrigation Division No. 1, during the fiscal year ending November 30th, 1916.

The efficiency of this office would be increased 50 per cent if it was located at Greeley. The Division Engineer would then be in close touch with the conditions in the upper end of District No. 1, and the lower ends of Districts Nos. 2, 3 and 4, the very storm center of nine-tenths of all the trouble over the distribution of water in this division.

In order to receive the full benefit of the removal of the office to Greeley, the present inadequate expense fund should be increased to one thousand dollars ($1,000.00) per annum.

During the past year the "Dove of Peace" has been hovering over this division and "Watchful Waiting" has taken the place of appeals to the courts from rulings of this office. This office, therefore, has been charged with no more serious crimes than contempt of court and conspiracy to defraud a ditch of its decreed appropriations. It is not easy to decide which charge is the most contemptible.

In June, inquiry was made relative to storing water in reservoirs when ditches break and they cannot divert their deereed ditch appropriations. An order was issued that when for any reason a ditch cannot divert its decreed appropriation, that water goes to the general supply of the stream and cannot be stored except by order of the court. It was also ruled that water must not be stored under the so-called "Seven Lakes Case," except when ordered by the court.

In passing, it might be noted, that up in Districts Nos. 3 and 4 this celebrated case appears to be very much alive, and several ditches are now, by order of the District Court, allowed to store their ditch appropriations when not needed for direct irrigation.

The laws of the state require water to be distributed in accordance with measurements made by the State Engineer or the Division Engineer. It was found necessary during the past season to issue orders to the water commissioners not to use rating tables furnished by outside parties. All rating tables used must be approved by this office.

No new questions relative to the distribution of water, except a special case in District No. 4, have been presented to this office during the season just past.

In the case of the Greeley & Loveland Irrigation Company vs. Huppe et al., reported in 60 Colorado, page 541, our Supreme Court

ruled that 23 small reservoirs in District No. 4 were not entitled to reservoir decrees.

These reservoirs "are small, natural depressions, or basins, lying along or near laterals from their ditches, through which they are filled, and in some instances the laterals pass through the reservoirs."

No water commissioner had ever distributed water to be stored in these reservoirs, nor had he ever been requested to do so. The reservoirs had never appropriated water from the river for storage purposes. The water stored in the past had been the excess water carried by the ditches for direct irrigation and not needed for immediate use. In 44 Colorado, page 233, reservoirs of a similar character are spoken of as "stock-filling reservoirs" and are not entitled to a priority. At the request of the Water Commissioner of District No. 4, this office on October 24th ruled that the present status of the above 23 reservoirs, is *not* that of undecreed storage reservoirs, but that of the so-called "stock-filling reservoirs" without any direct appropriations from the river for storage purposes, except in such cases where it has been ordered by the District Court.

The first order of the season to close junior ditches was issued on April 14th, directed to Districts Nos. 1 to 9 and 23, to cease all distribution of water to ditches and reservoirs of later date than January 1st, 1890, to supply a shortage of 350 second feet for direct irrigation under prior appropriations in District No. 1.

The false statement was made that the water was not to be used for direct irrigation, but was to be stored in the reservoirs and that the order was not warranted by conditions on the South Platte River. It was stated that on April 19th, 200 second feet was in the river above Sterling, in Logan County, in District No. 64. This water looked like the same kind of water that flows in the Cache la Poudre, therefore it must have come from that stream.

As a matter of fact, the above order was issued to supply ditches in District No. 1. The Bijou Canal, near Hardin in Weld County, the third county west of Logan County and 80 miles above Sterling, was demanding 250 second feet of 1888 water for direct irrigation. From April 13th to May 22nd, the Bijou was demanding 250 to 300 second feet. There was no storage in District No. 1 from April 4th to May 23rd, and then only for four days. The next storage was in October. The Water Commissioner of District No. 3 reports water used for irrigation under the Larimer and Weld Canal from and after April 2nd. We are of the opinion that irrigation is just as necessary under the Bijou Canal in April as under Larimer and Weld Canal.

From April 14th until October 9th, the supply of water for direct irrigation was inadequate to meet the demands of the decreed ditches. During June, July, August and September, the South Platte River was reported dry below Platteville, except during a few days in August.

Lake Cheesman discharged from storage during June and July, 14,881-acre feet to the credit of the Highline Canal in Dis-

trict No. 8. This water was repaid Lake Cheesman from Antero Reservoir during September and October.

On October 9th, at 7:00 P. M., the Water Commissioner of District No. 1 'phoned that the demands of his ditches for direct irrigation were supplied, including the 1907 appropriation of the Riverside Canal.

On October 10th, an order was sent to Districts Nos. 1, 2, 3, 4, 5 and 6 to store water in decreed reservoirs that have not been full once this calendar year, with appropriations of earlier date than January 1st, 1908. Also not to distribute water to any reservoir that has been full once this calendar year, nor to any undecreed ditch or reservoir, without my permission.

District No. 3 lived up to its reputation and the charge of "Discrimination" was duly recorded.

We trust that our next Legislature will establish by statute the "year," in the phrase, "to fill said reservoir once each year," as used in decrees and by the Supreme Court.

Storage was not allowed in the other districts as there was a shortage in Districts Nos. 2 and 8 for direct irrigation under earlier appropriations.

On October 17th, at 7:00 P. M., the Water Commissioner of District No. 1, 'phoned that, owing to the late heavy rains, his demands for direct irrigation were supplied and he had excess water for storage. He was instructed to store it in the reservoirs that have not been full once this calendar year. He reported that none of his reservoirs diverting water from the South Platte River had been full this year.

On October 18th, a general order was sent to Districts Nos. 1 to 9, as follows: "You are advised, that after you have supplied the demands of your reservoirs that have *not* been full once this calendar year, you are at liberty to distribute any excess water in your district to the reservoirs that have been full once this year, in accordance with the dates of their decreed appropriations."

Permission was given Lake Cheesman to store water on October 19th.

Up to the present time, Antero Reservoir has not been allowed to store any water as Lake Cheesman, from October 19th to November 13th, was storing on its prior appropriation. Since that date Lake Cheesman has been discharging about 20 second feet from storage, to supply the shortage in the river for the domestic use of Denver and for power purposes of the flour mill at Littleton.

Although the law of 1911 requires that each Division Engineer shall be provided with a suitable office, furniture and office equipment for the proper transaction of business, this office is still without a permanent abiding place and a telephone.

I hereto attach the regular statutory tabulation of the Water Commissioners' annual report.

Respectfully submitted,

(Signed) F. COGSWELL.

Irrigation Division Engineer, Irrigation Division No. 1.

IRRIGATION DIVISION NO. 1

THE WEEKLY REPORTS OF THE WATER COMMISSIONER OF DISTRICT NO. 3 SHOW THE FOLLOWING AMOUNTS OF WATER BROUGHT OVER FROM DISTRICTS NOS. 47, 48 AND 51, INTO DISTRICT NO. 3, DURING 1916.

	From Dist. No. 47 In Acre Feet	From Dist. No. 48 In Acre Feet	From Dist. No. 51 In Acre Feet	Totals
April	0	0	0	0
May	0	2,156	1,220	3,376
June	2,336	12,202	6,740	21,278
July	2,410	7,902	4,886	15,198
August	1,146	3,956	1,630	6,732
September	520	1,254	42	1,816
October	84	0	0	84
November	0	0	0	0
Totals	6,496	27,470	14,518	48,484
Stored in Dist. No. 3, less 5%	0	2,876 In Chambers Lake, Worster and Douglas Reservoirs	0	2,876
Used for direct Irrigation, less 5%	6,496 By North Poudre and Larimer County Ditches	24,594 By Larimer County and Poudre Valley Ditches	14,518 By Larimer County Ditch	45,608

NOTE.—In making this transfer of water 5 per cent. is deducted for loss in transit, except when stored in Chambers or Worster Reservoirs. 3,645 acre feet of the above were diverted from District No. 48 through the Greeley-Poudre Tunnel.

IRRIGATION DIVISION NO. 1—Continued

THE WEEKLY REPORTS OF THE WATER COMMISSIONERS SHOW THE FOLLOWING AMOUNTS OF RIVER WATER, IN ACRE FEET, USED IN IRRIGATION DURING 1916.

District	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Totals
1	36,120	30,836	24,964	20,910	32,378	32,790	38,970	6,600	223,568
2	17,750	47,798	54,130	47,462	55,619	36,899	22,712	4,820	287,190
3	7,556	63,412	108,790	54,828	31,514	16,482	2,240	0	284,822
4	3,186	19,822	33,218	26,008	19,152	11,544	2,814	0	115,744
5	794	14,728	33,216	25,558	14,174	6,836	1,806	0	97,112
6	880	20,650	37,242	22,780	13,628	6,588	1,092	0	102,860
7	4,196	21,650	34,270	23,242	16,220	7,238	5,020	0	111,836
8	6,568	14,636	8,128	7,938	24,690	7,598	7,732	360	77,650
9	734	3,392	5,590	3,524	5,950	3,576	1,700	116	24,582
64	17,600	21,644	22,940	18,454	26,268	21,500	10,500	0	138,906
Totals	95,384	258,568	362,488	250,704	239,593	151,051	94,586	11,896	1,464,270

NOTE.—The annual reports of the Water Commissioners include many ditches not reported in the weekly reports; hence the totals in this table are less than the totals reported in column (12) of the tabulated annual reports. While the quantities are approximate, they are the only ones available for each month.

IRRIGATION DIVISION NO. 1—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL RESERVOIR REPORTS FOR THE IRRIGATION SEASON OF 1916.

District	Number of Reservoirs Reported	Area of High Water Line Acres	Capacity in Acre Feet	Quantity of Water in Reservoirs May 1, 1916 Acre Feet	Quantity of Water in Reservoirs Nov. 1, 1916 Acre Feet	Quantity of Water Held Over from Nov. 1, 1915 Acre Feet
1	5	10,094	139,606	92,840	30,971	73,760
2(A)	20	6,588	134,876	75,067	12,924	41,321
3	54	10,096	156,948	96,420	29,846	58,632
4	15	4,875	95,654	92,251	47,200	77,718
5	19	2,974	38,228	37,343	21,336	30,444
6	30	2,762	43,134	27,200	4,944	13,775
7	39	Not reported	17,432	13,041	112	12,533
8	10	80	6,200	6,185	927	4,829
9	17	1,270	6,123	5,703	1,000	11,356
23(B)	3	5,086	138,435	98,628	76,976	96,330
46	No reservoirs		reported			
47	No reservoirs		reported			
48	1	52	149	149	149	115
64(C)	3	6,175	141,041	61,903	14,463	48,303
65	2	14	69	69	69	
Totals	218	50,066	917,895	606,799	240,917	469,116

These "Annual Reports" of the Water Commissioners include many small reservoirs not included in their weekly reports.

(A) District No. 2 includes storage in Standley Lake.

(B) District No. 23, Antero Reservoir reported capacity 58,601 acre feet at gage rod of 30 ft. as high water line.

(C) District No. 64 includes storage in Point of Rocks and Prewitt Reservoirs and Julesburg Reservoir.

IRRIGATION DIVISION NO. 1—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1916.

(1) District	(2) Amount of Appropriation in Second Feet	(3) Capacity of Ditches in Second Feet	(4) Length of Main Ditches in Miles	(5) Length of Laterals in Miles	(6) First Day Water Diverted from Natural Streams for Irrigation
1	2,790	2,374	361	310	Mar. 18
2	3,361	3,650	384	336	April 9
3	3,892	3,400	357	1,300	April 1
4	2,478	2,764	242	153	April 3
5	2,445	1,764	269	248	April 1
6	3,496	1,871	340	182	April 6
7	1,611	1,238	188	88	April 4
8	1,914	1,167	334	300	March 13
9	395	345	54	46	Feb. 12
23	2,443	Not repor	ted		May 10
46	1,859	1,927	174		April 25
47	The Wate	r Commissi	oner only r	eports rela	tive to 42
	ditches ou	t of a total	of 371 decr	eed approp	riations.
	567	891	Not repor	ted	May 1
48	2,526	674	126		April 24
64	3,798	3,826	292	764	April 1
65	171	249	Not repor	ted	April 15
Totals	33,746	26,140	3,121	3,727	Feb. 12

IRRIGATION DIVISION NO. 1—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1916.

District	(7) Last Day Water Diverted from Natural Streams for Irrigation	(8) Maximum No. of Days Water Diverted from Natural Streams for Irrigation	(9) Maximum No. of Days Water Carried from Reservoirs	(10) Amount of Water Carried from Reservoirs in Acre Feet (See Note)
1	Oct. 30	226	159	91,589
2	Oct. 31	213	171	64,435
3	Oct. 16	199	Not reported	121,379
4	Oct. 31	212	168	48,920
5	Oct. 20	203	142	21,455
6	Oct. 20	198	Not reported	27,132
7	Oct. 31	211	75 Castlewood Reservoir	14,305 -
8	Nov. 2	235	60	5,257
9	Nov. 30	293	118	8,599
23	Aug. 15	97	66	23,034
46	Aug. 15	113	No reservoirs	
47	Oct. 25	178	No reservoirs	
48	Oct. 31	191	Not reported	
64	Oct. 31	214	150	61,020
65	Nov. 15	215	23	52
Totals	Nov. 30	293	171	487,177

NOTE.—The quantities in column (10) represent the reported acre feet in the reservoirs on May 1, 1916, minus the acre feet reported in the reservoirs on Nov. 1, 1916, plus the acre feet diverted from the rivers for storage from May 1 to Nov. 1, as given in the weekly reports of the Water Commissioners, except in Districts 2 and 3 which are given as reported by the Water Commissioners.

District No. 8 also used 20,226 acre feet of water from Cheesman Lake and Antero Reservoir.

The "Annual Reports" of the Water Commissioners include many small reservoirs not included in their weekly reports. These quantities are, therefore, only approximate, but they are the only ones available.

District No. 2 includes storage in Standley Lake.

District No. 64 includes storage in Point of Rocks and Prewitt Reservoirs and in Julesburg Reservoir.

IRRIGATION DIVISION NO. 1—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1916.

District	(11) Average Daily Amount of Water Diverted by Ditches During Season from Natural Streams for Irrigation	(12) No. of Acre Feet Diverted by Ditches During Season from Natural Streams for Irrigation	(13) Total No. of Acres That Can be Irrigated (See Note)	(14) Crops Irrigated, Etc. Alfalfa	(15) Crops Irrigated, Etc. Natural Grasses
1	975	237,679	143,800	28,950	8,400
2	871	271,762	173,075	23,980	2,435
3	1,211	348,942	391,690	67,080	6,680
4	495	138,986	116,547	32,425	510
5	445	116,992	103,235	27,560	7,008
6	630	115,088	93,689	24,222	13,938
7	474	132,728	115,509	31,908	2,505
8	485	105,464	127,471	18,135	1,430
9	98	27,449	20,177	7,589	723
23	693	55,966	18,695	.....	18,695
46	1,486	220,382	89,485	.....	88,939
47	364	50,802	17,945	.....	15,690
48	359	52,415	12,236	.....	5,551
64	716	159,101	185,185	34,932	20,082
65	Not reported		3,015	942	580
Totals.....	9,302	2,033,756	1,611,754	297,723	193,166

NOTE.—The quantities given in columns (13) to (25) represent the total acreage that can be irrigated or was irrigated, whether the ditches only used the natural flow of streams, or only used reservoir water, or used river and reservoir water combined.

The approximate amount of water used in any district, except in Districts 2, 3, 7 and 8, will be found by adding together the "No. of Acre Feet Diverted by Ditches During Season from Natural Streams," given in column (12) and the "Amount of Water Carried from Reservoirs in Acre Feet," given in column (10).

In District No. 2, 1983 acre feet were diverted from Districts Nos. 5, 7 and 23. In District No. 3, 45,608 acre feet additional were diverted from Districts Nos. 47, 48 and 51, and used for direct irrigation. In District No. 7, 924 acre feet were diverted from District No. 51 and used by the Golden City and Ralston Creek Ditch. In District No. 8, 20,226 acre feet were diverted from District No. 23.

IRRIGATION DIVISION NO. 1—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1916.

	CROPS IRRIGATED FROM CANALS IN ACRES					
District	(16) Cereals	(17) Orchards	(18) Market Gardens	(19) Potatoes	(20) Sugar Beets	(21) Other Crops
1	25,375	233	185	695	18,025	6,595
2	39,890	352	7,884	4,293	22,991	2,630
3	83,171	2,403	1,636	34,225	45,220	6,430
4	56,890	1,879	117	1,335	20,795	1,411
5	39,356	747	187	578	14,102	3,177
6	26,551	1,508	623	125	8,540	6,885
7	42,344	3,150	18,960	25	735	295
8	22,991	1,243	1,590	.....	600	1,708
9	7,310	264	109	.....	218	377
23	Total N	o. of acre	s that can	be irrigat	ed was no	t re-
	ported.	The Distr	ict is here	given cre	dit for ac	reage
	that is ir	rigated.				
46	546	(36,795	Acres of t	he "Natu	ral Grass	es" are
		reported	as "Pastu	re.")		
	Oats					
47	40	(11,505	Acres of t	he "Natu	ral Grass	es" are
		reported	as "Wild	Hay.")		
48	27	.....	.....	3	.....	8
64	27,035	55	125	1,826	20,031	365
65	182	37	18	42	.....	50
Totals	371,708	11,871	31,434	43,147	151,257	29,931

IRRIGATION DIVISION NO. 1—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1916.

	CROPS IRRIGATED FROM CANALS IN ACRES				COST—DOLLARS		
District	(22) Corn	(23)	(24) Beans	(25) Total Irrigated	(26) Superintendence	(27) Repairs	(28) Improvements
1				88,458	$15,575	$12,884	$8,888
		Celery					
2		340	5,700	110,495	21,515	2,675	2,350
3				246,845	22,245	14,045	3,000
		Peas					
4		1,130		116,492	12,850	4,225	2,850
5				92,715	5,446	7,974	1,076
		Cucumbers					
6	40	50		82,482	3,535	9,839	5,765
		Onions					
7		66		99,988	4,330	550	1,235
8				47,697	23,947	75	783
9				16,590	5,560	1,815	1,550
23				18,695			
46				89,485			
47				15,730			
48				5,589		756	780
		Beet Seed					
64	1,826	700	425	107,402	18,579	22,690	22,925
		Cane					
65	142	84		2,077		1,081	35
Totals..	2,008	2,370	6,125	1,140,740	$133,582	$78,609	$51,237

ANNUAL REPORT DIVISION ENGINEER DIVISION NO. 2, FOR 1915

Pueblo, Colo., November 30, 1915.

Mr. A. A. Weiland,
State Engineer,
Denver, Colorado.

Dear Sir: I herewith submit my annual report for the year ending November 30th, 1915, for Division No. 2, together with tabulation of the Water Commissioners' annual reports.

Rains began in March, continued throughout the entire season, in such volume as to diminish irrigation very materially. More rain fell in this division than ever known in the history of the valley. Numerous heavy downpours of as high as two and a half inches.

Many disastrous floods on tributaries, but none of consequence on the Arkansas River. The rainfall far exceeded the normal.

Reservoirs were hardly called upon for water during the season, and it is most remarkable that nearly all go into winter full, something never chronicled before, guaranteeing an abundance of water for next season.

The normal flow of the streams, increased with the unusual rainfall, was ample for all purposes. In fact, this resulted in overuse or abuse of water to such an extent as to injure many crops and increase seepage. It is remarked that seepage will be the next and most serious problem to confront irrigationists.

The vast resources of this valley make of it an empire within itself. To say this valley is one of the richest in the world is far from exaggeration.

We have approximately 700,000 acres that can be irrigated, 550,000 irrigated, and of this amount 187,000 acres are in alfalfa. Since excessive rain injured the crop to some extent, we will place the average yield at three tons per acre; 561,000 tons at a minimum of $6.00 per ton, gives $3,366,000; 65,000 acres of sugar beets at a minimum of 13 tons per acre, 845,000 tons, gives $4,225,000. The beets were very high in sugar content, so that many brought $7.00 per ton. Fifty-two thousand acres blue stem or wild hay at a minimum of one ton per acre, 52,000 tons at $12.00 per ton, $624,000. Beside the above, 12,000 acres of cereals, 15,000 acres in orchards, 5,000 acres of melons and 6,000 acres in market gardens, and the balance in bush fruit and diversified crops.

I shall use this in a primary way. Under consumers I will place the four sugar factories, condensed milk plants and canning factories, alfalfa meal mills, creameries and cheese factories. Each in its line consumes the products of the farm and enriches the valley by hundreds of thousands of dollars. Each of the above was taxed to fullest capacity during the past season.

Fremont is the banner apple county, with Otero, Pueblo and Crowley close seconds.

From the best information at hand, the value of apples, peaches, cherries, prunes, together with bush fruits, reach well into six figures.

Vegetables of many varieties are shipped into the surrounding states, and much to the far eastern market. There will be many cars of celery shipped, which is one of the best paying crops, often yielding as much as $1,100 per acre.

Thousands of acres are planted for seed crop alone, such as cucumbers, squash, and melons.

I am reliably informed that over one-half million sheep will be fed in this valley the coming winter, besides thousands of cattle, at each sugar factory. The dairy industry is fast growing throughout the entire division. In District No. 67 it is becoming the leading industry.

The constant high water from so much rain has kept busy an expert hydrographer. The shifting current, carrying great quantities of sand into the ditches, changing the course of the river from one side to the other, has made the presence of this hydrographer a necessity; without his assistance it would have been difficult to administer the water of the division.

I do not recall a single complaint in any district in the division, or from any water commissioner, save one, and that was between the Holbrook and Meredith reservoirs, as to their priority to exchange stored water with the river.

Respectfully,

(Signed) E. R. CHEW,
Irrigation Division Engineer, Division No. 2.

IRRIGATION DIVISION NO. 2

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL RESERVOIR REPORTS FOR THE IRRIGATION SEASON OF 1915.

District	Name of Reservoirs Reported	Source of Supply	Capacity in Cubic Feet	Quantity of Water in Reservoirs May 1, 1915, Cubic Feet	Quantity of Water in Reservoirs Nov. 1, 1915, Cubic Feet
10	Roby	Fountain Creek			23,958,000
10	Fountain V. L. & W. Co.	Fountain Creek			5,500
10	Birdsell	Fountain Creek			239,580,000
10	Monument	Monument Creek			
10	Stratton Home	Fountain Creek			
11	Twin Lakes	Lake Creek	2,377,853,280	2,307,460,320	2,251,137,240
11	Clear Creek	Clear Creek	498,518,350	418,552,435	217,734,100
11	Sugar Loaf	Lake Fork of Arkansas River			
12	Shaffer	Beaver Creek	137,151,000	128,605,000	128,605,000
12	Skagway	Beaver Creek	144,000,000	144,000,000	144,000,000
12	Victor No. 2	East Fork Beaver Creek	12,032,000	10,561,000	12,032,000
12	Bison	East Fork Beaver Creek	48,115,000	48,115,000	30,080,000
12	Colorado Springs No. 7	South Slope Pike's Peak	6,600,000	2,673,800	6,021,400
12	Colorado Springs No. 8	East Fork Beaver Creek	26,000,000	20,053,500	28,074,800
12	Colorado Springs No. 2	Middle Beaver Creek	24,000,000	24,000,000	24,000,000
12	Colorado Springs No. 4	Middle Beaver Creek	115,000,000	71,390,000	86,631,000
12	Colorado Springs No. 5	Middle Beaver Creek	86,000,000	68,181,800	85,962,000
12	Gillett	South Fork Oil Creek	500,000		
12	Cripple Creek No. 2	Cripple Creek	25,000,000	2,474,000	25,000,000
12	Mt. Pisgah	Four Mile Creek	138,000,000	60,438,000	60,438,000
13	Balman Lake	Lake Creek	2,592,000	2,592,000	
14	Lake Henry	Arkansas River	117,742,680		
14	Lake Meredith	Arkansas River	678,359,880		
14	Greenview	Arkansas River	2,613,600		
14	Pueblo Water Co. No. 1	Arkansas River	679,000	679,000	679,000
14	Pueblo Water Co. No. 2	Arkansas River	767,180	767,000	767,000
14	Pueblo Water Co. No. 1	Arkansas River	955,441	955,441	955,441
14	Pueblo Water Co. No. 2	Arkansas River	1,740,000	1,740,000	1,740,000
14	Teller	Turkey Creek	1,760,000	1,760,000	1,760,000
15	Sarvard	Arkansas and St. Charles Rivers	69,000,000	46,642,000	47,862,000
15	Minnequa	Arkansas River	580,654,800	118,746,560	149,740,960
15	Corwin	Arkansas River	119,000,000	58,167,600	95,830,000
15	Bonnimede	Greenhorn Creek	141,000,000	109,291,200	136,031,200
15	Hayden	Greenhorn Creek	1,807,740,000	159,824,000	

16	Cucharas No. 5	Cucharas River	1,843,459,200	656,013,600	
16	(A) Bradford Lake	Huerfano River	10,354,200		
16	(B) Manla	Cucharas River	1,200,000		
16	(B C. F. Richir	Cucharas River	2,500,000		
16	(A) Robinson	Muddy Creek	1,448,400		
16	(A) Hayes	Cucharas River	251,000		
16	Montez	Huerfano River	87,855,600		
16	Huerfano Valley	Huerfano River	7,741,300		
16	La Foya	Cucharas River	91,150		
16	Sterns	Bear Creek	4,024,438		
16	Pofe Bros.	Bear Creek	1,045,000	Now Lindsley	Lake
16	McMillan	Huerfano River	3,696,000	Not in use	
16	(A) Sharp's Orchard	Cucharas River	450,000		
16	(A) Ellis	Huerfano River	91,150		
16	McDonald	Cucharas River	569,400	Not in use	
16	(A) Archuleta	Huerfano River	23,524,020	22,522,900	
16	Holita	Cucharas River			
16	Dickson	Huerfano River			
16	Homestead	Huerfano River	171,543,960	126,367,400	
16	Lake Oehn	Cucharas River			
16	(A) Willis Lake	Cucharas River	17,953,950		
16	Walsenburg	Cucharas River	4,000,000	3,000,000	
16	Apache	Apache Creek	50,946,205		
16	Valdez	Santa Clara Creek			
16	(B) Goose Lake	Huerfano River			
16	Lindsey Lake	Huerfano River			
16	Nepesta	Huerfano River			
16	Chicosa	Huerfano River			
17	Holbrook No. 1	Arkansas River	326,700,000	324,260,640	294,117,120
17	Dye Lake	Arkansas River	186,020,000	209,000,880	124,593,796
17	Timpas No. 2	Timpas Creek	125,585,000		
17	Timpas No. 3	Timpas Creek	79,725,000		
17	Red Top	Mustang Creek	26,136,000		
17	Hardesty	Mustang Creek	6,846,000		
17	(B) Mustang	Mustang Creek	144,000,000		
17	Swink No. 1	Apishapa River	1,798,156,800		87,120,000
17	Swink No. 2	Apishapa River	94,525,200		13,068,000
17	Swink No. 5	Apishapa River	304,920,000		34,848,000
17	Box Springs	Horse Creek	152,000,000	87,120,000	87,120,000
18	Kate L. Cossum No. 1	Apishapa River	10,750,044		522,502
18	Kate L. Cossum No. 2	Apishapa River	2,204,136		
18	Swink D. & Res. Co.	Apishapa River			
19	Model	Las Animas River	886,883,220	352,836,000	272,255,000

IRRIGATION DIVISION NO. 2—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL RESERVOIR REPORTS FOR THE IRRIGATION SEASON OF 1915.

District	Name of Reservoirs Reported	Source of Supply	Capacity in Cubic Feet	Quantity of Water in Reservoirs May 1, 1915, Cubic Feet	Quantity of Water in Reservoirs Nov. 1, 1915, Cubic Feet
19	(C) John Lake	Las Animas River	1,935,000		
19	North Lake	Las Animas River	44,000,000	38,000,000	38,000,000
19	Monument Lake	Cherry and Whiskey Creeks	7,000,000	7,000,000	7,000,000
19	Madrid No. 1	North Lake	1,334,000	1,334,000	1,334,000
19	Madrid No. 2	Madrid No. 1	1,334,000	1,334,000	1,334,000
19	Madrid No. 3	Madrid No. 2	8,000,000	1,500,000	Empty
19	Jansen	Madrid No. 3	8,000,000	800,000	800,000
19	Maple Street	Jansen	170,000	100,000	100,000
19	Russell	Middle Fork and Whiskey Creek	13,590,000	12,000,000	10,000,000
19	North Sherman		Not in use		
19	Survant		Not completed		
49	Horse Creek	Arkansas River and Horse Creek	1,171,163,000	1,089,000,000	1,001,880,000
49	Adobe	Adobe Creek	4,094,640,000	3,179,880,000	3,049,200,000
67	Two Buttes	Two Buttes Creek	1,782,395,000	1,100,000,000	1,156,000,000
67	Great Plains	Arkansas River	8,058,600,000	3,620,228,040	5,298,577,040
67	Thurston	Arkansas River	348,480,000	130,680,000	130,680,000
67	Great Plains	Arkansas River	7,955,580,600	3,620,228,040	5,298,377,040

(A) Stock Pond.

(B) Out of Commission.

(C) Not used for irrigation.

IRRIGATION DIVISION NO. 2—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1915.

(1) District	(2) Amount of Appropriation in Second Feet	(3) Capacity of Ditches in Second Feet	(4) Length of Main Ditches in Miles	(5) Length of Laterals in Miles	(6) Maximum No. of Days Water Diverted from Natural Streams for Irrigation
10	.....	.....	.....	.....	.....
11	699	1,338	500	120	153
12	938	.....	.....	.....	346
13	422	.....	.....	208	177
14	2,058	2,143	634	.....	338
15	214	255	100	73	173
16	906	.....	394	184	.....
17	4,635	7,165	404	1,071	327
18	133	215	44	.....	.....
19	626	2,396	232	140	.....
49	.....	.....	.....	.....	.....
66	.....	.....	.....	.....	.....
67	953	2,275	212	166	216
Totals	11,584	15,787	2,520	1,962	346

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1915.

District	(7) Average Daily Amt. of Water Diverted by Ditches During Season from Natural Streams for Irrigation Second Feet	(8) Number of Acre Feet Diverted by Ditches During Season from Natural Streams for Irrigation	(9) Total Number of Acres that can be Irrigated	(10) Crops Irrigated from Canals in Acres	(11)
				Alfalfa	Natural Grasses
10	.....	.....	.....	4,874	5,841
11	699	202,820	29,917	6,102	7,126
12	485	204,063	32,483	7,247	1,186
13	293	61,356	19,143	1,741	13,417
14	1,404	510,403	124,510	74,937	4,536
15	98	24,135	9,021	3,220	1,341
16	865	61,621	112,197	16,430	3,744
17	1,920	510,009	240,585	73,180	9,210
18	91	.....	6,305	1,764	.....
19	.....	.....	43,641	11,856	11,129
49	.....	.....	.....	.....	.....
66	.....	.....	.....	.....	.....
67	426	158,096	106,316	31,889	2,000
Totals	6,281	1,732,503	724,118	233,240	59,530

IRRIGATION DIVISION NO. 2—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1915.

CROPS IRRIGATED FROM CANALS IN ACRES.

District	(12) Cereals	(13) Orchards	(14) Market Gardens	(15) Potatoes	(16) Sugar Beets	(17) Other Crops	(18)
10	4,423	282	463	7	.....	74	Corn 40 Peas and Cabbage
11	6,055	123	78	203	2,080	.....	1,368 Corn
12	3,826	9,304	367	2	95	674	265
13	3,937	16	17	.....	15	.....	..... Beans and Corn
14	11,900	2,334	2,334	42	15,785	3,891	2,060
15	1,240	83	2	.....	60	.....	.....
16	2,984	732	814	.....	131	458	..... Melons and Cucumbers
17	43,960	1,838	472	30	26,270	14,510	1,690
18	547	.....	653	.....	.....	1,014	..... Cattle
19	3,175	250	.....	7	57	2,512	10,199
49	.....	.....	.....	.....	.....	.....	.....
66	.....	.....	.....	.....	.....	.....	.....
67	7,754	346	203	864	2,768	5,026	1,261
Totals	89,801	15,308	5,403	1,155	47,261	28,159	16,883

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1915.

District	CROPS IRRIGATED FROM CANALS IN ACRES (19)	(20) Total Irrigated	COST—DOLLARS (21) Superintendence	(22) Repairs	(23) Improvements
10	.....	16,004	$.....	$.....	$.....
11	.....	23,135	.....	6,652	.....
12	.....	22,966	4,590	22,596	8,675
13	..... Celery	19,143	.....	508	7
14	630	118,449	20,935	9,831	6,662
15	.....	5,946	.....	1,080	.....
16	..... Canta-loupes	25,293	7,631	3,525	7,100
17	2,290	173,450	30,669	29,927	34,400
18	..... Horses	3,978	.....	.....	.....
19	3,187	42,372	1,350	6,717	171,645
49	.....	.....	.....	.....	.....
66	..... Beans	.....	.....	.....	.....
67	164	52,275	6,940	20,539	1,935
Totals	6,271	503,011	$72,115	$101,375	$230,424

ANNUAL REPORT DIVISION ENGINEER DIVISION NO. 2, FOR 1916

Pueblo, Colo., December 8, 1916.

Mr. A. A. Weiland,
State Engineer,
Denver, Colorado.

Dear Sir: I herewith submit my annual report.

The season opened extremely unfavorable, and continued so late into May, the ground being wet and cold, seed failed to germinate readily, and resulted in much replanting.

There was but little rainfall after May. This was one of the driest seasons ever known in the valley; in fact, there was but little rain until August, and that during the latter part of the month. The rainfall for May was 0.63 inches; June, 1.22 inches; July, 0.83 inches, and August, 3.12 inches.

However, the ditches drawing from the Arkansas River were sufficiently supplied, and splendid crops were produced thereunder. The tributaries did not fare so well. As they were very low, or dry, crops suffered, and many failed for lack of water.

There were no floods in either the Arkansas River or its tributaries, and very little above normal at any time during the season. The grazing lands suffered.

Dry farming showed varying results. For instance, in some sections fine crops, some very light, and in other sections a total failure. I attribute this not merely to lack of rain, but earth conditions.

There has not been sufficient water for storage at any time during the season.

I am often asked, "What is the duty of water?" The duty of water for irrigation is the amount of land a given amount of water will irrigate successfully in the growing and maturing of any particular crop.

There was never a better demonstration than this season, proving that in past years over-irrigation had been indulged in to the detriment of crops, and land injured and water-logged to a marked extent. In my long experience I have noted that the years when water was scarcest and had to be most economically used, better crops resulted.

There was planted to sugar beets 53,120 acres, yielding at a minimum 10 tons per acre, or 531,200 tons, at the minimum price of $5.00 per ton, distributed to the growers $2,656,000. In alfalfa 187,986 acres, at the lowest estimate three tons per acre. We have 563,958 tons, at the moderate price of $10.00 per ton (now $16.00), we find the farmers receiving the handsome sum of $5,639,580. There were over 4,000 acres of melons. Some growers report

$800.00 per acre, noticeably from the now famous "Honey Dew" melon.

Some 3,500 acres Mexican beans, yielding from 500 pounds to one ton per acre, worth a market value of six cents per pound, the great difference attributable to several causes,—want of irrigation at the proper time, and cultivation; and to the dry farmer, lack of rain and cultivation are the most prominent causes.

Besides the above there were 50,000 acres wild hay, or natural grasses, at one ton per acre, and now worth $22.00, or $1,100,000. Success in growing and producing, like everything else, depends upon the "man behind the gun," absolutely.

Fruit crop in general was not up to normal.

The market gardeners were successful. The high prices obtained made a banner year for all truck gardening.

The usual number of cattle and sheep are being fattened, not only in the feeding pens of the sugar factories, but throughout the valley.

I would recommend a general revision of the irrigation law, particularly all that relates to reservoirs and its relation to canals. The law is now a confusing tangle. To enter upon any particular part would take more space and time than is accorded me. But every lawyer and user of water for irrigation, I believe, will endorse the above.

The division engineer, being the head of a department, should be held as other officers of the state, having full and complete supervision over the affairs of his division, accountable to the state. His report each year should be made to the State Engineer, and included in his published report. His salary and bills of expense should go to the Auditing Board direct, or to the State Auditor, and under oath.

The water commissioners in each district should be appointed by the Governor, upon the recommendation of the division engineer of that division. They should receive a fixed sum per year, paid by the state, and the division engineer should be vested with authority to discharge any water commissioner at any time he may deem it necessary. All deputy water commissioners should be required to give a good and sufficient bond. They should receive $3.00 per diem, for days actually worked. All salaries of water commissioners and deputies should be approved by the division engineer.

The division engineer should be empowered to send a water commissioner, or his deputy, into any district of his division for the performance of any duty he may deem necessary.

The time should be extended to December 1st for the water commissioners' reports, as they fail to get them in by the 15th of November, claiming they cannot procure the necessary data.

Appeal from the decision or ruling of the division engineer should be made direct to the courts, and not elsewhere.

A permanent office should be furnished the division engineer, equipped with everything needful or necessary for the maintenance of such office. The equipment would be incomplete without a competent stenographer. Not only is there ample work, but one is needed in the office at all times.

To administer the affairs of the office as they should be, the division engineer should be thoroughly acquainted with every stream, ditch and reservoir in his division, and in order that he may have this knowledge he must personally acquire same. This necessitates his absence from his office much of his time. There should be a competent hydrographer stationed in his office, as he is most valuable and necessary. His service is demanded constantly throughout the entire year. Every user of water will recognize both the above as necessary.

This has been a most strenuous year for the farmers and myself. We bow with reverence to our Supreme Maker for his watchful kindness in our needs, and heartily thank all those who assisted in our work.

Respectfully submitted,

(Signed) E. R. CHEW,
Irrigation Division Engineer.

IRRIGATION DIVISION NO. 2—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL RESERVOIR REPORTS FOR THE IRRIGATION SEASON OF 1916.

(1) District	(2) Number of Reservoirs Reported	(3) Area of High Water Line Acres	(4) Capacity in Cubic Feet	(5) Quantity of Water in Reservoirs May 1, 1916, Cubic Feet	(6) Quantity of Water in Reservoirs Nov. 1, 1916, Cubic Feet
10	6			Empty	Empty
11	2		287,637,163	2,108,401,008	803,328,880
12	15		769,447,000	412,671,470	Empty
13	1		2,592,000	2,592,000	Empty
14	8		1,055,483,581	519,996,741	17,649,181
15	5		329,000,000	196,000,000	306,730,206
16	27		3,184,450,672	691,004,050	225,272,800
17	15	12,049	16,687,879,600	4,657,304,520	872,681,040
18	1		3,200,116,080		
19	13	20,150	965,046,220	66,576,300	68,798,296
67	2	14,736	9,669,161,600	6,540,076,440	4,023,050,560
Totals	95	46,935	36,150,813,916	15,194,622,529	6,317,510,963

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1916.

(1) District	(2) Amount of Appropriation in Second Feet	(3) Capacity of Ditches in Second Feet	(4) Length of Main Ditches in Miles	(5) Length of Laterals in Miles	(6) Maximum Number of Days Water Diverted from Natural Streams for Irrigation
10					140
11	702	1,349	489	125	153
12	833		136		330
13	528		174		212
14	2,045	2,129	213		358
15	214	254	99	728	183
16	905		394	184	235
17	4,859	7,048	408	104	358
18	262	224	47		190
19	639	2,428	248	147	
49					
66					
67	969	2,275	215	165	286
Totals	11,956	15,707	2,423	1,453	358

IRRIGATION DIVISION NO. 2

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1916.

District	(7) Average Daily Amount of Water Diverted by Ditches During Season from Natural Streams for Irrigation Second Feet	(8) Number of Acre Feet Diverted by Ditches During Season from Natural Streams for Irrigation	(9) Total Number of Acres That Can be Irrigated	(10) Crops, Irrigated, Etc. Alfalfa	(11) Crops, Irrigated, Etc. Natural Grasses
10	.....	.....	.....	6,823	6,115
11	702	214,654	28,192	6,215	8,528
12	437	155,915	33,629	7,453	900
13	195	55,529	18,861	1,697	13,084
14	624	309,952	123,540	30,712	4,785
15	72	35,292	6,361	2,940	1,505
16	680	483,041	114,877	13,848	2,720
17	1,580	5,880	251,685	75,300	9,110
18	56	.....	4,259	1,964	522
19	.....	.....	26,875	11,664	12,376
49	.....	.....	.....	.....	.....
66	.....	.....	.....	.....	.....
67	339	164,900	106,913	31,067	2,883
Totals	4,685	1,421,163	715,192	189,683	62,528

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1916.

CROPS IRRIGATED FROM CANALS IN ACRES

District	(12) Cereals	(13) Orchards	(14) Market Gardens	(15) Potatoes	(16) Sugar Beets	(17) Other Crops
10	3,945	410	490	.....	325	208
11	5,321	94	84	160	.....	.....
12	3,944	8,810	392	2	50	611
13	3,507	8	.....	.....	.....	.....
14	11,460	2,507	1,238	45	18,893	1,363
15	884	60	11	.....	76	130
16	6,647	725	207	1	50	680
17	44,590	1,162	529	13	30,045	5,183
18	598	.....	.....	.....	.....	.....
19	4,066	304	757	127	57	3,118
49	.....	.....	.....	.....	.....	.....
66	.....	.....	.....	.....	.....	.....
67	8,685	417	251	20	3,624	4,450
Totals	93,647	14,497	3,959	368	53,120	15,743

IRRIGATION DIVISION NO. 2—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1916.

	CROPS IRRIGATED FROM CANALS IN ACRES			COST—DOLLARS		
District	(18)	(19)	(20) Total Irrigated	(21) Superintendence	(22) Repairs	(23) Improvements
10	Beans 63	Corn 454	18,833	$	$	$
11	Peas 2,143	Timothy 1,106	23,651		5,824	
12	Corn 1,021		23,183	14,637	9,234	4,231
13			18,296			
14	Corn 900	Melons 1,692	73,595	1,910		
15			5,606	8,625		
16			24,878	6,360	2,130	100
17	Melons 2,050	Cucumbers 1,605	169,587	29,640	26,025	27,383
18			3,084			
19	Cattle 12,737	Horses 3,541	48,747	2,100	6,407	2,895
49						
66						
67	Corn 2,936	Beans 314	54,647	13,999	10,283	988
Totals..	21,850	8,712	464,107	$77,271	$59,903	$35,597

ANNUAL REPORT DIVISION ENGINEER DIVISION NO. 3, FOR 1915.

Alamosa, Colo., November 30, 1915.

Hon. A. A. Weiland,
State Engineer,
Denver, Colorado.

Dear Sir: I have the pleasure of handing you herewith my annual report of ditches and reservoirs for the fiscal year ending November 30th, 1915, for Irrigation Division No. 3, comprising the eight districts in the San Luis Valley and covering the drainage basin of the Rio Grande Del Norte River and its tributaries.

As I did not assume the duties of office as Irrigation Division Engineer until the first of August last, the heavy irrigation was practically over, so that since that time there has been very little trouble in the distribution of water.

There has been no extreme high water during the season just closed in any of the districts, but a steady flow, which supplied all demands and assured good crops in the entire division. During two or three days in July it was necessary to close several of the late priorities; however, it did not last long, as heavy rains in the mountains soon increased the flow of the streams.

The valley has had a very prosperous season, with an abundance of water for all priorities and crops well matured. Thousands of cattle, sheep and hogs are being fed and wintered here, and many more shipped in from other sections. The acreage of crops increases each season as more land is being developed, and in some sections large sums of money are being spent in the reclamation of seeped areas, which in itself speaks for prosperity.

I have covered several districts thoroughly to ascertain the condition of headgates and measuring flumes for the purpose of bettering the system of distribution in the division, and find there are only sixty-two ditches rated in the entire division. Of these ratings thirty-three were made during the season just closed. This is due to the fact that in nearly all cases the owners may have constructed good headgates, but have failed to provide a suitable measuring flume for rating. This condition prevails for the reason that there has been an abundant supply of water most of the time for several seasons.

Notices of the laws relative to headgates and measuring flumes have been served in all districts, followed up with letters from the office of Irrigation Division Engineer, and especially to water users in Districts Nos. 21 and 26, with a result that during the fall there has been heavy expenditure in putting ditches in shape in those districts for the next season. The same procedure will be taken in the other districts next year, as it is advisable to get all ditches

rated, when new measuring flumes are installed, and establish good systems of distribution for those water users, thereby showing the good faith of the officers in charge of the distribution of water, to protect the rights of all water users who have complied with the law.

Water commissioners were appointed in all the districts this year, and assumed their duties a little late in the season, but have done exceptionally well for new men at the work. They have had very little trouble with the water users, and have kept good records of the amount of water distributed since assuming their duties; however, it has been very hard for them on account of the lack of proper measuring devices. It is impossible for them to keep accurate records and properly distribute the water to the water users who fail to comply with the law, especially in maintaining measuring flumes. Most of the controversies that arise cover the amount of water carried in ditches, and usually it is the water commissioner, and not the water user, who gets the blame. This condition will probably be eliminated in a year or two, as the majority of the water users are putting their ditches in the proper shape to receive the appropriations of water to which they are entitled.

I also find that the prevailing opinion among water users is to the effect that they may regulate their headgates whenever they so desire. No matter how hard a water commissioner may work for the best interests of all concerned, he cannot do his duty as such commissioner unless he knows what each ditch is carrying, and this can only be accomplished by complying strictly to that section of the laws covering the regulation of headgates. This is especially true where the waters of a stream have been over-appropriated, and a reservoir is located at the head of the stream. The water commissioners have experienced a great deal of difficulty over this question, and even have to provide their own locks to control the gates.

The reservoirs in the division have had a very good supply of water during the season, all of which was not demanded. With a few exceptions, all of the reservoirs are in good condition and storing at the present time. Others are being repaired, and storing as much water as possible. If these reservoirs do not fill before spring they will be able to do so at that time. At present there are sixteen reservoirs in the division, and one being constructed on the Costilla River.

In the districts where we have commenced our work of enforcing the laws relative to measuring flumes, it has been necessary for the water commissioners to spend extra time in regulating the water, serving notices, etc. The expense of such work has caused a large amount of protest from the county commissioners, who can see no reason for such expenditures. They are inclined to blame the water commissioners rather than the taxpayers themselves, who are the water users and the people responsible. Such expense will be unnecessary when a good system has been established.

I wish to mention the valuable assistance given this office by Mr. H. D. Amsley, Hydrographer from the State Engineer's office, who has spent the entire season in this division. Through him records have been kept on eight river stations, where measurements have been regularly made. Aside from this work he has made thirty-three complete ratings on ditches, half the entire number in this office at the present time. A large number of check measurements were also made. These stations are so located that his measurements and the station gages have been of great assistance to the several water commissioners in determining the amount of water in the streams for their distribution.

In conclusion, I desire to thank the State Engineer for his courteous treatment and advice on all matters pertaining to this office. Also, the several water commissioners in this division, as they have all been active and faithful in the discharge of their duties, giving at all times as accurate information as possible under existing conditions.

Respectfully submitted,

(Signed) D. A. NORTON,
Irrigation Division Engineer, Division No. 3.

IRRIGATION DIVISION NO. 3

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1915.

(1) District	(2) No. of Priorities Reported	(3) Amount of Appropriation in Second Feet Reported	(4) Length of Main Ditches in Miles	(5) Length of Laterals in Miles	(6) First Day Water Diverted from Natural Streams for Irrigation
20	301	3,783	595	781	Mch. 15th
21	82	1,806	222	69	Apr. 1st
22	133	4,371	306	.....	May 1st
24	72	353	92	21	Apr. 1st
25	235	946	199	.....	Apr. 1st
26	172	552	121	.....	Mch. 15th
27	59	109	42	.....	Mch. 20th
35	77	901	141	213	Apr. 1st
Totals	1,131	12,821	1,718	1,084	

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1915.

District	(7) Last Day Water Diverted from Natural Streams for Irrigation	(8) Maximum No. of Days Water Diverted from Natural Streams for Irrigation	(9) Maximum No. of Days Water Carried from Reservoirs	(10) Amount of Water Carried from Reservoirs in Acre Feet
20	Nov. 1st	230	112	42,113
21	Oct. 30th	213	143	16,440
22	Nov. 15th	199	No Report	2,800
24	Nov. 1st	214	107	20,636
25	Oct. 15th	198	None	None
26	Nov. 1st	230	None	None
27	Nov. 2nd	226	None	None
35	Nov. 1st	214	185	17,150
Totals		230	185	99,139

IRRIGATION DIVISION NO. 3—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1915.

District	(11) Average Daily Amount of Water Diverted by Ditches During Season from Natural Streams for Irrigation Second Feet	(12) No. of Acre Feet Diverted by Ditches During Season from Natural Streams for Irrigation	(13) Total No. of Acres that can be Irrigated	(14) Crops Irrigated from Canals in Acres: Alfalfa	(15) Crops Irrigated from Canals in Acres: Natural Grasses
20	2,073	649,266	315,795	26,296	129,460
21	800	134,822	64,822	4,879	22,455
22	2,595	539,335	92,675	5,085	23,760
24	160	48,075	16,535	736	3,589
25	No Report	No Report	48,315	575	23,393
26	407	81,573	33,109	2,908	23,448
27	61	8,919	5,389	559	2,774
35	283	54,507	92,452	938	6,705
Totals	6,379	1,516,497	669,092	41,976	235,584

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1915.

CROPS IRRIGATED FROM CANALS IN ACRES

District	(16) Cereals	(17) Orchards	(18) Market Gardens	(19) Potatoes	(20) Sugar Beets	(21) *Other Crops
20	62,326	46	148	7,223	36	1,478
21	9,956	32	.....	148	....	13,372
22	24,238	102	40	2,275	....	32,865
24	7,331	5	67	6	....	893
25	1,520	10	.....	8	....	.....
26	1,252	.....	205	6	....	3,113
27	80	5	23	26	1	776
35	5,300	2	4	10	....	2,569
Totals	112,003	202	487	9,702	37	55,066

*In Districts Nos. 21, 22, 24, 26 and 27, Peas are included in "Other Crops."

IRRIGATION DIVISION NO. 3—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1915.

CROPS IRRIGATED, ETC.			COST—DOLLARS		
District	(22) Peas	(23) Total Irrigated	(24) Superintendence	(25) Repairs	(26) Improvements
20	53,267	280,280	$20,120.00	$27,536.00	$12,836.00
21	.....	50,842	300.00	1,420.00	.....
22	.....	88,365	No Report	No Report	No Report
24	.....	12,627	1,076.00	1,290.00	510.00
25	505	26,011	No Report	No Report	No Report
26	.....	30,932	No Report	No Report	245.00
27	.....	4,244	No Report	No Report	No Report
35	4,532	20,060	2,000.00	12,946.00	94.00
Totals ..	58,304	513,361	$23,496.00	$43,192.00	$13,685.00

IRRIGATION DIVISION NO. 3—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL RESERVOIR REPORTS FOR THE IRRIGATION SEASON OF 1915.

(1) District	(2) Name of Reservoirs Reported	(3) Area of High Water Line—Acres	(4) Capacity in Acre Feet	(5) Quantity of Water in Reservoirs May 1, 1915 Acre Feet	(6) Quantity of Water in Reservoirs Nov. 1, 1915 Acre Feet
20	Rio Grande	.....	51,113	47,922	1,095
20	Santa Maria	.....	48,239	.....	.....
20	Upper and Lower Lost Lakes	.....	2,575	1,861	.....
20	Beaver Park	(Dam no during e	t safe and arly summ	water all d er.)	rawn out
20	Road Canon	No report		No report	
21	Terrace	292	17,700	12,930	1,534
21	La Jara	1,241	14,052	4,470	27
22	Cove Lake	No report	No report	2,800	None
24	Sanchez	3,151	103,156	15,035	19,090
24	Eastdale No. 1....	336	3,466	2,612	None
24	Eastdale No. 2....	357	3,041	1,470	None
24	Mesita	266	2,606	53	17
24	Salazar	10	123	122	115
35	Mountain Home..	640	19,147	11,621	8,706
35	Smith	710	5,336	4,887	2,266
Totals		7,003	270,554	105,783	32,850

IRRIGATION DIVISION NO. 3—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL RESERVOIR REPORTS FOR THE IRRIGATION SEASON OF 1915.

District	Name of Reservoir	(7) Ditch Supplied from Reservoir	(8) First Day Water Was Used from Reservoir	(9) Last Day Water Was Used from Reservoir
20	Rio Grande	Farmers Union	July 10	Oct. 30
20	Santa Maria	Rio Grande	No reports	
20	Upper and Lower Lost Lakes	Midland	July 10	July 28
20	Beaver Park			
20	Road Canon			
21	Terrace	Main Terrace, Jose M. Valdez, Alamosa Creek Canal	May 18	Oct. 8
21	La Jara	Main Terrace, Jose M. Valdez, Alamosa Creek Canal	May 18	Oct. 8
22	Cove Lake			
24	Sanchez	Culebra-Eastdale	June 22	Aug. 23
24	Eastdale No. 1	Laterals Nos. 5 and 6	May 13	Aug. 27
24	Eastdale No. 2	Lateral No. 4	May 13	Aug. 27
24	Mesita	Laterals Nos. 7 and 8	July 6	July 16
24	Salazar	Direct from Outlet		
35	Mountain Home	Trinchera Highline, Trinchera Canal, Trinchera-Garland	May 20	Oct. 31
35	Smith	Smith Reservoir Outlet Canal	April 1	Oct. 31
Totals				

IRRIGATION DIVISION NO. 3—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL RESERVOIR REPORTS FOR THE IRRIGATION SEASON OF 1915.

District	Name of Reservoir	(10) Number of Days Water Was Carried from Reservoir	(11) Average Daily Amount of Water Carried from Reservoir During Season in Second Feet	(12) Number of Acre Feet of Reservoir Water Carried During Season	(13) Crops Irrigated, Etc. Alfalfa
20	Rio Grande	76	265	40,314	
20	Santa Maria	No report			
20	Upper and Lower Lost Lakes	19	798		
20	Beaver Park				
20	Road Canon				
21	Terrace	144	42	11,997	
21	La Jara	144	15	4,443	
22	Cove Lake			2,800	50
24	Sanchez	63	146	18,416	1,850
24	Eastdale No. 1, Eastdale No. 2..	107	10	2,140	100
24	Mesita	10	4	80	
24	Salazar		No report	No report	50
35	Mountain Home..	145	40	11,600	
35	Smith	185	15	5,550	
Totals		998	558	98,138	2,050

NOTE.—Reports of crops not given under this Reservoir Report are given in the Annual Ditch Reports as the reservoir water is used as an auxiliary to canals having direct rights from the rivers.

IRRIGATION DIVISION NO. 3—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL RESERVOIR REPORTS FOR THE IRRIGATION SEASON OF 1915.

CROPS IRRIGATED WITH RESERVOIR WATER.

District	Name of Reservoir	(14) Natural Grasses	(15) Cereals	(16) Crops Other	(17) Peas
20	Rio Grande	.....	.....	.....	.....
20	Santa Maria	.....	.....	.....	.....
20	Upper and Lower Lost Lakes	.....	.....	.....	.....
20	Beaver Park	.....	.....	.....	.....
20	Road Canon	.....	.....	.....	.....
21	Terrace	.....	.....	.....	.....
21	La Jara	.....	.....	.....	.....
22	Cove Lake	300	100	.....	1,100
24	Sanchez	160	2,600	300	9,845
24	Eastdale No. 1, Eastdale No. 2..	.....	250	50	500
24	Mesita	.....	.....	.....	50
24	Salazar	150	.....	.....	75
35	Mountain Home..	.....	.....	.....	.....
35	Smith	.....	.....	.....	.....
Totals		610	2,950	350	11,570

IRRIGATION DIVISION NO. 3—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL RESERVOIR REPORTS FOR THE IRRIGATION SEASON OF 1915.

District	Name of Reservoir	(18) Crops Irrigated, Etc. Total Irrigated	COST—DOLLARS (19) Superintendence	(20) Repairs	(21) Improvements
20	Rio Grande	.....	.....	.....	.....
20	Santa Maria	.....	.....	.....	.....
20	Upper and Lower Lost Lakes	.....	.....	.....	.....
20	Beaver Park	.....	.....	.....	.....
20	Road Canon	.....	.....	.....	.....
21	Terrace	.....	.....	.....	.....
21	La Jara	.....	.....	.....	.....
22	Cove Lake	1,550	.....	.....	.....
24	Sanchez	14,755	.....	.....	.....
24	Eastdale No. 1, Eastdale No. 2..	900	.....	.....	.....
24	Mesita	50	.....	.....	.....
24	Salazar	275	$365.00	.....	.....
35	Mountain Home..	.....	.....	.....	.....
35	Smith	.....	.....	.....	.....
Totals		17,530	$365.00	.....	.....

ANNUAL REPORT DIVISION ENGINEER DIVISION NO. 3. FOR 1916.

Alamosa, Colo., November 30, 1916.

Hon. A. A. Weiland,
State Engineer,
Denver, Colorado.

Dear Sir: I have the pleasure of handing you herewith my annual report of ditches and reservoirs for the fiscal year ending November 30th, 1916, for Irrigation Division No. 3, comprising the eight districts in the San Luis Valley, and covering the drainage basin of the Rio Grande Del Norte River and its tributaries.

The supply of water during the season just closed has been very good for a greater part of the division, only a few of the smaller streams being short. The flow of water was steady throughout the season, regardless of the fact that the first rains did not commence until the middle of July. For the following six or eight weeks these rains continued throughout the division, both in the valley and in the mountains, supplying sufficient water for the irrigation of crops.

The division as a whole is in a very prosperous condition, with a substantial increase in acreage under cultivation, as well as a large increase in cattle, sheep and hogs, which are being wintered and fed for market. High prices for grains, hay and potatoes have been of great financial benefit to the division, especially the potato crop, which netted many of the farmers as high as $200 per acre.

The development of drainage for the seeped lands has gained during the past season. The sections already drained have proven, beyond a doubt, the benefits to be derived from drainage. Lands that prior to being drained would not raise a crop of any kind are now raising excellent crops of small grains, alfalfa, potatoes and peas. At the present time there are seven drainage districts formed, varying in size from 5,000 to 30,000 acres, which means that within a short time many thousand acres will be added to the present crop acreage. Of these seven districts, three have been drained and are working successfully. In two districts drainage is under way and will soon be completed, while the sixth district, comprising about 10,000 acres, has recently sold its bonds, and will commence the drainage of its lands next spring. The seventh district is preparing to dispose of its bonds. Two of these districts, of some 14,000 acres, are being drained by individuals, while the balance are bonded districts. The cost of drainage is varying from $9.00 to $12.00 per acre, depending on the length of outlet ditch and length of secondary lines to properly drain the district, but in no case has the cost exceeded $12.00 per acre. Water developed by means of this drainage is being used, in some cases, on other lands in the irrigation of crops, while in other instances it goes directly to the streams for the benefit of the rights on that stream.

In going over the several water districts I find the condition of headgates and measuring flumes much better than last year, with a gain in the efficient regulation of the water. Some 225 measurements were made on ditches, and rating cards for these ditches were furnished the water commissioners and owners. In all cases where ditches were rated we found the condition of the ditch to be good; however, owing to the number of ditches to be rated we were unable to get them all. This work will continue as rapidly as possible for the purpose of getting a more efficient and beneficial distribution of water.

This office has continued and will continue to send out notices of the laws relative to headgates and measuring flumes, and in addition has taken up the changes of points of diversion which are necessary in the several districts. The officials have been quite successful in these matters, and a number of the districts are in much better shape than for several years. The most marked change is in District No. 21, where, by next year, every ditch will have a good headgate and measuring flume, and most of them will have a rating card for the ditch. Practically all measuring flumes were in the ditches this year, but this office was unable to take all the measurements necessary to get them rated.

The water commissioners have handled their districts in good shape during the season just closed. The supply of water was such that very few controversies arose; however, these commissioners were always at their work and giving good service to the water users. This being their second season, more efficient services were given and more accurate records kept than last year.

The reservoirs in the division have had an excellent supply of water during the season. Because of the steady run of water in several of the rivers, it was not necessary to use all of the stored water, so that these reservoirs will carry over a good supply of water for the irrigation season of 1917.

I wish to mention the valuable assistance of Mr. H. D. Amsley, Hydrographer from the State Engineer's office. He was in the division from the 1st of April until the 23rd of November, keeping records and making measurements.

In conclusion, I desire to thank the State Engineer for his advice and treatment of all matters which have come up in this division. Also, the several water commissioners, who have been faithful in the discharge of their duties, and have at all times rendered as accurate reports as possible.

Respectfully submitted,

(Signed) D. A. NORTON,
Irrigation Division Engineer, Division No. 3.

IRRIGATION DIVISION NO. 3

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1916.

(1) District	(2) No. of Priorities Reported	(3) Amount of Appropriation in Second Feet Reported	(4) Length of Main Ditches in Miles	(5) Length of Laterals in Miles	(6) First Day Water Diverted from Natural Streams for Irrigation
20	400	5,498	435	800	Mch. 20th
21	68	1,615	220	8	Mch. 16th
22	188	5,744	214	5	May 1st
24	84	1,682	92	19	Mch. 1st
25	193	877	179	.....	Apr. 1st
26	177	550	95	.....	Mch. 16th
27	62	83	58	.....	Mch. 1st
35	50	597	126	.....	Mch. 26th
Totals.....	1,222	16,646	1,419	832	Mch. 1st

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1916.

District	(7) Last Day Water Diverted from Natural Streams for Irrigation	(8) Maximum No. of Days Water Diverted from Natural Streams for Irrigation	(9) Maximum No. of Days Water Carried from Reservoirs	(10) Amount of Water Carried from Reservoirs in Acre Feet
20	Nov. 1st	225	31	16,764
21	Oct. 31st	229	192	19,600
22	Nov. 15th	199	No Report	No Report
24	Oct. 15th	229	188	47,544
25	Nov. 1st	214	None	None
26	Nov. 11th	240	None	None
27	Nov. 4th	249	None	None
35	Oct. 31st	219	150	8,561
Totals....	Nov. 15th	249	192	92,469

IRRIGATION DIVISION NO. 3—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1916.

District	(11) Average Daily Amount of Water Diverted by Ditches During Season from Natural Streams for Irrigation Second Feet	(12) No. of Acre Feet Diverted by Ditches During Season from Natural Streams for Irrigation	(13) Total No. of Acres that can be Irrigated	(14) Crops Irrigated from Canals in Acres: Alfalfa	(15) Crops Irrigated from Canals in Acres: Grasses Natural
20	1,947	708,772	309,308	37,222	125,160
21	753	158,352	62,353	4,714	25,099
22	1,081	359,180	99,320	6,729	22,958
24	145	54,549	16,855	736	4,133
25	No Report	No Report	40,930	709	18,591
26	331	64,517	31,579	2,726	19,742
27	74	22,421	6,263	727	2,537
35	234	55,954	68,244	1,001	4,338
Totals ..	4,565	1,423,745	634,852	54,564	222,558

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1916.

CROPS IRRIGATED FROM CANALS IN ACRES

District	(16) Cereals	(17) Orchards	(18) Market Gardens	(19) Potatoes	(20) Peas	(21) *Other Crops
20	61,871	33	107	9,029	60,623	10,226
21	10,477	17	4	304	.....	14,525
22	32,144	22	66	2,669	24,964	9,208
24	7,111	5	67	.....	.....	893
25	1,838	....	2	5	.....	73
26	1,262	....	204	15	67	3,904
27	1	5	19	43	.....	800
35	3,432	2	5	21	2,861	875
Totals ..	118,136	84	474	12,086	88,515	40,504

*In Districts Nos. 21, 24, 25 and 27, Peas are included in report on "Other Crops."

IRRIGATION DIVISION NO. 3—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1916.

	CROPS IRRIGATED, ETC.		COST—DOLLARS	
	(22)	(23)	(24)	(25)
District	Total Irrigated	Superintendence	Repairs	Improvements
20	304,271	$23,949.00	$22,745.00	$10,309.00
21	55,140	500.00	525.00	1,315.00
22	98,760	No Report	No Report	No Report
24	12,945	No Report	15.00	No Report
25	21,218	No Report	No Report	No Report
26	27,920	No Report	No Report	745.00
27	4,132	No Report	No Report	No Report
35	12,535	1,800.00	3,560.00	6,367.00
Totals	536,921	$26,249.00	$26,845.00	$18,736.00

IRRIGATION DIVISION NO. 3—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL RESERVOIR REPORTS FOR THE IRRIGATION SEASON OF 1916.

(1) District	(2) Name of Reservoirs Reported	(3) Area of High Water Line—Acres	(4) Capacity in Acre Feet	(5) Quantity of Water in Reservoirs May 1, 1916 Acre Feet	(6) Quantity of Water in Reservoirs Nov. 1, 1916 Acre Feet
20	Rio Grande	.....	51,113	None	11,385
20	Santa Maria	.....	48,239	9,737	20,260
20	Upper and Lower Lost Lakes	.....	2,575	No report	No report
20	(a) Beaver Park	.....	.....	.....	.....
20	Road Canon ..	.....	.....	No report	No report
21	Terrace	410	17,700	8,096	7,980
21	La Jara	1,241	14,052	1,461	761
22	Cove Lake	.....	.....	No report	No report
24	Sanchez	3,151	103,156	17,314	9,001
24	Eastdale No. 1....	336	3,466	2,860	291
24	Eastdale No. 2....	357	3,041	2,754	135
24	Mesita	266	2,606	100	49
24	Salazar	10	123	121	None
35	Mountain Home..	439	19,147	11,546	5,049
35	Smith	671	5,336	4,869	2,805
Totals		6,881	270,554	58,858	57,716

(a) Water all drawn before irrigation season.

IRRIGATION DIVISION NO. 3—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL RESERVOIR REPORTS FOR THE IRRIGATION SEASON OF 1916.

District	Name of Reservoir	(7) Ditch Supplied from Reservoir	(8) First Day Water Was Used from Reservoir	(9) Last Day Water Was Used from Reservoir
20	Rio Grande	Farmers Union	July 8	Aug. 2
20	Santa Maria	Rio Grande	July 9	Aug. 2
20	Upper and Lower Lost Lakes	Midland		
20	Beaver Park	San Luis		
20	Road Canon			
21	Terrace	Main Terrace, Jose M. Valdez, Alamosa Creek Canal	May 15	Oct. 6
21	La Jara	Main Terrace, Jose M. Valdez, Alamosa Creek Canal	May 25	July 31
22	Cove Lake	Taos		
24	Sanchez	Culebra-Eastdale	May 1	Oct. 15
24	Eastdale No. 1	Laterals Nos. 5 and 6	May 1	Sept. 25
24	Eastdale No. 2	Lateral No. 4	May 1	Sept. 25
24	Mesita	Laterals Nos. 7 and 8	Sept. 15	Sept. 25
24	Salazar	Direct from Outlet	April 1	Oct. 31
35	Mountain Home	Trinchera Highline, Trinchera Canal, Trinchera-Garland	June 1	Nov. 1
35	Smith	Smith Reservoir Outlet Canal	June 1	Nov. 1
Totals			April 1	Nov. 1

IRRIGATION DIVISION NO. 3—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL RESERVOIR REPORTS FOR THE IRRIGATION SEASON OF 1916.

District	Name of Reservoir	(10) Number of Days Water Was Carried from Reservoir	(11) Average Daily Amount of Water Carried from Reservoir During Season in Second Feet	(12) Number of Acre Feet of Reservoir Water Carried During Season	(13) Crops Irrigated, with Reservoir Water Alfalfa
20	Rio Grande	31	222	13,764	
20	Santa Maria	30	50	3,000	
20	Upper and Lower Lost Lakes				
20	Beaver Park				
20	Road Canon				
21	Terrace	100	73	14,600	
21	La Jara	68	37	5,000	
22	Cove Lake				
24	Sanchez	147	156	45,790	2,422
24	Eastdale No. 1,				
24	Eastdale No. 2	58	14	1,624	190
24	Mesita	10	6	130	
24	Salazar	188			60
35	Mountain Home	150	22	6,497	
35	Smith	150	7	2,064	
Totals		990	587	92,469	2,672

IRRIGATION DIVISION NO. 3—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL RESERVOIR REPORTS FOR THE IRRIGATION SEASON OF 1916.

CROPS IRRIGATED WITH RESERVOIR WATER.

District	Name of Reservoir	(14) Natural Grasses	(15) Cereals	(16) Other Crops	(17) Peas
20	Rio Grande				
20	Santa Maria				
20	Upper and Lower Lost Lakes				
20	Beaver Park				
20	Road Canon				
21	Terrace				
21	La Jara				
22	Cove Lake				
24	Sanchez		3,194	930	9,176
24	Eastdale No. 1, Eastdale No. 2		322	91	428
24	Mesita			100	
24	Salazar	10	135	5	
35	Mountain Home				
35	Smith				
Totals		10	3,651	1,128	9,604

NOTE.—Reports of crops not given in this Reservoir Report are given in the Annual Ditch Report, as the reservoirs supply canals having direct rights from the rivers.

IRRIGATION DIVISION NO. 3—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL RESERVOIR REPORTS FOR THE IRRIGATION SEASON OF 1916.

		COST—DOLLARS			
District	Name of Reservoir	(18) Crops Irrigated, Etc. Total Irrigated	(19) Superintendence	(20) Repairs	(21) Improvements
20	Rio Grande	.....	.....	.....	.....
20	Santa Maria	.....	.....	.....	.....
20	Upper and Lower Lost Lakes	.....	.....	.....	.....
20	Beaver Park	.....	.....	.....	.....
20	Road Canon	.....	.....	.....	.....
21	Terrace	.....	.....	.....	.....
21	La Jara	.....	.....	.....	.....
22	Cove Lake	.....	.....	.....	.....
24	Sanchez	15,722	$525.00	.....	.....
24	Eastdale No. 1, Eastdale No. 2..	1,031	.....	$ 10.00	$4,143.00
24	Mesita	100	.....	.....	.....
24	Salazar	210	.....	.....	.....
35	Mountain Home..	.....	.....	.....	.....
35	Smith	.....	832.00	.....	.....
Totals		17,063	$1,357.00	$ 10.00	$4,143.00

NOTE.—Cost of reservoirs not reported can be found in the reports on ditches.

ANNUAL REPORT DIVISION ENGINEER DIVISION NO. 4, FOR 1915.

Montrose, Colo., November 29, 1915.

Mr. A. A. Weiland,
State Engineer,
Denver, Colorado.

Dear Sir: I herewith present my report of Irrigation Division No. 4 for the fiscal year ending November 30th, 1915.

The season was the dryest one we have had for several years. The snowfall in the mountains was very light, yet, owing to the cool spring, the streams held up later in the summer than was at first expected. There was no high water in the various streams, as the snow in the mountains melted very slowly. From July to November, inclusive, was one long, dry period. So low did the Gunnison River get above Delta, below the Gunnison Tunnel, and there was so little water left in the river after supplying the Gunnison Tunnel, that tons of fishes left the river bed and died in the irrigating ditches.

In Districts Nos. 40, 41 and 42, where new water commissioners were appointed rather late in the season, considerable difficulty was experienced by them in distributing the water. This was especially true in District No. 40, which is a very large district and one that is extremely difficult to handle. Before Mr. George Hider, the new commissioner, had time to qualify, they were demanding water in all parts of the district at the same time.

La Plata County had a greater amount of precipitation during the early part of the season than any other part of the division, and, as a result the commissioner of District No. 30 was not called out.

There has, in previous years, been more or less trouble in District No. 33 with incompetent water commissioners, but the present commissioner, Mr. O. J. Leggett, handles the water distribution in a very satisfactory manner.

The following order was issued to the water commissioner of this district:

Montrose, Colo., May 30, 1915.

Mr. O. J. Leggett,
Kline, Colorado.

Dear Sir: About a year ago notices were served on the various ditches in District No. 33 to put in headgates and measuring boxes. A recent visit to your district reveals the fact that the law has not been complied with, and that the notices have been disregarded.

You are hereby directed to again notify the following ditches, and such others as have not complied with the law, that unless they immediately put in the necessary head-

gates and measuring flumes, the law will be strictly enforced, and you are instructed to shut off all water in those ditches which do not comply with the law, and to keep the same shut off until such times as they meet the requirements of the law. The following is a list of the ditches and requirements:

Pine Ridge Ditch, new flume; Hay Gulch, cleaned out below and in measuring flume; Fort Lewis Ditch, flume; H. H. Ditch, timber across flume; Short Line, new headgate and flume; Traynor, repair headgate and put in new flume; Slade, new headgate; Townsite, flume; Joe Freed, flume; Sooner Valley, headgate and flume; Morgan, flume; Dale, flume.

If the ditches do not comply within fifteen days from the date of notice, you are directed to shut off all water in those ditches not complying, and notify me.

Very respectfully,

(Signed) H. C. GETTY,
Irrigation Division Engineer, Division No. 4.

Mr. Leggett informs me that the various ditches have complied with the above order, and, consequently, the distribution of water in this district will be less difficult than usual.

At the head waters of Surface Creek, in District No. 40, there are about 200 reservoirs, and, until recently, the distribution of the water from these reservoirs was a bone of contention to all water commissioners. The distribution of this reservoir water has been much simplified in recent years, by the organization of the Grand Mesa Water Users' Association. This association handles the water distribution of all the reservoirs in this locality, resulting in better service and less expense to water users, and a vast saving in water from evaporation, etc. The consolidation of all reservoir interests has been decidedly beneficial.

In District No. 41, which embraces all the Uncompahgre Valley in Montrose and Delta Counties, the U. S. Reclamataion Service owned or controlled all the canals and important ditches except the Ironstone Canal. Prior to the year 1915, the U. S. Reclamation Service and the Uncompahgre Valley Water Users' Association made repeated attempts to unify all the ditches under the Uncompahgre project, but were unable to do so, owing to their inability to get control of the Ironstone Canal.

The lack of unification has in the past retarded the development of the valley to a very great extent. A contention between the Ironstone Canal on one side and the U. S. Reclamation Service and the Uncompahgre Valley Water Users' Association on the other, over the return water resulting from the use of water brought into the valley from the Gunnison River through the Gunnison Tunnel, was the cause of a great amount of strife and ill-feeling, and threatened to bring on endless litigation in the State

and Federal Courts. This calamity has happily been averted by the purchase of the Ironstone Canal by the U. S. Reclamation Service, which is now engaged in enlarging and extending the Ironstone system.

We think this unification will result very favorably for the valley, as it will unify the people as well as the canal system, will open up new lands to irrigation, cause new settlers to come in and help develop this vast empire, second to none in climate and productiveness, and increase the peace and happiness of water officials by removing the cause of their grief and vexation of spirit.

From Mr. Fred D. Pyle, Project Manager, we obtain the following facts relative to the progress made during the year on this most important irrigation project:

UNCOMPAHGRE VALLEY PROJECT—COLORADO

GENERAL PROGRESS

During the past year a permanent wooden flume was constructed on the South canal to replace the old temporary flume near Tunnel 5. Collapsible shutters were placed on the Gunnison diversion weir. A permanent connection was made between the West canal and the South canal, so that in the future the water supply can be drawn directly from the South canal when desired. This connection consisted of a concrete headgate and a semi-circular steel flume on steel girders, across the Uncompahgre River. A wasteway and underdrain was constructed on the Montrose and Delta Canal to provide for the future floods in Big Sandy. A feeder was constructed between Cedar Creek and the Loutsenhizer Canal. Construction work was commenced on a 20″ wood stave siphon 1,800 feet long to irrigate the Boot Mesa from the Loutsenhizer Canal. The Selig Canal and lateral system was completed and seasoned, except for the Peach Valley lateral. The East canal lateral system was completed. Work was commenced on the enlargement and reconstruction of the Ironstone Canal and lateral system. The Garnet Canal system was taken over and reconstructed. Drainage investigations and irrigable land surveys were commenced. The Ironstone and Ironstone Extension Canal Companies were unified and the properties acquired by the Government. The Government now owns the Montrose and Delta, Chipeta, Loutsenhizer, Selig, Ironstone, Ironstone Extension and Garnet Canals, and has agreements to unify with the Boomer, Reservation, Highline, Logan, North Mesa, Homerun and Delta Chief Canals. It is expected that the canal and lateral systems will be practically completed by July 1, 1916.

RESULTS

The following is a brief summary of the results accomplished from July 1, 1914, to June 30, 1915: Miles of canal constructed—112; structures costing over $2,000 each—9; costing from $500 to

$2,000 each—7; costing from $100 to $500 each—33; costing less than $100 each—638. Number of bridges built—86; number of culverts constructed—30; number of wooden pipe siphons laid—2; length—10,324 feet. There has been excavated 567,843 cubic yards of Class 1 material, 20,536 cubic yards of Class 2, and 2,377 cubic yards of Class 3; 716 cubic yards of concrete were placed.

The above work has made it possible to deliver water to about 30,000 acres more than a year ago.

EXPENDITURES

The expenditures on the project from October 1, 1914, to October 1, 1915, amounted to $422,657.05, of which $288,561.32 was spent on construction work, $60,613.02 on purchase of rights of way and unification, and $73,482.71 on operation and maintenance. The receipts for rental of water amounted to $60,628.37.

OPERATION

During the season of 1915, the Government operated the Gunnison Tunnel, South, West, Montrose and Delta, Loutsenhizer, Selig, East and Garnet Canal systems. The season was a very dry one, with considerable wind during the spring. While the snowfall was not heavy, the run-off was much better than was expected. The Uncompahgre River reached a flood stage for only a few days. There was only one small flood due to rains. This was on the east side of the river, and did some damage to the lower portion of the Selig lateral system. The rainfall and mean temperatures at Montrose were as follows:

1914	Season of 1914-1915		Five-year Average	
	Precipitation Inches	Mean Temperature	Precipitation Inches	Mean Temperature
October	1.52	45	1.25	48
November	0.15	40	0.36	38
December	0.74	23	0.82	22
1915				
January	0.94	18	0.71	24
February	0.48	31	0.60	31
March	0.10	37	0.73	39
April	1.31	52	0.78	49
May	1.53	54	0.99	57
June	0.91	63	0.90	64
July	0.22	71	1.16	70
August	0.64	69	1.04	69
September	1.03	61	1.11	60
Total	9.43		10.45	
Average		47		48

But little trouble was encountered in the operation of the project, except for sliding banks above the Montrose and Delta, near Happy Canon, and leaks through the concrete lining in the South Canal. The slides have not moved for several months, and extensive repairs will be made this winter to the South Canal lining.

Some difficulty was encountered in seasoning the Selig Canal where it climbs North Mesa, but this was overcome by drainage and the puddling of the canal section.

During August, September and October the flow of the Uncompahgre River varied from 60 to 100 second feet, and the Gunnison from 650 to 1,000 second feet. The maximum discharge of the tunnel was 660 second feet. For several weeks the discharge of the river below the tunnel was less than 35 second feet, which, with the return water from Redrock Canon, Crystal Creek, Smith's Fork and the North Fork, furnished ample water for the older priorities near Delta.

CROPS

The season was a particularly favorable one for wheat, oats, onions, corn and potatoes, and splendid yields were secured by the farmers. A frost on May 2nd and 3rd did considerable damage to alfalfa and apples. Some fields of alfalfa did not recover from the effects of this frost until the third crop commenced growing. As a result, the alfalfa crop was light and the prices range from $5.00 to $7.00 per ton in the stack. The fruit crop was only about 60 per cent of normal. The sugar beet crop is somewhat below normal. The approximate acreage of crop is given in the table. In addition to the crop area of 39,335 acres shown in the table, approximately 3,000 acres were irrigated by canals which rented Gunnison water from the Government.

GENERAL CONDITIONS

The general financial condition of the project is becoming better and there is a tendency on the part of those holding large areas of undeveloped land to divide them up into farms and sell on such terms that new settlers will have an opportunity to make good. There has been a remarkable growth of interest in livestock. Many farmers who had only two or three hogs a year ago, now have 50 to 100, and hogs are beginning to leave the project for the Denver markets in car lots. Considerable attention is being given to dairy cattle, about twenty silos were constructed during the year.

The Department of Agriculture has recently placed a field man on the project to assist the farmers with their livestock.

A new flour mill was completed at Montrose, and the Western Colorado Power Company has extended its line to Delta, and is furnishing power and light to the town of Olathe, and to many of the farmers along its transmission line.

CROP AREA IN ACRES OF LANDS UNDER GOVERNMENT OPERATED CANALS—UNCOMPAHGRE VALLEY PROJECT, COLORADO.

Canal System	Alfalfa	Potatoes	Cereals	Orchard	Pastures	Sugar Beets	Other Crops	Total
South	1,800	250	1,550	35	110	125	10	3,880
West	1,000	500	2,000	150	100	10	20	3,780
Montrose & Delta	7,250	3,500	5,300	1,550	500	100	20	18,220
Loutsenhizer	2,200	350	1,600	150	100	200	10	4,610
Selig	1,000	200	1,500	100	50	200	10	3,060
East	1,200	200	1,900	25	50	400	10	3,785
Garnet	500	200	400	600	100	100	100	2,000
Total	14,950	5,200	14,250	2,610	1,010	1,135	180	39,335

In District No. 42 the Grand Valley Project is in course of construction by the U. S. Reclamation Service, under Mr. J. H. Miner, Project Engineer.

The Grand Valley Project provides for the delivery of water from the Grand River by a dam located about eight miles northeast of Palisade, Colo., into a canal system on the north side of the river, for the irrigation of lands lying north and west of Grand Junction, Fruita and Mack, Colorado. About 42,750 acres will be supplied by gravity and 10,250 acres by electrically operated pumping plants to be located on the gravity canal.

The diversion dam is practically completed. It consists of a concrete weir with six movable roller crests, each ten feet high and seventy feet long in the river section, and one roller crest fifteen feet high and sixty feet long in the sluice-way. The nine intake gates each have openings seven feet by seven feet.

On the first six and one-half miles of the main canal, located in the canon of the Grand River, there are three tunnels, respectively 3,723, 1,655 and 7,292 feet long. The earth work on this six and one-half miles aggregates 370,000 yards of excavation, and 1,436,000 station yards of overhaul. This portion of the main canal is finished. The next thirty-eight miles of the main canal, extending to the East Salt Creek and involving 2,300,000 yards of excavation, was completed in September, 1915. The laterals to serve 15,000 acres east of Big Salt Wash were also constructed in 1915. The main canal and laterals east of Big Salt Wash have been primed to beginning the delivery of water for irrigation in the spring of 1916. On December 31, 1915, the project will be approximately sixty per cent completed. The construction of the works for supplying water to the pumping areas will not be undertaken until the gravity area is supplied.

For several years there has been a vacancy in the office of Water Commissioner in District No. 59, and the County Commissioners of Gunnison County decline, or at least have neglected to recommend anyone for appointment to this position. During the past season this district was very much in need of a commissioner, and this office was handicapped by having to perform the duties of Water Commissioner at a time when other portions of the division were demanding our attention. What an improvement there would be in the water service of the State if the Division Engineers had in their several divisions a certain number of assignable, experienced water commissioners who could be kept constantly on duty during the irrigation season, and who, when their services were not required in one district, could be sent to another adjoining district where their services were in demand. Why not have water commissioners appointed by the State Engineer, on recommendation of the Division Engineer, instead of being appointed by the Governor, on recommendation of Boards of County Commissioners, when the appointment would be made on account of the appointee's ability, and not on account of his "political influence"? Water, the greatest asset the state possesses, is distributed under the most inefficient system

imaginable. How long, O Lord, must the state be cursed by our present rotten, inefficient, political, cumbersome and expensive system? But recommendations are useless, "Ephriam is wedded to his idol."

In western Montrose County, District No. 61, the Paradox Valley Irrigation, Land and Development Co. has been rapidly pushing its projects towards completion. The feeder canal system, which takes the water from the LaSal Mountains in Utah to the Paradox Valley, has been practically completed. The storage capacity of the Buckeye Reservoir was doubled by increasing the height of the dam twelve feet, making the present storage capacity five thousand acre feet.

They are now installing the Broadhead valve in the reservoir outlet. This valve will enable the company to control the delivery of water from their reservoir with perfect ease, as it is the simplest, most efficient and easiest operated headgate on the market. The expenditures of the company for improvements during the past season were about $25,000.00.

A controversy arose between this company and Mr. Sam Rowley, et al., over the right to the use of water brought into the state from Utah. The company has filings on various streams in Utah, among them being Two Mile Creek. They have been operating for several years, and have built an extensive canal system to divert the water into Colorado. A statement from Utah officials acknowledges their right to the water.

In District No. 62 a certain water user made us no end of trouble. He refused to comply with the law relative to putting in proper headgates and weirs or measuring flumes, and proceeded to take all the water his ditches would hold, regardless of the orders of water officials, and with absolute disregard of the rights of other appropriators on the stream. He even threatened to exterminate the water officials if they molested him in his attempt to make "dry farmers" of his neighbors. Our persuasive ability being no match for his pertinacity, we caused his arrest, and a vigorous prosecution by Deputy District Attorney George Hetherington, in the County Court of Gunnison County, resulted in his conviction, and a fine of $100.00 and costs, amounting to about $600.00, was the penalty he paid for his disregard of the statutes and of the orders of the water officials. This conviction may have some effect on many others who are disposed to question the authority of the water officials, and are inclined to disregard the rights of others. Our thanks are due to the State Engineer and his Deputy for the able assistance they gave us in upholding the dignity of the law.

The annual reports and field books turned into this office by the various Water Commissioners are discouraging, to say the least. Much of the information required, and to which the attention of the Water Commissioners was directed, is wanting. The field books have not been properly kept, and in all but two instances are absolutely valueless.

We are unable to understand how a Water Commissioner expects to be able to make out a proper annual report if he goes through the season, day after day, without taking daily data on the various ditches and reservoirs, or compelling his deputies to do so.

In closing this report I desire to heartily thank the State Engineer and his obliging deputy for their many acts of courtesy and for the loyal support they extended to this office.

Attached hereto is the regular statutory tabulation of the annual report of Water Commissioners.

Respectfully yours,

(Signed) H. C. GETTY,
Irrigation Division Engineer, Division No. 4.

IRRIGATION DIVISION NO. 4

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1915.

(1) District	(2) No. of Ditches Reported	(3) Amount of Appropriation in Second Feet	(4) Capacity of Ditches in Second Feet	(5) Length of Main Ditches in Miles	(6) Length of Laterals in Miles
28	182	399	2,287	.....	.....
34	35	178	203	89	56
40	123	676	1,253	502	435
41	44	2,768	2,927	170	381
42	60	361	.....	173	41
61	20	12	44	9	.....
62	16	195	.....	48	.....
68	112	509	.....	231	.....

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1915.

District	(7) First Day Water Diverted from Natural Streams for Irrigation	(8) Last Day Water Diverted from Natural Streams for Irrigation	(9) Maximum No. of Days Water Diverted from Natural Streams for Irrigation	(10) Average Daily Amt. of Water Diverted by Ditches During Season from Natural Streams for Irrigation Second Feet	(11) No. of Acre Feet Diverted by Ditches During Season from Natural Streams for Irrigation
28	Apr. 20	Sept. 25	97	380	63,140
34	Jun. 1	Aug. 31	92	146	17,762
40	Apr. 10	Nov. 15	205	659	160,825
41	Apr. 1	Nov. 10	226	940	385,180
42	Apr. 2	Oct. 26	150	190	26,303
61	May 1	Oct. 29	175	12	4,355
62	Apr. 30	Oct. 1	123	.....	.....
68	Apr. 1	Nov. 15	210	.....	.....

IRRIGATION DIVISION NO. 4—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1915.

	CROPS IRRIGATED FROM CANALS IN ACRES				
District	(12) Total No. of Acres that can be Irrigated	(13) Alfalfa	(14) Natural Grasses	(15) Cereals	(16) Orchards
28	21,550	31	18,954	178	.....
34	9,153	3,264	595	952	76
40	109,506	19,680	2,111	8,133	12,805
41	132,991	20,363	2,233	19,959	3,194
42	13,739	13,030	1,650	2,679	719
61	1,875	637	195	313	12
62	1,826	.....	1,515	89	.....
68	29,108	3,677	2,530	3,265	81

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1915.

	CROPS IRRIGATED FROM CANALS IN ACRES				
District	(17) Market Gardens	(18) Potatoes	(19) Sugar Beets	(20) Timothy	(21) Other Crops
28	.....	34	.....	.....	.....
34	8	53	.....	.....	.....
40	197	806	664	.....	1,834
41	126	7,831	1,969	.....	1,022
42	22	369	4	.....	20
61	.....	8	.....	.....	26
62	.....	8	.....	.....	.....
68	58	117	57	7,939	.....

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1915.

CROPS IRRIGATED, etc.		COST—DOLLARS		
District	(22) Total No. of Acres Irrigated	(23) Superintendence	(24) Repairs	(25) Improvements
28	19,197	.....	.....	.....
34	4,948	.....	932	342
40	46,230	4,175	10,490	1,280
41	53,697	9,525	37,085	256,500
42	18,493	1,055	1,593	230
61	1,191	.....	.....	205
62	1,612	.....	390	45
68	17,724	3,749	1,763	776

No reports from Districts Nos. 30, 31, 32, 33, 59, 60, 63 and 69.
No commissioners in Districts Nos. 31, 32, 59, 63 and 69.

IRRIGATION DIVISION NO. 4—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL RESERVOIR REPORTS FOR THE IRRIGATION SEASON OF 1915.

(1) District	(2) No. of Reservoirs Reported	(3) Area of High Water Line in Acres	(4) Capacity of Reservoir in Cubic Feet	(5) Quantity of Water in Reservoirs May 1st, Cubic Feet
34	4	535	266,713,781	233,000,000
40	108	3,453	799,534,744	799,534,744
42	24	3,956	650,980,840	650,980,840
61	1	250	108,800,000	108,800,000
Totals ..	137	8,194	1,826,029,365	1,792,315,584

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL RESERVOIR REPORTS FOR THE IRRIGATION SEASON OF 1915.

District	(6) Quantity of Water in Reservoirs Nov. 1, Cubic Feet	(7) First Day Water was Used from Reservoirs	(8) Last Day Water was Used from Reservoirs	(9) Maximum No. of Days Water was Used from Reservoirs
34	16,500,000	June 1	Sept. 1	92
40	Empty	July 1	Sept. 1	72
42	Empty	June 22	Sept. 16	71
61	Empty	May 8	Oct. 29	159
Totals ..	16,500,000	June 1	Oct. 29	159

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL RESERVOIR REPORTS FOR THE IRRIGATION SEASON OF 1915.

		COST—DOLLARS		
District	(10) No. of Acre Feet Used from Reservoirs During Season	(11) Superintendence	(12) Repairs	(13) Improvements
34	.....	.....	.....	.....
40	20,016	$1,000	.....	.....
42	9,219	600	$3,620	$ 1,035
61	7,814	500	.....	24,000
Totals	37,049	$2,100	$3,620	$25,035

ANNUAL REPORT DIVISION ENGINEER, DIVISION NO. 4, FOR 1916.

Montrose, Colorado, November 29, 1916.

The State Engineer,
Denver, Colorado.

Dear Sir: I have the honor to present you my annual report of Irrigation Division No. 4, for the fiscal year ending November 30, 1916.

From the standpoint of the farmer this year was exceedingly prosperous. There was an abundance of snow in the mountains, which made an ample supply of water for irrigation purposes.

With the exception of the fruit crop and the first cutting of alfalfa, the crops were splendid. Late frosts did considerable damage to the fruit crop in some locations, also to the first cutting of alfalfa. In Mesa and Delta counties, where the fruit crop was fairly good, the fruit grower received excellent prices for his peaches. Grain, potatoes and sugar beet crops were never better, and the market was the highest. This was especially true in the Uncompahgre Valley, where the yield of potatoes was enormous and prices ranged from $1.50 to $2.25 per hundred pounds. The farmers in this locality were greatly handicapped by the shortage of cars.

Early in May two small reservoirs broke, but caused little damage. These were the Casement Reservoir on Unaweep Creek in Mesa County, and the Hanson Reservoir on Leroux Creek in Delta County.

The break in the Hanson Reservoir was caused by the owner's neglect to clear the spillway, causing the water to run over the dam. Fortunately the Bailey Extension Reservoir, which received the water, was empty, or much damage would have been done. As it was, much mud and silt was washed into the Bailey Extension Reservoir. The Hanson Reservoir should not be rebuilt unless a large outlet is constructed to take care of the surplus water in the spring.

By a strict enforcement of the law on the part of water officials, the flooding of the roads was reduced to a great extent. The water officials, co-operating with the County Commissioners and road overseers, prevented the excessive flooding of roads, as was the practice in the past.

The city attorney of Gunnison complained to this office and to the office of the State Engineer about the flooding of the cellars in the town of Gunnison, caused, as he thought, by the use of an excessive amount of water by the Hartman Ditch. During the irrigation season the cellars fill with water and cause considerable damage to property. On orders from your office a rating flume has been put in the Hartman Ditch so that the exact amount of water used by this ditch may be known.

A personal visit to the various clerks of the district court, and bringing the matter before the Board of County Commissioners, resulted in obtaining certified copies of some judicial decrees for this office and the office of the State Engineer, which had not heretofore been furnished.

This office is greatly indebted to Mr. Fred D. Pyle, Project Manager of the Uncompahgre Project, U. S. R. S., for daily reports sent to this office of the amounts of water in the various ditches taking water from the Uncompahgre River. A copy of the report is given below:

WATER DISTRIBUTION TABLE.

Uncompahgre River. Date, July 22, 1916.

Place	River Stations			Canal Stations			Return Water
	Time	Gage	Discharge	Time	Gage	Discharge	
Colona	.....	2.25	.....	.....	.....	.....	.....
	.....	2.30	327	.....	.....	.....	.....
Ouray	.....	.....	.....	.....	1.90	22	.....
West Canal Feeder	.....	.....	.....	.....	3.70	.....	.....
	.....	.....	.....	.....	.75	95	.....
South Canal	.....	6.65	518	.....	.....	.....	.....
High Line	.....	.....	.....	.....	1.36	24	.....
Plymouth Rock	.....	.....	.....	.....	Dry	.....	.....
Montrose and Delta	.....	.....	.....	.....	4.10	372	.....
Stark-Volkman	.....	.....	.....	9:00	.65	17	.....
Ben Davis	.....	.....	.....	8:50	.30	.9	.....
Midland	.....	.....	.....	8:40	.70	1.2	.....
Woodgate-Calloway	.....	.....	.....	8:50	.70	2.7	.....
Chipeta	.....	.....	.....	.....	.90	13	.....
Loutsenhizer	.....	.....	.....	8:30	1.55	79	.....
Montrose City Supply	.....	.....	.....	8:20	1.15	3.3	.....
Val Verde	.....	.....	.....	9:20	.32	4.4	.....
North Mesa	.....	.....	.....	9:50	1.95	2.0	.....
West Montrose	.....	.....	.....	9:50	.60	.....	.....
Total	.....	.....	845	.....	.....	637	107
Montrose	9:50	3.65	315	.....	.....	.....	.....
Rice-Cain	.....	.....	.....	7:30	.25	4.3	.....
Stitler-Williams	.....	.....	.....	7:30	.85	1.1	.....
Happy Canon Creek	9:25	1.31	(8.3)	.....	.....	.....	.....
Sunrise	.....	.....	.....	9:35	1.30	11	.....
Selig	.....	.....	.....	7:15	.90	84	.....
Cedar Creek	7:20	3.52	71	.....	.....	.....	.....
Eagle	.....	.....	.....	7:15	2.1	20	.....
Ross-Hull Private	.....	.....	.....	7:00	1.0	1	.....
Total	.....	.....	386	.....	.....	121	5

Ross	7:00	3:4	270	.....	.....	.....	.....
Spring Creek	7:00	.72	(21)	.....	.....	.....	.....
Frost	.....	.....	.....	6:45	2.20	2	.....
Ironstone	.....	.....	.....	.....	2.72	149	.....
Satisfaction	.....	.....	.....	.....	1.15	8.3	.....
Home Run	.....	.....	.....	6:30	.82	16	.....
East	.....	.....	.....	.....	1.20	101	.....
Delta Chief	.....	.....	.....	6:20	.30	14	.....
Home Stake	.....	.....	.....	6:20	2.4	10	.....
Foster	.....	.....	.....	6:20	1.3	2.4	.....
East Side	.....	.....	.....	6:10	1.1	4.2	.....
Swanson	.....	.....	.....	6:00	1.0	4.9	.....
Total	.....	.....	270	.....	.....	312	85
Casner	6:00	2.48	43	.....	.....	.....	.....
Garnet	.....	.....	.....	5:50	1.70	33	.....
Chipeta-Beaudry	.....	.....	.....	5:50	.80	9.5	.....
Boles-Manney	.....	.....	.....	5:40	1.43	2.9	.....
Uncompahgre No. 3	.....	.....	.....	5:25	1.00	5.4	.....
Purdy-Vickers and Delta Town	.....	.....	.....	5:10	1.00	.5	.....
Total	.....	.....	43	.....	.....	51	73
Balance	5:10	1.25	65	.....	.....	.....	.....

Total Return Water, 270.
Total Available Return Water, 197.
Proportion Available Return Water Gunnison, 126.
Proportion Available Return Wataer Uncompahgre, 71.
Gunnison Return Water, 715. Uncompahgre Return Water, 398.
Last Priority filled by Water Commissioner, 30.
Waste-Discharge of Casner, Less Last 5 Ditches, 8.

A very important decision was handed down by the Supreme Court in reference to the Greeley and Loveland Irrigation Company vs. The Farmers Pawnee Ditch Company. In this case the court interprets a direct irrigation right to have been granted for a specific use, and for a like period of time, and no enlarged use can be made of this right and the same applied to storage purposes. This decision provides us with definite information to solve similar problems as they come up from time to time.

Some apprehension arose on the part of the Rio Grande Railroad and others in regard to the safety of Trout Lake, which is owned by The Western Colorado Power Company and situated at the headwaters of San Miguel River.

On September 11th the Deputy State Engineer and myself, in company with Mr. Clay, Manager of The Western Colorado Power Company, made an examination of Trout Lake. This examination did not result in any stop orders being issued against the reservoir, and it is believed there is no cause for alarm as to the safety of the structures incident to this reservoir.

In this division there are two important reclamation projects under the U. S. Reclamation Service, viz., the Highline or Grand Valley, and the Uncompahgre or Gunnison Tunnel. Mr. J. H. Miner and Mr. Fred D. Pyle, project managers, kindly furnished us with the following data relative to these important projects:

GRAND VALLEY PROJECT—COLORADO.

U. S. Reclamation Service
J. H. Miner, Project Manager

PROGRESS DURING CALENDAR YEAR 1916.

The Grand River diversion dam will be practically complete at the end of the year. The work accomplished on this feature has consisted of the installation of the operating machinery and power plant, dismantling of the construction plant, and disposition of used equipment.

On the canal system, the first 55 miles of the main canal has been completed. During the current year 9 miles of canal were constructed, involving the excavation of about 200,000 cubic yards of earth and shale, the construction of a number of cross-drainage structures and flumes, and the erection of 4,000 linear feet of 60-inch wood stave pipe. Laterals have been completed to cover 14,500 acres in the first district and 10,000 acres in the second district. Laterals to serve the lands in the third district are now under construction.

During the season of 1916 water was supplied on demand to all lands in the first lateral district desiring to use it. About 2,000 acres were actually irrigated. It is expected that at the beginning of the season of 1917 facilities will be completed for supplying water to 35,000 acres. On December 31, 1916, the project will be about 67 per cent complete.

UNCOMPAHGRE VALLEY PROJECT—COLORADO.

Fred D. Pyle, Project Manager
United States Reclamation Service

October 1, 1916

GENERAL PROGRESS

During the past year a 20-inch wooden stave siphon 1,800 feet long was constructed to irrigate the Boot Mesa from the Loutsenhizer lateral system. The Peach Valley portion of the Selig lateral system was completed. The Ironstone canal was enlarged from a capacity of one hundred second feet to a capacity of three hundred eighty second feet. The lateral system on Ash Mesa was completed and plans made for the reconstruction of the California Mesa lateral system. Drainage investigations and the irrigable area surveys were continued. The Government now owns the Montrose and Delta, Chipeta, Loutsenhizer, Selig, Ironstone, Ironstone Extension and Garnet canals. It has agreements to unify with the Boomer, Reservation, High Line, Logan, North Mesa Homeruñ, Colorow and Delta Chief canals. The construction of the distribution system is practically completed, except for the California Mesa lateral system, which will be reconstructed this winter.

RESULTS

The following is a brief summary of results accomplished from July 1, 1915, to June 30, 1916:

Miles of canal constructed	21
Structures costing over $2,000 each	5
Structures costing from $500 to $2,000 each	17
Structures costing from $100 to $500 each	52
Structures costing less than $100 each	685
Number of bridges built	81
Number of culverts built	69
Number of wooden pipe siphons (1,727 feet long)	1

There has been excavated 345,757 cubic yards of Class 1 material; 10,392 yards of Class 2, and 1,735 cubic yards of Class 3, and 2,308 cubic yards of concrete have been placed. The above work has made it possible to deliver water to a total of 80,000 acres, of which amount 54,400 acres were in crop this year.

EXPENDITURES

The expenditures on the project from October 1, 1915, to October 1, 1916, amounted to $343,545.45, of which amount $143,680.90 was spent on construction work, $103,469.53 on purchase of rights of way and unification, and $96,395.02 on operation and maintenance. The receipts for rental of water amounted to $78,041.25.

OPERATION

The season was somewhat backward, the last frost occurring on May 15th and 16th, which did considerable damage to the fruit and alfalfa. The snowfall was not heavy, but the run-off was very good. There were no floods from melting snows. Rains commenced on July 25th and continued the remainder of the season. Several floods in the river and canal systems were caused by rains, but no damage was done. Project water was delivered on a rental basis of $80 per second foot continuous flow for the season. This is a wasteful method of water delivery, and some change to a rotation system will be needed in the future.

But little trouble was encountered in operating the project, except for the sliding banks on the Montrose and Delta, Ironstone and Selig canals, and the settling of short portion of the concrete lining in the South canal. During August and September the flow of the Uncompahgre River was never less than one hundred second feet, and for considerable periods was greater than two hundred fifty second feet. The minimum flow of the Gunnison River was about six hundred fifty second feet during the latter part of September. During the time of heavy irrigation, it was always in excess of one thousand second feet. The maximum discharge of the Gunnison tunnel was seven hundred second feet. The water supply was ample during the entire irrigation season. It is estimated that six acre feet of water was delivered to the water users for each acre of land in crop.

GENERAL CONDITIONS

The financial condition of the project farmers has been greatly improved during the past year by good yields and good prices, and the large increase in the livestock industry. Several carloads of Holstein cows have been brought in and arrangements are being made for several more cars. Excellent results have been obtained by the farmers engaged in growing and fattening hogs. About fifteen new silos were built during the summer. The farmers have been assisted in their livestock industry by Mr. Lindgreen, of the Department of Agriculture, who was assigned to this project about one year ago. The prospects are very bright for the construction of a sugar beet factory at Delta in time to handle the 1917 crop.

The reports of Water Commissioners are anything but encouraging. I had earnestly hoped and expected that the water commissioners would have excellent reports, complete in every detail. They were notified by your office, as well as by circular and personal letters and personal talks. Besides this, the following circular letter was sent to each:

"April 4, 1916.

"To All Water Commissioners,
"State of Colorado.

"Gentlemen:

"It is earnestly hoped that each and every water commissioner will seriously endeavor this coming season to efficiently administer his district to the very best of his ability. Complete, accurate and detailed annual reports are required from all Water Commissioners on November 15th each year, covering the administration of their district for the past season.

"Dependable annual reports cannot be submitted unless facilities exist for accurately determining the actual amounts of water diverted from the public streams by the various ditches and reservoirs in your district. The statutes provide for this exigency. You will note the law says—'Owners * * * shall erect and maintain * * *. If the owner * * * shall fail or neglect to erect * * * the Water Commissioner * * * shall refuse to deliver any water * * *.'

"Owners and all Water Commissioners must realize that an efficient water administration is demanded, and the provisions of the statutes must be strictly complied with by all.

"A. A. WEILAND,
"State Engineer."

District No. 28 made no report, the Water Commissioner making the foolish excuse that a letter to your office was unanswered, and that his report would not be complete. A personal letter from this office, dated July 17, 1916, gave him ample instructions.

District No. 30 made no report, the Water Commissioner claiming he had no blanks or field books.

The reports for Districts Nos. 40 and 41 are not finished, but will probably be at some later date.

There is no report from District No. 59, as the Water Commissioner was not called out.

The report from District No. 60 is very incomplete, as the Water Commissioner worked but little and had other business to attend to.

The report from District No. 62 is as good as is possible under the circumstances, as is also the report from District No. 68.

The manner of appointing and paying Water Commissioners should be immediately changed. Must the office of Water Commissioner remain forever a sinecure?

RECOMMENDATIONS

That an appropriation be made by the next General Assembly to enable the Secretary of State to furnish Division Engineers' offices, as the statutes say he shall.

That a hydrographer be furnished this division for at least three months each year, to assist in rating the ditches and canals in the division.

That the present law relative to appointing Water Commissioners be repealed by a statute giving the State Engineer power to appoint on recommendation of the Division Engineer. That if Water Commissioners cannot be paid by the state, then they be paid by the county in which the work is performed; and all vouchers for paying Water Commissioners should first be certified by the Division Engineer. That all Water Commissioners shall be assigned to their work by the Division Engineer, and may be sent into any water district in the division. That the Division Engineer shall have power to discharge, or at least to suspend, any Water Commissioner neglecting or failing to perform his duties.

If this recommendation were enacted into the statutes the results would be far reaching in this division. It would mean greater efficiency and less expense. It would mean that Water Commissioners would be appointed for their ability to distribute water, and not because of their "political pull." It would mean that a Water Commissioner would not be on the pension list, a parasite on the taxpayers, and occupying an office which he does not fill; and who knows nothing about the duties of Water Commissioners and cares less. It would mean that a system of records would be kept which would be of inestimable value to water users. Why not have a more efficient, less cumbersome and less expensive system? A change is greatly to be desired. Why not make it now?

Attached hereto is the tabulated statement of the Water Commissioners' reports.

In closing I desire to thank you for the many acts of courtesy, and for the excellent support you have always given this office.

Very respectfully,

(Signed) H. C. GETTY,
Irrigation Division Engineer, Division No. 4.

IRRIGATION DIVISION NO. 4.

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1916.

(1) District	(2) No. of Ditches Reported	(3) Amount of Appropriation in Second Feet	(4) Capacity of Ditches in Second Feet	(5) Length of Main Ditches in Miles	(6) Length of Laterals in Miles
33	30	98	256	86	.....
34	56	202	202	86	112
40	120	648	1,277	446	419
41	33	622	1,317	133	360
42	174	3,182	3,779	532	370
60	16	.....	.....	.....	.....
61	27	18	81	46	37
62	75	249	249	.....	119
68	103	423	794	216	.....
Totals	634	5,442	7,955	1,545	1,417

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1916.

District	(7) First Day Water Diverted from Natural Streams for Irrigation	(8) Last Day Water Diverted from Natural Streams for Irrigation	(9) Maximum No. of Days Water Diverted from Natural Streams for Irrigation	(10) Average Daily Amt. of Water Diverted from Natural Streams for Irrigation	(11) No. of Acre Feet Diverted by Ditches During Season from Natural Streams for Irrigation
33	June 27	Sept. 3	64	68	8,640
34	May 1	Sept. 15	123	245	48,020
40	Apr. 1	Nov. 30	240	593	262,094
41	Apr. 17	Oct. 31	196	814	315,884
42	Mch. 1	Dec. 31	190	535	139,185
60	.....	.....	.....	.....	.....
61	Apr. 14	Nov. 10	211	58	17,510
62	Apr. 1	Dec. 15	240	.....	.....
68	Apr. 1	Nov. 15	210	.....	.....
Totals ..	Mch. 1	Dec. 31	240	2,313	791,333

IRRIGATION DIVISION NO. 4—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1916.

District	(12) Total No. of Acres that can be Irrigated	CROPS IRRIGATED FROM CANALS IN ACRES (13) Alfalfa	(14) Natural Grasses	(15) Cereals	(16) Orchards
33	10,243	2,721	690	2,409	67
34	9,466	3,625	993	1,993	72
40	96,784	28,879	2,526	11,110	10,256
41	74,349	23,270	2,144	17,524	2,194
42	152,478	21,070	2,729	18,120	11,372
60	662	544	48	39	6
61	5,460	1,711	264	1,566	33
62	8,736	13	4,902	601	.....
68	26,589	3,850	2,590	2,725	73
Totals	384,767	85,683	16,886	56,087	24,073

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1916.

District	CROPS IRRIGATED FROM CANALS IN ACRES (17) Market Gardens	(18) Potatoes	(19) Sugar Beets	(20) Timothy	(21) Other Crops
33	264	549	.....	.....	25
34	5	120	.....	.....	21
40	205	871	569	.....	1,921
41	26	5,430	4,231	.....	1,908
42	69	1,441	1,386	.....	1,114
60	10	3	.....	.....	.....
61	2	21	.....	.....	82
62	.....	.....	.....	2,890	.....
68	233	182	66	5,582	1,365
Totals	814	8,617	6,252	8,472	6,436

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL DITCH REPORTS FOR THE IRRIGATION SEASON OF 1916.

District	CROPS IRRIGATED, etc. (22) Total No. of Acres Irrigated	COST—DOLLARS (23) Superintendence	(24) Repairs	(25) Improvements
33	6,725	$ 375	$ 1,045	$ .....
34	6,829	.....	1,715	85
40	56,337	2,925	9,980	2,830
41	56,727	5,303	21,146	20,074
42	57,301	3,090	102	307
60	650	.....	.....	.....
61	3,679	406	235	681
62	8,406	500	3,022	.....
68	16,666	9,355	1,103	998
Totals	213,320	$21,954	$38,348	$24,975

IRRIGATION DIVISION NO. 4—Continued

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL RESERVOIR REPORTS FOR THE IRRIGATION SEASON OF 1916.

(1) District	(2) No. of Reservoirs Reported	(3) Area of High Water Line in Acres	(4) Capacity of Reservoir in Cubic Feet	(5) Quantity of Water in Reservoirs May 1st, Cubic Feet
34	6	550	356,717,776	278,000,000
40	108	3,460	853,167,000	86,400,000
42	30	.....	785,350,189	Empty
61	1	300	200,000,000	1,960,000
Totals ..	145	4,310	2,195,234,965	366,360,000

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL RESERVOIR REPORTS FOR THE IRRIGATION SEASON OF 1916.

District	(6) Quantity of Water in Reservoirs Nov. 1, Cubic Feet	(7) First Day Water was Used from Reservoirs	(8) Last Day Water was Used from Reservoirs	(9) Maximum No. of Days Water was Used from Reservoirs
34	113,000,000	May 15	Oct. 1	138
40	99,144,000	June 20	Sept. 10	100
42	Empty	July 3	Oct. 2	92
61	1,840,300	Apr. 14	Nov. 10	179
Totals ..	213,984,300	Apr. 14	Nov. 10	179

TABULATED STATEMENT OF WATER COMMISSIONERS' ANNUAL RESERVOIR REPORTS FOR THE IRRIGATION SEASON OF 1916.

District	(10) Average Daily Amt. Used from Reservoirs, Second Feet	(11) No. of Acre Feet Used from Reservoirs During Season	COST—DOLLARS (12) Superintendence	(13) Repairs	(14) Improvements
34	21	5,796	$ 100	.....	.....
40	350	14,000	1,400	.....	.....
42	65	7,930	.....	.....	.....
61	8	2,864	406	.....	.....
Totals ..	444	30,590	$1,906	.....	.....

ANNUAL REPORT DIVISION ENGINEER, DIVISION NO. 5, FOR 1915.

Glenwood Springs, Colo., November 30, 1915.

Hon. A. A. Weiland,
State Engineer.

Dear Sir: I herewith submit my report for the year 1915, Irrigation Division No. 5.

The irrigation season of 1915 set in with dry, cool winds and sporadic rains, varying locally with occasional showers, quickly followed by a premature heat. In one district, No. 37, in two valleys the low temperature at night foiled the attempt of the irrigators to profit by the abundant water supply during the day, and as a consequence the first hay crop was subnormal, and, in several instances, almost a failure.

As marked contrasts I mention the isolated case of four ranches on the Eagle River, their location affording protection from the cold winds and sudden changes of temperature, which produced a maximum hay crop—four tons of alfalfa per acre from the first cutting. On several ranches on Gypsum Creek, eleven miles west of the Eagle ranches, the first crop of alfalfa, chilled by early and night irrigation, and stunted by a few weeks of dry heat following, was left uncut.

Throughout the division the climatic changes during the months of April, May and part of June were sudden and not conducive, in general, to a healthy growth of crops. The total result is not as satisfactory as was expected, especially when compared with that of 1914. Many individual irrigators did not seem to take economic advantage of the water supply when it was most available, and, as a consequence, suffered as the season advanced.

This state of affairs gave, as is usual in such cases, rise to complaints and unpleasant differences among irrigators, and caused strictures upon the action of the Water Commissioners who endeavored to adjust matters.

The commissioner of District No. 37 came in for his share of just objections, as he, in a misapplied sentiment for what he conceived to be his discretionary authority, apportioned water to certain appropriators at a time when they were not entitled to it and when senior appropriators actually needed the water, but *"when the former needed it worse,"* and it took some time to make him understand the difference between the dates of decrees and his personal judgment.

The subject of judicial apportionment of water to a given area is one of the greatest importance. While I can speak only within the scope of this report, I cannot refrain from suggesting a thorough investigation by the State Engineer, backed by the necessary legislative appropriation, for the purpose of modifying

the procedure of using unalterable proportions between water and area, just because that proportion has been applied in this division, say, as early as 1881.

More than a quarter-century of irrigation experience in this vicinity has conviced me that the majority of over-irrigated ranches become gradually leached and water-logged, to the detriment of quantity and quality of crops, and that it is not good practice to apportion water in a pre-determined ratio to all kinds of land, whether hilly or on flat ground, regardless of altitude, contour, remote from or adjoining gravelly creek beds with consequent sub-irrigation, on open or tight, "skinny" or deep soil, and, more especially, with respect to longer or shorter periods of previous application.

Argument on these points is barren of results. The irrigator wants his pound of flesh, or water, and would rather waste the priceless liquid than to let his neighbor have at least part of it. Many irrigators simply think that partial or total non-use of water, for even a portion of a single season, will be claimed as proof of abandonment of their priority. The exceptions in such cases merely prove the rule.

A reservoir decree on pages 320-322 of the book containing decrees for District No. 38, rendered prior to January 1, 1912, allows the petitioner, "A sufficient quantity of water *to keep said reservoir filled* to the capacity of one million, three hundred eighty-three thousand, four hundred four cubic feet of water for irrigation purposes," yet the quantity, about 31.8 acre feet, is seriously claimed to supply two hundred acres, which, as stated in the same decree, "are capable of being irrigated practically, and cultivated, by water from said reservoir."

Litigation threatened in this case. Attorney for the reservoir owners maintained that the 31.8 acre feet were meant to be subject to the wording of the above italic passage, i. e., that the reservoir could be filled and emptied and filled and emptied continuously from one end of the year to the other; he failed, however, to explain how the water was to be used at all if the reservoir was being *kept* filled, as distinctly stated in the decree. A settlement out of court was arrived at.

Another decree, in district No. 37, apportions all the surplus water in the creek over and above decreed rights existing at the time of its rendering to the first five priorities pro rata of their rights, thus virtually preventing any subsequent appropriator from enjoying irrigation privileges. I have in former reports referred to the uncertain results of jury trials in cases of unlawful appropriation of water, especially when locked headgates are raised, I should say certainty of acquittal. Two such cases were thus decided last season, although the offenses were clearly proven.

Again some poor victim of the consequences of literal application of the law suffers, when he is, humanely speaking, innocent of intent to do harm.

Cattle Creek was in this last season infected by beavers in its lower part and to take three cubic second feet down to the priorities, near the mouth of the creek, it was necessary to shoot out the beaver dams and channel the tortuous creek bed. This involved the labor of six men and two teams for nearly a week, and the creek then ran about fifteen cubic second feet. Subsequently a lone beaver couple returned and engaged industriously in restoring their home, and a rancher, fearing a repetition of the famine, killed one of them, forgetting or being ignorant of the necessity of first obtaining a permit from the game department. He was promptly arrested, tried, found guilty and fined $25.00 and costs. I mention this fact because the victim in this case—the rancher, not the beaver—almost completely lost his crop on account of the beavers' activity, and is otherwise unable to procure the money to pay fine and costs.

There were no new projects or irrigation plants observable during 1915. Those contemplated previously received their share of local and other advertising, but without tangible results.

The Spring Park Reservoir owners in District No. 38 added considerable to their irrigated areas, and , having the advantage of a late beginning of season, could fill their reservoir to the 25-foot contour during the spring months, and furnish an ample supply throughout the season.

The Battlement Reservoirs, District No. 45, were also well supplied, and additional labor on dams and headworks was performed during 1915.

The Park Reservoir on West Elk Creek, District No. 39, has been successfully operated during the season, and the owners have added to the structure by better securing the sides of a spillway and widening the emergency ditch leading therefrom.

The sudden demise of the Water Commissioner of District No. 39, by a fatal accident while he was engaged in the performance of his duties, was followed by instructions to the deputy to assume charge of the office. The deputy has acted during the balance of the season, but, upon demanding field books and other property of the state of the administrator, for the purpose of making up his report, met with the objection that such property would only be turned over to the duly appointed successor of the deceased Water Commissioner. Up to this writing the books and other property belonging to the state are retained by the administrator, and I have been unable to obtain them. Under the law of 1903 I have assumed the office of Water Commissioner, and have made demand for this state's property now in the hands of the administrator; the probate judge has also supported this demand, and I hope to obtain the books, etc., in a few days, although too late for a complete report of District No. 39.

My recommendations with respect to a different method of appointing Water Commissioners are hereby repeated. The Water Commissioner is the judge of first jurisdiction, and, viewing the

importance of the irrigation industry in its proper light, the law should protect the actions of the commissioner to a greater extent than it does now, by giving his office more summary authority. To arrive at this point it is, however, necessary to select for this position men of known probity, skill and energy; to compensate them adequately and for a certain fixed period of the year, which should begin before and last after the real irrigation season, so as to give the commissioner time to examine his district before irrigation commences and to make his report after it ceases. The commissioner should be entirely freed from any kind of local influence, and should be paid from the state treasury direct. It is also conceivable that the deputy commissioners could do more effective work if their compensation was increased, even to the same figure which the Water Commissioner is paid, perhaps for a shorter period of the year. But both, commissioner and deputy, should be vested with the same authority and by special enactment. The number of deputies in each district should be commensurate to the extent of the area supervised. All commissioners and deputies should be placed under the direct authority and control of the Division Engineer.

It is with sincere appreciation of the courtesy of your office that I mention the fact that during the past season all communications from your office to the Water Commissioners were transmitted through the Division Engineer's office, thus preserving the succession of instances and thereby strengthening the hand of the officer directly above the Water Commissioner.

The subject of delegated authority to Division Engineers and Water Commissioners by special provisions of judicial decrees to the effect of committing to their care, authority and supervision of the supply to laterals out of main ditches, or the adjustment of individual rights in associated ditches, etc., is one of great importance. A conflict is created by such provisions between the intent of the law which limits such authority to the main headgate of the ditch, and execution of the decree, and I recommend that your office issue instructions to the officers of irrigation service clearly setting forth the full compass and limit of their authority in this respect. The State Engineer subsequently ruled that, in accordance with the statutes, Water Commissioners had no jurisdiction over the distribution of water from a ditch to its consumers. That decrees containing such provisions were not issued according to law, and that it was not incumbent upon Water Commissioners to obey such parts of these decrees.

Very respectfully,

(Signed) THEODORE ROSENBERG,
Division Engineer, Irrigation Division No. 5.

IRRIGATION DIVISION NO. 5.

SUMMARY ANNUAL REPORTS OF WATER COMMISSIONERS.

1915	Water District No. 37
Appropriations to ditches in cubic second feet	464.37
Capacity of ditches in cubic second feet	579.84
Length of ditches in miles	175.70
Length of laterals in miles	18.55
Water used from May 1 to October 1	.....
Average number of days of use of water	114.00
Average second feet of water during season in ditches	294.00
Total acre feet of water used during season	67,032.00
Total irrigated area in acres	19,167.00
Total irrigable area in acres	21,249.00
Duty (acre feet per acre)	3.5

CROP REPORT

Alfalfa	10,300	acres
Natural Grasses	2,656	acres
Cereals	4,409	acres
Orchards	11	acres
Market Gardens	.....	acres
Potatoes	1,771	acres
Other Crops	20	acres
Total	19,167	acres

RESERVOIRS

There were three of these in operation in this district, as reported by the commissioners; the Welsh, Christianson and Johnson Reservoirs, with 60, 29 and 102.5 acre feet capacity, respectively, which contained on May 1, 14.5, 11.63 and 22.77 acre feet, and were practically emptied on November 1. The ditches supplied are in the order named, the Alkali, Christianson and Eby ditches, used from June 1 to July 1, from July 1 to August 10, and from August 1 to August 30 in the above order to irrigate 260 acres, 220 in alfalfa and 40 in natural grasses.

1915	Water District No. 45
Appropriations to ditches in cubic second feet	823.40
Capacity of ditches in cubic second feet	504.71
Length of ditches in miles	369.00
Length of laterals in miles	111.48
Water used from April 6 to October 9	.....
Average number of days of use of water	79.00
Average second feet of water during season in ditches	412.00
Total acre feet of water used during season	65,096.00
Total acres irrigated during season	22,793.33
Total acres susceptible to irrigation	37,139.00
Duty (acre feet per acre)	2.86

CROP REPORT

Alfalfa	15,673	acres
Natural Grasses	624	acres
Cereals	4,379	acres
Orchards	940.83	acres
Market Gardens	92	acres
Potatoes	774.5	acres
Sugar Beets	111	acres
Other Crops	229	acres
Total	22,793.33	acres

RESERVOIRS

The Battlement Reservoirs store the water of Battlement Creek near its head. They are owned by the Battlement Water Supply Company, and are used for irrigation of land on Battlement Mesa on the south side of the Grand River in Township 7 S., Ranges 95 and 96 W., 6th P. M.

The annual repair and maintenance assessment work on the reservoirs is done by the stockholders, generally during the fall, and, if the season is favorable, in the spring. There are six of the reservoirs.

No.	Area High Water Line Acres	Capacity Cubic Feet	Dam Length in Feet	Dam Height in Feet	Quantity of Water in Reservoirs May 1, 1915, Cubic Feet	Quantity of Water in Reservoirs Nov. 1, 1915, Cubic Feet
1	14.19	5,733,779	416	30	4,910,000	870,000
2	6.90	2,480,368	175	25	2,100,000	495,000
3	41.66	20,011,821	671	30	17,280,000	1,380,000
4	18.75	6,016,700	312	20	5,000,000	260,000
5	5.21	1,453,054	178	20	980,000	210,000
6	11.42	2,754,226	420	25	2,710,000	391,000

The dams of all these reservoirs are protected by riprap. The condition of all dams is satisfactory.

1915	Water District No. 58
Appropriation to ditches in second feet	518.44
Capacity of ditches in second feet	691.50
Length of ditches in miles	183.75
Length of laterals in miles	164.25
Water used from April 1 to October 30	.....
Average number of days of use of water	66.00
Average second feet of water during season in ditches	527.71
Total acre feet of water used during season	69,657.70
Total irrigated area in acres	24,877.75
Total irrigable area in acres	80,851.00
Duty (acre feet per acre)	2.80

CROP REPORT.

Alfalfa	1,524.00 acres
Natural Grasses	21,133.00 acres
Cereals	1,975.00 acres
Market Gardens	3.25 acres
Potatoes	15.00 acres
Strawberries	227.50 acres
Total	24,877.75 acres

1915	Water District No. 70
Appropriations to ditches in second feet	169.40
Capacity of ditches in second feet	273.00
Length of ditches in miles	109.00
Length of laterals in miles	11.00
Water used from April 1 to November 13	.....
Average number of days of use of water	119.40
Average second feet of water during season in ditches	85.08
Total acre feet of water	20,316.00
Total irrigated area in acres	5,126.00
Total irrigable area in acres	6,149.00
Duty (acre feet per acre)	3.96

CROP REPORT.

Alfalfa	3,382 acres
Natural Grasses	157 acres
Cereals	1,046 acres
Orchards	189 acres
Market Gardens	5 acres
Potatoes	34 acres
Sugar Beets	20 acres
Other Crops	226 acres
Corn	22 acres
Pasture	5 acres
Town of DeBeque	40 acres
Total	5,126 acres

RESERVOIRS.

	Name	Name of Owner	Location
1	McDowell	Briggs & Wys	West side of Roan Cr.
2	Glen Beulah No. 1	John W. Carr	West side of Clear Cr.
3	Blair & McDowell	Briggs & Wys	West side of Roan Cr.
4	Myers	Alfons Myers	West side of Roan Cr.
5	Conwell	C. H. Conwell	West side of Conn Cr.
6	Boldt	H. W. Boldt	South side of Dry Fork
7	Trough Springs	David McKay	Dry Fork Creek
8	Parkes	C. E. & F. Parkes	North side of Clear Cr.
9	Eaton	S. G. Eaton	North side Kimball Cr.

	Source of Supply	Name of Feeder	Area of High Water Line, Acres	Capacity in Cubic Feet
1	Roan Creek	Reservoir Ditch	2.00	522,720
2	Clear Creek	Newton Ditch	5.00	1,306,800
3	Gulch Creek	Gulch Ditch	12.00	Out of Commission
4	Roan Creek	Roan Cr. Ditch No. 1	1.00	130,680
5	Conn Creek	Conwell Ditch	5.00	261,360
6	Boldt Spring	Boldt Spring Ditch	.50	65,340
7	Flood Water	Dry Fork	5.00	1,689,308
8	Tom Creek	Parkes Ditch	.20	6,750
9	Kimball Creek	Eaton Ditch	3.00	522,720
Totals			33.70	4,505,678

	Quantity of Water in Reservoir May 1, Cubic Feet	Quantity of Water in Reservoir Nov. 1, Cubic Feet	Name of Ditch Supplied from Reservoir
1	522,720	522,720	Reservoir Ditch
2	Dry entire season		Newton
3	Out of commission		Reservoir Ditch
4	Dry entire season		Roan Creek Ditch No. 1
5	.....	261,360	Conwell Ditch
6	65,340	65,340	Boldt Spring and Gulch Ditch
7	.....	.....	G. & G. R., De & G. and De La Matyr Ditches
8	Built during spri	ng of 1915	Parkes Ditch
9	.....	.....	Eaton Ditch
Totals	588,060	849,420	

None of the above reservoirs were used this season. No. 8 received $75.00 worth of improvements, and No. 9 $100.00 worth. Source of information on all was from observation.

ANNUAL REPORT DIVISION ENGINEER DIVISION NO. 5 FOR 1916.

Glenwood Springs, Colorado, Nov. 30, 1916.

Hon. A. A. Weiland,
State Engineer,
Denver, Colorado.

Dear Sir: I herewith present my annual report for Irrigation Division No. 5 for the year 1916.

I believe this is the largest division in the state and I venture to say that the industries are more varied than in any other like portion of the state. Certain portions of the division are very difficult of access, or rather have been in years past, but with the great demand for road building and the advent of the motor car distances have been greatly overcome during the past few years. I have not traveled over the division as extensively and completely as I had hoped to do, but have given attention to every inquiry and have personally responded to every call made upon me where there seemed to be a real demand for my services. I will make but one exception to this statement, and that was in the case of a call from the country north of Craig, in Moffat County. I think this call would not have been made had there been a Water Commissioner in District No. 57. For several years this district has been without a Water Commissioner. I believe the County Commissioners ought to be urged to recommend to the Governor some suitable person for appointment as Water Commissioner for District No. 57.

The past year has been most satisfactory to farmers and water officials, there being less difficulty and fewer lawsuits over water than in any year within my recollection, but is has not been altogether favorable for one in search of statistical irrigation information.

The unusual snowfall of last winter and the very favorable climatic conditions of the spring and early summer were very encouraging to the farmers, and made it seem that there would be less use than ever for the services of the Water Commissioners. With this prospect in view County Commissioners, desirous of avoiding needless expense, urged the Division Engineer to use all precaution possible along this line and to make the administration as economical as possible, intimating that Water Commissioners' bills against the counties would be checked up with greater care than usual, and that the County Commissioners very much hoped for a reduction in the expenses of the services. I have, therefore, endeavored to conduct the business with the greatest economy possible, consistent always with the best service that could be given, but with the view only of eliminating any unnecessary expense. This perhaps will account for the lack of

completeness which will be found in the reports of some of the Water Commissioners who did not feel authorized to go into the various portions of their district excepting as their services seemed to be in demand. I find that nearly all of them have furnished good crop reports, as I insisted on special effort along this line. Their answers to questions 5, 6, 7, 25, 26 and 27 of the Water Commissioners' annual ditch reports I find are rather meager, due, I think, to the large extent of some of the districts and the inhibition put upon the commissioner against any work which County Commissioners did not deem to be absolutely necessary.

The crop conditions throughout Division No. 5 during the past season have been most excellent, and farmers are in a very prosperous condition. The extremely favorable season as to the natural precipitation and irrigation water have rendered the production of large crops a comparatively easy matter, and this fact, coupled with the abnormal prices, have combined to bring the farmer into a degree of prosperity which perhaps he has always deserved, but which he has seldom, if ever, attained to the degree which he is enjoying at this time.

DISTRICT NO. 37

This is a very fertile district comprising lands irrigated from the Eagle River, Gypsum Creek, Brush Creek and their tributaries, the district being almost entirely situate in Eagle County. The production of alfalfa, grain and potatoes has been considerably above the average during the past year. I visited the district twice, at one time making a very careful visit with the Water Commissioner of several of the streams and ditches. I have had no complaints or grievances from the territory and there has been no litigation so far as I have learned.

DISTRICT NO. 38

This district, watered from the Roaring Fork, Frying Pan and Crystal Rivers and from Cattle Creek and their tributaries, is one of the choice sections of Colorado. The streams are fed from snow that falls at a high altitude and short water rights are almost unknown, especially is this true of the two main streams of the district.

The production during the past year in this district has been highly satisfactory, and, in some instances, has been almost phenomenal. It is not unusual this year to find potato fields which will average better than two hundred sacks of one hundred and fifteen pounds each to the acre, and on the Sweet ranch, irrigated from the Crystal River, a field of ninety-five acres of potatoes gave an average yield of five hundred and twenty-nine bushels per acre, which at the present prices gives a monetary yield of $814.15 per acre, or a gross price of $77,344.25 for the field.

Wheat yields in this district have been little better than fair this year. Fall wheat of the Turkey Red variety has yielded from

twelve and one-half to thirty bushels per acre, while Defiance spring wheat has given a yield of from twenty-five to fifty bushels, a great many fields yielding better than forty bushels per acre.

DISTRICT NO. 39.

In this district there has been much litigation in the past, chiefly centered at Rifle Creek and in the Antlers country; but this year, due largely to the diplomatic conduct and energetic effort of the Water Commissioner, Mr. Isam W. Graham, there has been but little difficulty. I have been called out three or four times to assist Mr. Graham, and give advice on matters which came to his attention, but the difficulty was slight and was soon adjusted in each case.

DISTRICT NO. 43

This district comprises lands situate in the vicinity of Meeker and irrigated from White River and its tributaries. It is one of the best irrigated sections in the division, and the water officials have little or no trouble over the distribution of water. In fact, their services are so little in demand during ordinary seasons that it is usually very difficult to secure anything like an accurate statistical report from the Water Commissioners. I think Mr. Fisk has done remarkably well in that respect this year.

Stock growing is the chief industry in this district, and the people are in a very prosperous condition.

DISTRICT NO. 44

This district is watered from the Yampa or Bear River and its tributaries between the town of Craig and the mouth of the Little Snake River, and the water supply is usually abundant. This is also a stock growing section, and but little attention is given to crops other than hay and grain. Mr. Collom, the Water Commissioner, has not furnished me with an annual report, although I have only recently urged him to do so.

DISTRICT NO. 45

This district comprises some of the most fertile lands in Garfield County, the best portion of the district being situate along Divide Creek and being irrigated from that stream. While it has never been considered a well irrigated section, the farmers usually close the year with crops well up to the average, and this year has been no exception in that respect. Mr. S. B. Potter, the Water Commissioner, has been assisted in his work by four deputies, and it has kept them all very busy. The largest ditch in this district is one of comparatively recent construction and adjudication, but one which has meant much to the farming interests of that territory.

DISTRICT NO. 52

This is a small district on the Grand River and one from which I have heard but little during the season, but Mr. Rundell, the commissioner, has made an excellent annual report.

DISTRICT NO. 53

Mr. Macfarlane of this district has failed to file his annual report, but I have kept in close touch with him and his work during the year, and he seems to have had but little difficulty.

DISTRICT NO. 57

Included within the borders of District No. 57 are the towns of Hayden and Craig, and this district extends northward almost to the Wyoming state line. No Water Commissioner has been appointed in this district for many years, owing to the failure and refusal of the County Commissioners to make a recommendation to the Governor.

DISTRICT NO. 58

This is another high altitude section and stock growing in this district is very profitable. The seasons are short and only hardy and quick maturing crops are practical. Mr. Lansing, the Water Commissioner, submits a most excellent report.

DISTRICT NO. 70

This district is watered from Roan Creek and its tributaries, and lies in Garfield and Mesa Counties. Mr. Newton, the commissioner, has served in this capacity many years, and is thoroughly familiar with every phase of the work.

GENERAL OBSERVATIONS

I have stated elsewhere that there had been no litigation in the division this year. This is true so far as irrigation officials are concerned, and I believe I only recall one instance that has come to my notice of a person being arrested for appropriating water belonging to another. I find that heretofore Water Commissioners have yielded to requests to go down the ditches and settle disputes, and I have offended both consumers and commissioners because I refused to allow a continuance of this practice. I found the Attorney General's excellent opinion on this subject very helpful in the line of justifying my action.

In District No. 38 I had some trouble the past year, due, in part, I think, to the location of the district in relation to the Division Engineer's office, and the ease with which the water users could make their complaints to that official instead of depending on the Water Commissioner. In some instances the Division Engi-

neer was blamed for what the Water Commissioner did or failed to do, before the parties had even applied to the Water Commissioner for relief, the aggrieved coming to me before I had been made aware that there was any ground for complaint. However, the trouble did not assume serious proportions, and I mention it to show what difficulties may come to a Division Engineer through no fault of his own, where the water users and the Water Commissioner do not work harmoniously together.

SETTLEMENT OF NEW LANDS

While but little has been done in the way of ditch or reservoir construction in the division during the past year, much new land has been filed on and many people have come into the division to develop new homes, and I anticipate considerable irrigation construction during the coming year.

In the section contiguous to Craig, in Districts Nos. 57 and 44, this settlement of new lands has been especially noticeable the past year, but the most of this settlement is in what is known as the "Dry Land Belt," where irrigation will be extremely difficult and expensive, and can only be done in a practical way on a cooperative basis.

COMPLAINTS

I have had several complaints from parties in regard to reservoirs which were thought to be unsafe, the parties complaining in some instances believing their lives and property to be in jeopardy.

Upon investigating the matter I am satisfied that some small reservoirs have been constructed in this division that would not be in existence today had the laws requiring notice to the State Engineer and official inspection by him been complied with. However, I find that, whatever the conditions, the Division Engineer and the Water Commissioners are without power to interfere further than to report the conditions to the State Engineer.

RECOMMENDATIONS

I have heretofore made so many recommendations to your office that I think I will desist from that pastime this year, further than to reiterate my oft repeated statement that Water Commissioners should be appointed by the Governor or State Engineer, and paid for their services from state funds, and should be under more direct control and supervision of the Division Engineer than at present. I desire also to say that in these days of high cost of living the statutory maximum wage of $2.50 per day for deputy Water Commissioners makes it a very difficult matter in some sections to secure suitable assistants for the water commissioners.

I desire also to refer to the recommendations of the Division Engineers adopted December 7, 1906, and found printed on pages 208 and 209 of the Thirteenth Annual Report issued from your office.

CONCLUSION

In conclusion I desire to acknowledge my thanks to your office for the many courtesies extended to me during the past year, and also to express my appreciation to the Water Commissioners for the loyalty and harmony with which they have co-operated with me in the service.

Yours very truly,

(Signed) A. J. DICKSON,
Irrigation Division Engineer, Division No. 5.

IRRIGATION DIVISION NO. 5.

REPORTS OF WATER COMMISSIONERS FOR THE IRRIGATION SEASON OF 1916.

Water District No. 37.

Appropriation to ditches (second feet)	540.00
Capacity of ditches (second feet)	615.10
Length of ditches (miles)	233.55
Water used from April 1 to October 1, average number of days	102.75
Average amount of water during season (second feet)	382.64
Total number of acre feet for season	78,632.52
Total number of acres irrigated	19,564.00
Total number of acres that can be irrigated	24,813.75

CROP REPORTS.

Alfalfa	9,785 acres
Natural Grasses	4,297 acres
Cereals	4,092 acres
Orchards	11 acres
Gardens	7 acres
Potatoes	1,347 acres
Other Crops	25 acres
Total	19,564 acres

Water District No. 39.

Total number of acres irrigated	15,935
Total number of acres that can be irrigated	29,376

CROP REPORT.

Alfalfa	8,736 acres
Natural Grasses	169 acres
Cereals	3,170 acres
Orchards	1,336 acres
Gardens	90 acres
Potatoes	983 acres
Sugar Beets	1,075 acres
Other Crops	376 acres
Total	15,935 acres

Water District No. 43.

Appropriation to ditches (second feet)	100.12
Capacity of ditches (second feet)	133.50
Length of ditches (miles)	30.00
Length of laterals (miles)	14.25
Average number of days water used	82.00
Average amount of water used during season (second feet)	38.43
Number acre feet used during season	6,302.52
Total number of acres irrigated	2,785.00
Additional that can be irrigated	1,402.00

CROP REPORT.

Alfalfa	1,902.00 acres
Natural Grasses	444.00 acres
Cereals	423.00 acres
Potatoes	6.00 acres
Other Crops	10.00 acres
Total	2,785.00 acres

Water District No. 44.

Appropriation to ditches (second feet)	418.23
Length of ditches (miles)	229.50
Total number of acres irrigated	15,724.00
Total number of acres that can be irrigated	24,320.00

CROP REPORT.

Alfalfa	7,110 acres
Natural Grasses	5,950 acres
Cereals	2,645 acres
Orchards	1 acres
Potatoes	18 acres
Total	15,724 acres

Water District No. 45.

Appropriation to ditches (second feet)	677.91
Capacity of canals (second feet)	275.00
Length of ditches (miles)	232.75
Water used, April 20 to August 20, average number of days	53.00
Total number of acres irrigated	24,830.00
Total number of acres that can be irrigated	42,538.00

CROP REPORT.

Alfalfa	16,975 acres
Natural Grasses	30 acres
Cereals	5,610 acres
Orchards	863 acres
Gardens	88 acres
Potatoes	462 acres
Sugar Beets	208 acres
Beans	280 acres
Other Crops	314 acres
Total	24,830 acres

Water District No. 52.

Capacity of ditches (second feet)	92.00
Length of ditches (miles)	67.00
Average number of days water was used	57.30
Average amount of water used during season (second feet)	77.00
Number acre feet used during season	8,824.20
Total number of acres irrigated	2,696.00
Total number of acres that can be irrigated	4,160.00

CROP REPORT

Alfalfa	641 acres
Natural Grasses	988 acres
Cereals	576 acres
Gardens	20 acres
Pasture	439 acres
Other Crops	32 acres
Total	2,696 acres

Water District No. 53.

Appropriation to ditches (second feet)	183.90
Capacity of ditches (second feet)	303.00
Length of ditches (miles)	74.00
Water used May 1 to September 10, average number days	87.40
Average amount of water used during season (second feet)	169.96
Number acre feet used during season	29,709.00
Total number of acres irrigated	7,980.50
Total number acres that can be irrigated	8,518.00

CROP REPORT.

Alfalfa	2,760.00 acres
Natural Grasses	4,662.00 acres
Cereals	545.00 acres
Potatoes	13.50 acres
Total	7,980.50 acres

Water District No. 58.

Appropriation to ditches (second feet)	633.44
Capacity of ditches (second feet)	902.35
Length of ditches (miles)	210.65
Length of laterals (miles)	201.35
Water used from May 1 to September 15, average number days	64.80
Average amount of water used during season (second feet)	593.20
Total number of acre feet for season	76,878.72
Total number of acres irrigated	26,332.00
Total number of acres that can be irrigated	45,415.00

CROP REPORT.

Alfalfa	1,876 acres
Natural Grasses	22,121 acres
Cereals	2,122 acres
Gardens	205 acres
Potatoes	8 acres
Totals	26,332 acres

Water District No. 70.

Appropriation to ditches (second feet)	150.60
Capacity of ditches (second feet)	313.30
Length of ditches (miles)	106.50
Length of laterals (miles)	19.25
Water used from May 1 to November 10, average number days	95.00
Average amount of water used during season (second feet)	163.55
Total number of acre feet for season	31,074.50
Total number of acres irrigated	5,290.00
Total number of acres that can be irrigated	9,023.00

CROP REPORT

Alfalfa	3,185 acres
Natural Grasses	134 acres
Cereals	1,464 acres
Orchards	219 acres
Gardens	5 acres
Potatoes	43 acres
Sugar Beets	4 acres
Pasture	98 acres
Other Crops	138 acres
Total	5,290 acres

CHAPTER VI

EVAPORATION LOSSES FROM STREAM-BED RESERVOIRS.

The present State Engineer feels that the existing method of administering the rights of stream-bed reservoirs during the periods of non-storage is fundamentally wrong, and works an injustice on all ditches deriving their supply from this stream during this non-storage period.

At present a stream-bed reservoir is ordered not to store after a given date. From this time on, until the non-storage period ends, this reservoir is required to keep its gage height constant, except insofar as use of stored water is made from the reservoir in question. Undoubtedly this means that the reservoir, during its non-storage period, takes from the stream in question the quantity of water that is evaporated from its exposed surface. It is self-evident that all off-stream reservoirs must on account of their location, stand their evaporation losses during the non-storage period. When an off-stream reservoir is ordered not to store water, its inlet ditch is closed and no supply of water does or can go to offset the evaporation losses.

For the purpose of illustrating the question before us it may be well to give at this time the results of estimates which have been prepared to determine evaporation losses from Antero Reservoir and Prewitt Reservoir. The former is a stream-bed reservoir, located on the South Fork of the South Platte River, in Water District No. 23. The Prewitt Reservoir is not a stream-bed reservoir, and is located in Water District No. 64.

Since May, 1909, at which time the Antero Reservoir began storing the waters of the South Fork of the South Platte River, until January, 1917, a careful detailed estimate has been made of the evaporation losses sustained by this reservoir. This estimate shows that during this period a total of 56,000 acre feet of water was lost from the Antero Reservoir by evaporation.

An estimate prepared to determine the evaporation losses from the Prewitt Reservoir, covering the period from December, 1912, to October, 1915, shows that there was, during these thirty-five months, a total of 16,219 acre feet evaporated. These estimated losses in particular instances are only cited at this time to show that the problem is an important one, and should receive the serious consideration of the State Engineer in the administration of stream-bed reservoirs.

Assuming for the purpose of illustrating at this time that there is a stream-bed reservoir located on the headwaters of a stream which is fully appropriated during the growing season. This reservoir receives non-storage orders on May 1, and from that date until October 1 is not permitted to store any of the waters of

the stream in question. Assuming that this reservoir loses from its exposed water surface during a year 8,000 acre feet by evaporation, there would be, during the months of May to September, inclusive, five per cent of the total annual evaporation losses sustained, giving 5,200 acre feet as the evaporation loss during the growing season. During this period the direct right ditches deriving their supply from the stream in question have been deprived of 5,200 acre feet of water, assuming that there has not been at all time a sufficient quantity of water in the stream to supply the demands of the direct right ditches.

The present State Engineer feels that in justice to these direct right ditches, the stream-bed reservoirs should be charged with their evaporation losses during the period of non-storage, and that these reservoirs should be administered in such manner as to deduct evaporation losses during the non-storage period from the reservoir in question. It does not seem that it would be a very difficult matter to administer, for these stream-bed reservoirs could be required to lower their gage rods during the non-storage period a definite amount each week. This amount varies, of course, at different periods of the year, and on account of the variation which obtains in the rate of evaporation from a free water surface, due to local conditions and effecting factors, this amount would not be the same for the same month in different years. However, an average depth of evaporation for similar months could be adopted, and the variation from this average would in no instance work a hardship on either the reservoir or the direct right ditches.

With this problem in mind the present State Engineer undertook to compile and digest all of the available evaporation data which was a matter of published record. Compilation of all the existing data was undertaken and an attempt made to obtain a conservative figure for the annual depth of evaporation from a free water surface, which would be applicable to average conditions in Colorado.

In investigations of evaporation data quite a diversity of opinion is expressed by those conducting or reporting on the evaporation experiments. Many evaporation records vary to such an extent among themselves, even when the local conditions appear to be quite consistent and uniform, that one wonders just what data should be accepted and what discarded. It is axiomatic that the depth of evaporation from a water surface depends upon several different, definite factors. The relative temperature of the air and the water adjacent thereto is one of the important factors. The humidity of the air adjacent to the water surface affects materially the rate of evaporation. The dryer the air adjacent to the evaporating surface, the less will be the vapor pressure, and, consequently, an increased rate of evaporation will result. A most important factor affecting the rate of evaporation is the total wind movement across the evaporating surface. If the layer of air immediately adjacent to the water surface from which evap-

oration is taking place is changed continually, and a dryer air takes the place of the air which has in part received some of the moisture evaporated from the water surface, it is quite evident that a larger total loss by evaporation will be sustained from the water surface.

Two general plans have been followed in determining the loss from water surfaces by evaporation. The more common method has been what is known as the "land pan" observations, and the other and more desirable method the "floating pan" observations. The practical difficulty which must be contended with whenever the floating pan method is adopted probably accounts for the larger number of land pan evaporation records that are available.

Experiments have been conducted to determine the relation that exists between the loss in depth by evaporation from land pans and floating pans. At first thought it would seem probable that such experiments would indicate that the depth of evaporation from land pans would be greater than that from a floating pan in the same locality and under the same conditions. This does not seem to be the case, as has been found in digesting the available evaporation data. Some experiments have determined that the loss by evaporation from a floating pan was eighty per cent of the loss from a land pan. Others have arrived at results practically opposite.

Considering the various factors which affect the rate of evaporation, it does not seem probable that under the same and similar conditions the evaporation from a water surface, as that of a reservoir, can be greater than the evaporation from a land pan. The layer of air in contact with the water surface of the land pan certainly changes more rapidly and dryer air comes in contact with the evaporating surface than is possible if this water surface is larger, as that of a reservoir. Again, the temperature of the water in a land pan, on account of its small volume, is higher during those seasons of the year when the rate of evaporation is greater. Since the relative temperatures of the water and layer of air adjacent thereto, the total amount of wind movement and the humidity of this air, are the important factors affecting the rate of evaporation, and, since these factors all tend towards an increased rate when considered with the land pan, it is logical and is believed that the amount of evaporation from a free water surface, as that of a lake, is less than the evaporation from a land pan under similar conditions.

The relative loss by evaporation from a free water surface and the loss as measured in a pan floating thereon, has been experimented upon and discussed by different observers. Here again a diversity of opinion exists. There are, of course, practical difficulties incident to the installation and measurement of evaporation loss from floating pans. If the floating pan is installed in a protected part of the reservoir, the difference in local conditions may result in the floating pan evaporation loss being materially different than that from the free water surface of the entire reservoir.

It is not believed that it is probable or possible for the depth of evaporation loss from a floating pan to be materially different than the loss from the reservoir surface on which this pan floats. Unless there is some particular local condition affecting the pan in question which does not affect the reservoir surface, the two depths should be substantially the same.

The relative location of mountain ranges and their relation with reference to a reservoir may reduce the total annual evaporation loss from a water surface, by reducing the total amount of wind movement. A lower mean annual temperature obtains at higher altitudes, and for this reason the evaporation loss from a reservoir at a higher altitude would be less than from a similar reservoir located at a lower altitude.

However, high altitudes tend to increase the rate of evaporation on account of a reduction in atmospheric pressure and a relatively dryer atmosphere. In some instances certain reservoirs at high altitudes have a larger total wind movement than many plains reservoirs. Considering all of these different points objections can in each instance be made to applying any particular set of evaporation records to any other conditions except those under which they were obtained.

It is realized that with the stream-bed reservoir problem before the State Engineer, it would be of considerable importance and of vast assistance if there were available the results of evaporation experiments conducted on reservoirs in the State of Colorado. It is hoped that some of these experiments will be inaugurated on several reservoirs in this state in the near future. However, the conditions existing at this time must be met, and such records as are available must be used, digested and applied until such time as additional data is available.

There is available in the State Engineer's office a compilation of all of the evaporation data which it was possible to obtain from published records. In each instance the source of the compiled information has been given, so that it is possible for those interested to consult the original source of the information.

Table I has been compiled, using available evaporation records. In this table the location of the experiment and the source of information is given, and the monthly percentage of the total annual evaporation is entered under the column heading of the observation, and opposite the respective month. At the bottom of this table additional information is given, the method of conducting the experiment, the total annual depth of evaporation in inches, and the approximate altitude of the station where the observation was conducted. Table I contains data from fifty-two different stations scattered throughout the United States. This table was compiled for the purpose of obtaining a safe average monthly percentage of the total annual evaporation loss.

TABLE I

MONTHLY PERCENTAGES OF EVAPORATION AT VARIOUS STATIONS THROUGHOUT THE UNITED STATES.

Month	Lake Tahoe, Cal. Eng. News, Vol. 67, Page 380. 1889-1907.	Santa Clara Valley, Cal. Eng. News, Vol. 60, Page 380. 1904-05.	Salton Sea. Eng. News, Vol. 60, Page 163. 1907-08.	Kingsburgh, Cal. Eng. News, Vol. 60, Page 163. Nov., 1881, Oct., 1885.	Queen Reservoir, Great Plains Storage System. 1903-4.	Nebraska. Principles of Irr. Eng. Newell & Murphy, Page 176.	Idaho. Principles of Irr. Eng. Newell & Murphy, Page 176.	Oregon. Principles of Irr. Eng. Newell & Murphy, Page 176.	Lake Tahoe. Principles of Irr. Eng. Newell & Murphy, Page 176.
January	4	2	2.98	1.67	6.79	2.67	1.90	0.94	3.76
February	3	2	3.59	2.26	6.04	2.67	2.85	2.34	3.76
March	4	5	4.07	5.15	8.36	4.57	5.06	6.69	3.76
April	6	7	7.00	5.65	9.35	6.85	9.18	12.42	4.29
May	8	10	11.55	8.56	8.78	9.52	13.51	13.37	6.44
June	11	14	12.03	13.56	8.61	12.25	14.00	13.08	10.72
July	14	17	11.23	17.03	16.18	16.67	14.12	14.98	13.92
August	16	16	8.62	18.46	13.56	14.29	14.89	17.22	15.90
September	13	14	15.20	13.64	10.22	11.32	12.33	11.47	16.62
October	10	7	9.29	7.27	7.62	8.52	6.84	4.68	9.29
November	7	4	8.78	4.32	3.26	6.10	3.42	1.87	6.71
December	4	2	5.71	2.43	1.24	4.57	1.90	0.94	4.83
Total	100	100	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Yearly Evaporation, Inches	.....	.....	73.64	49.11	66.26	65.67	79.00	53.45	46.62
Method		Floating Ground		Floating Ground	Floating	Ground	Ground	Floating	Ground
Altitude	6,225	6,769	—263'		4,000	4,000	2,739 Boise	4,100 Kalamath Falls	6,225

TABLE I—Continued.

MONTHLY PERCENTAGES OF EVAPORATION AT VARIOUS STATIONS THROUGHOUT THE UNITED STATES.

Month	Nevada, Principles of Irr. Eng. Newell & Murphy, Page 176.	Washington. Principles of Irr. Eng. Newell & Murphy, Page 176.	New Mexico. Principles of Irr. Eng. Newell & Murphy, Page 176.	Arizona. Principles of Irr. Eng. Newell & Murphy, Page 176.	Ft. Bliss, near El Paso, Tex. 11th Annual U. S. G. S., Page 34. 1889.	Arrowhead Reservoir, Little Bear Valley, Cal. Elev. 5,160 ft. North of San Diego. By H. B. Hedges, C.E. 1895-1897.	Sweetwater Reservoir, near San Diego, Cal. Elev. 220 ft. Bull. 45, Colo. State Agri. College. By H. N. Savage. 1889-92-97.	Chico, Cal. Bulletin 177, United States Department of Agriculture. 1904-05.	Berkley, Cal. Bulletin 177, United States Department of Agriculture. 1904-05.
January	3.26	2.57	2.88	3.99	2,37	0.84	4.01	0.56	2.50
February	3.26	3.68	3.16	4.12	2.37	1.35	3.37	2.11	3.39
March	4.20	9.19	5.18	5.43	8.29	2.63	5.38	4.52	5.26
April	6.06	11.62	9.20	7.82	8.65	10.52	8.33	7.18	7.83
May	9.79	12.30	13.23	10.00	12.92	10.98	9.45	11.49	11.72
June	14.65	13.10	15.46	11.70	12.68	16.39	16.68	14.66	14.16
July	18.37	15.84	13.30	12.37	11.37	16.15	12.58	16.98	13.75
August	16.20	13.82	12.05	12.36	13.51	14.36	12.96	15.96	12.70
September	9.57	8.11	9.87	11.95	10.89	11.98	10.92	11.42	11.60
October	6.25	4.63	7.78	9.82	8.06	9.25	9.69	7.34	8.88
November	4.66	2.93	4.44	6.41	5.45	3.17	7.65	5.48	5.14
December	3.73	2.21	3.45	4.03	3.44	2.38	4.03	2.30	3.07
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Yearly Evaporation, Inches	53.65	67.98	86.95	115.18	84.40	39.15	59.07	54.00	40.10
Method	Floating	Ground	Ground	Ground	Floating	Floating	Floating		
Altitude	3,965	1,070	4,200	1,325	3.874	5.160	220	189	317

TABLE I—Continued.

MONTHLY PERCENTAGES OF EVAPORATION AT VARIOUS STATIONS THROUGHOUT THE UNITED STATES.

Month	Tulare, Cal. United States Bulletin 177, Department of Agriculture. 1903-04-05.	Pomona, Cal. United States Bulletin 177, Department of Agriculture. 1903-04-05.	Calexico, Cal. United States Bulletin 177, Department of Agriculture. 1903-04-05.	Chestnut Hill Reservoir. Boston Water Works 10 yr. Public Water Supplies, Turneaure & Russel.	Mt. Hooper Reservoir. Rochester, N. Y. Water Works 2 to 8 yrs. Public Water Supplies, Turneaure & Russel.	California, O. Working Data For Irrigation Engineers, Moritz.	Birmingham, Ala. Working Data For Irrigation Engineers, Moritz.	Birmingham, Ala. Working Data For Irrigation Engineers, Moritz.	Minidoka Dam, Idaho. Working Data For Irrigation Engineers, Moritz.
January	2.07	3.63	3.85	2.45	1.51	2.18	2.92	2.88	2.33
February	3.88	3.25	4.36	2.68	1.56	3.26	2.92	2.88	2.59
March	4.75	5.71	7.19	4.34	3.86	5.44	4.38	4.32	4.14
April	5.64	6.99	7.72	7.58	7.59	8.97	8.67	10.27	7.25
May	10.45	9.61	10.42	11.38	11.37	11.02	11.50	12.20	11.62
June	14.87	12.25	14.48	14.13	14.30	13.50	14.18	14.45	12.75
July	16.50	14.02	13.47	15.26	15.83	15.65	14.34	13.35	15.54
August	15.10	14.24	11.62	14.02	15.35	15.78	14.30	14.03	13.98
September	11.32	10.77	9.62	10.50	12.01	12.24	11.69	10.73	11.40
October	7.27	8.87	8.30	8.05	9.15	6.52	7.80	7.69	8.81
November	5.32	6.34	4.85	5.74	4.20	3.26	4.38	4.32	5.96
December	2.83	4.32	4.12	3.86	3.27	2.18	2.92	2.88	3.63
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Yearly Evaporation, Inches	70.58	64.95	92.48	39.20	34.54	45.99	51.34	52.13	96.52
Method	.....	.....	.....	Floating	Floating	Floating	Floating	Floating	
Altitude	287	861	0	124	200	492	600	600	4,225

TABLE I—Continued.

MONTHLY PERCENTAGES OF EVAPORATION AT VARIOUS STATIONS THROUGHOUT THE UNITED STATES.

Month	Lake Kachess, Wash. Working Data for Irrigation Engineers. Moritz.	Deer Flat, Idaho. Working Data for Irrigation Engineers. Moritz.	Lake Tahoe, Cal. Working Data for Irrigation Engineers. Moritz.	Carlsbad, N. M., Reclamation Office. Working Data for Irrigation Engineers. Moritz.	Carlsbad, N. M., Alfalfa Field Near. Working Data for Irrigation Engineers. Moritz.	Lake Avalon, N. M. Working Data for Irrigation Engineers. Moritz.	Fort Bliss, Tex. 14th Annual Report U. S. G. S., Part II, Page 154. 1889-93.	Chestnut Hill Reservoir. Proceedings Inst. of C. E., Vol. LXXXIII, 1886-87, Part II.	Lakes Near Ft. Collins, Colo. Bulletin 45 Colo. State Agricultural College. 1889-90-96-97.
January	1.52	2.59	4.15	4.67	5.30	4.75	3.32	2.51	2.52
February	1.52	3.55	4.15	5.12	5.57	4.75	3.75	2.58	3.36
March	3.82	5.49	4.15	8.33	9.48	5.82	6.54	3.71	5.88
April	7.85	7.75	4.74	10.90	11.76	7.87	9.17	6.11	8.41
May	11.68	10.20	7.11	11.98	11.60	10.68	12.30	9.76	10.93
June	16.91	12.38	10.06	11.56	9.60	11.66	13.74	13.65	13.44
July	18.12	13.70	14.67	11.18	11.21	13.58	12.30	15.87	15.96
August	16.82	15.70	16.76	10.30	9.88	12.67	12.00	15.26	14.28
September	13.46	11.94	14.73	9.10	8.32	10.02	10.70	12:42	10.93
October	4.49	6.98	8.53	7.07	6.23	7.38	7.92	8.87	7.57
November	2.29	7.13	6.21	5.12	5.75	6.07	4.83	5.73	4.20
December	1.52	2.59	4.74	4.67	5.30	4.75	3.43	3.53	2.52
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Yearly Evaporation, Inches	32.76	77.43	42.21	107.25	94.35	94.76	95.91	39.12	59.50
Method	.....	Raft	.....	Ground	Ground	Floating	Floating	Floating	Floating
Altitude	2,235	2,739 Boise	6,225	3,102	3,102		3,874	124	5,000

TABLE I—Continued.

MONTHLY PERCENTAGES OF EVAPORATION AT VARIOUS STATIONS THROUGHOUT THE UNITED STATES.

Month	Salton Sea. 1,500 ft. Inland. Working Data for Irrigation Engineers. Moritz.	Salton Sea. 500 ft. at Sea. Working Data for Irrigation Engineers. Moritz.	Salton Sea. 7,500 ft. at Sea. Working Data for Irrigation Engineers. Moritz.	Indio, Cal. Working Data for Irrigation Engineers. Moritz.	Mecca, Cal. Working Data for Irrigation Engineers. Moritz.	Brawley, Cal. Working Data for Irrigation Engineers. Moritz.	Mammoth, Cal. Working Data for Irrigation Engineers. Moritz.	Hermiston, Ore. Working Data for Irrigation Engineers. Moritz.	Hermiston, Ore. Working Data for Irrigation Engineers. Moritz.
January	3.09	3.32	3.20	2.67	2.71	2.95	3.38	1.84	1.54
February	4.51	4.61	4.78	4.27	4.64	4.83	4.52	1.84	1.80
March	7.60	6.21	6.53	6.28	7.49	7.72	7.16	4.41	4.37
April	9.58	8.27	8.22	10.11	10.07	10.37	9.58	10.69	9.54
May	11.55	10.13	9.88	13.28	11.80	13.31	12.37	11.59	11.70
June	13.07	12.42	12.21	13.50	13.20	13.22	13.34	14.01	14.23
July	13.46	13.60	13.18	13.69	14.11	13.65	14.33	17.70	17.96
August	11.24	11.54	11.44	11.54	12.26	10.87	10.94	16.26	17.36
September	9.43	11.41	11.34	10.35	9.55	9.81	9.68	10.80	10.37
October	8.02	8.47	8.68	7.46	7.58	6.75	7.56	5.71	6.25
November	4.55	5.72	5.60	4.34	3.83	3.95	4.19	2.94	3.08
December	3.90	4.30	4.94	2.51	2.76	2.57	2.95	2.21	1.80
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Yearly Evaporation, Inches	164.50	108.65	106.45	119.33	107.81	103.55	125.53	68.05	97.29
Method	Ground	Floating	Floating	Ground	Ground	Ground	Ground	Raft	Ground
Altitude	263	263	263	20	185	105	257	451	451

TABLE I—Concluded

MONTHLY PERCENTAGES OF EVAPORATION AT VARIOUS STATIONS THROUGHOUT THE UNITED STATES.

Month	Granite Reef, Ariz. Working Data for Irrigation Engineers. Moritz.	San Antonio, Tex. Robert Follansbee, U. S. G. S. 6 Years.	Austin, Tex. Robert Follansbee, U. S. G. S. 1 Year.	Phoenix, Ariz. Robert Follansbee, U. S. G. S. 1 Year.	Dutch Flats, Neb. Pub. U. S. W. B. 1910.	North Platte Project, Neb. U. S. R. S. 1909-1914, Incl.	Ft. Collins, Colo. Agricultural College. 1887-1911.	Total Months.	Monthly Mean Percentage.
January	4.35	4.06	4.95	2.69	2.32	2.73	3.18	153.77	2.96
February	4.50	4.66	3.38	3.98	2.61	3.27	3.89	179.14	3.44
March	5.37	6.98	5.15	6.08	4.05	3.99	7.04	290.47	5.59
April	7.17	7.93	6.03	8.74	6.95	8.72	10.42	432.58	8.32
May	9.73	9.88	9.23	12.61	9.83	11.97	11.29	567.57	10.91
June	12.28	12.52	15.63	14.35	12.70	15.25	13.12	686.69	13.20
July	13.04	12.95	14.40	17.21	16.98	15.78	13.64	762.07	14.66
August	12.78	14.00	16.84	9.98	14.66	13.78	12.23	718.67	13.82
September	11.25	10.89	13.13	10.77	11.52	10.34	10.51	587.16	11.29
October	8.50	7.80	5.62	7.33	8.82	7.08	8.12	399.47	7.68
November	6.71	4.74	2.97	3.13	6.08	4.36	3.77	252.48	4.86
December	4.32	3.55	2.67	3.13	3.48	2.73	2.79	169.93	3.27
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	5,200.00	100.00
Yearly Evaporation, Inches	97.74	67.07	50.92	65.63	86.38	55.10	40.90		
Method	Floating	Ground	Floating			Ground	Ground		
Altitude	1,325	701	650	1,108	4,000	4,000	4,985		

While it is realized that numerous experiments have been included in Table I which were conducted at localities and under conditions not in any manner comparable with those existing at the sites of most reservoirs in Colorado, yet it is believed that the method used in compiling this table is reasonable, and that a safe and usable monthly percentage can be obtained by combining the data given in this table. It is felt that the method used is more desirable than to obtain monthly percentages of loss from a few experiments conducted for shorter periods of time, even when such experiments or observations were made under local conditions which could be favorably compared with the particular reservoir under consideration. Each experiment, when considered by itself, with monthly percentages available, expresses relatively the variation which takes place in the rate of evaporation during the twelve month period. If the mean monthly percentage, obtained at the end of Table I is compared with the monthly percentages of each separate observation, it will be noted that in practically no case is there any considerable difference existing between the mean obtained and the particular monthly percentage of the individual experiment.

TABLE II

FLOATING-PAN EVAPORATION—INCHES.

Loocation	Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
C. F. & I. Res. No. 2.....	1908	*1.83	*2.13	*3.46	*5.15	*6.75	*8.15	8.06	8.04	8.75	4.91	3.24	1.38
C. F. & I. Res. No. 2.....	1909	1.87	1.13	3.22	4.27	5.43	7.52	9.73	5.62	7.20	5.48	*2.72	*1.83
C. F. & I. Res. No. 3.....	1908	*1.93	*2.24	*3.65	*5.43	*7.12	*8.61	7.59	8.05	10.27	4.96	3.24	*2.13
C. F. & I. Res. No. 3.....	1909	*1.79	*2.08	*3.38	*5.02	*6.58	8.01	9.77	8.02	7.67	4.65	1.44	*1.97
Queen Res. near Lamar	1903	*1.45	*1.68	*2.74	*4.07	4.25	3.00	9.75	7.00	7.00	5.05	2.15	0.82
Queen Res. near Lamar	1904	4.50	4.00	5.54	6.20	7.38	8.40	11.68	10.97	6.57	*5.95	*3.77	*2.53
Warrens Lake, Colorado	1889	*1.78	*2.07	*3.37	*5.01	*6.57	*7.95	7.37	*8.32	7.25	5.61	*2.93	*1.97
Warrens Lake, Colorado	1890	*1.39	*1.62	*2.63	*3.92	*5.22	*6.22	*6.90	8.93	4.81	1.62	*2.29	*1.54
Lee Lake, Colorado.....	1896	*1.57	*1.82	*2.96	*4.40	*5.78	6.36	9.11	7.25	5.20	4.17	*2.57	*1.73
Lee Lake, Colorado.....	1897	*1.82	*2.11	*3.44	*5.12	4.31	9.55	8.53	8.61	8.40	4.60	*2.99	*2.01
Loomis Lake, Colorado..	1897	*2.04	*2.38	*3.86	*5.75	7.89	7.91	11.87	9.02	*7.79	4.89	*3.36	*2.26
Claymore Lake, Colorado	1897	*1.39	*1.62	*2.63	*3.93	5.22	*6.22	*6.90	8.93	4.81	1.62	*2.29	*1.54
Pathfinder, Wyoming	1914	*2.23	*2.59	*4.20	*6.26	6.55	10.28	12.01	10.95	8.76	4.44	4.50	*2.46
Pathfinder, Wyoming	1915	*1.44	*1.67	*2.71	6.77	6.02	8.28	9.87	8.94	6.38	5.47	*2.36	*1.59
Total		27.03	29.14	47.79	71.29	85.07	106.46	129.14	118.86	100.86	63.42	39.85	25.76
Mean		1.93	2.08	3.41	5.09	6.08	7.60	9.22	8.48	7.20	4.53	2.85	1.84
Monthly per cent.....		3.20	3.45	5.65	8.45	10.08	12.60	15.28	14.06	11.93	7.52	4.73	3.05

Total of Means, 60.31. Total of Monthly per cent., 100.00. *Deduced by table of monthly percentages.

Table II is a compilation of available evaporation data, which it is believed can be consistently compared with Colorado conditions existing at the sites of the reservoirs in this state. The Colorado Fuel and Iron Company Reservoir experiments were conducted by Mr. A. A. Weiland, and these reservoirs are located in the Arkansas Valley near Pueblo. The Queen Reservoir is located in the lower Arkansas Valley, and no detailed information is available as to the particular methods adopted for the conduct of these experiments. The Warren, Lee, Loomis and Clayborn Lake experiments were conducted by Prof. L. G. Carpenter, and all of these reservoirs are in the vicinity of Fort Collins. The Pathfinder experiments were conducted by the U. S. Reclamation Service. The broken records available have been completed by deducing the monthly loss in inches by applying the mean monthly percentage obtained from Table I. Table II gives a total mean annual evaporation loss of 60.31 inches, and, in view of the data available it is believed that this amount of gross evaporation loss is the best estimate which can be prepared at this time.

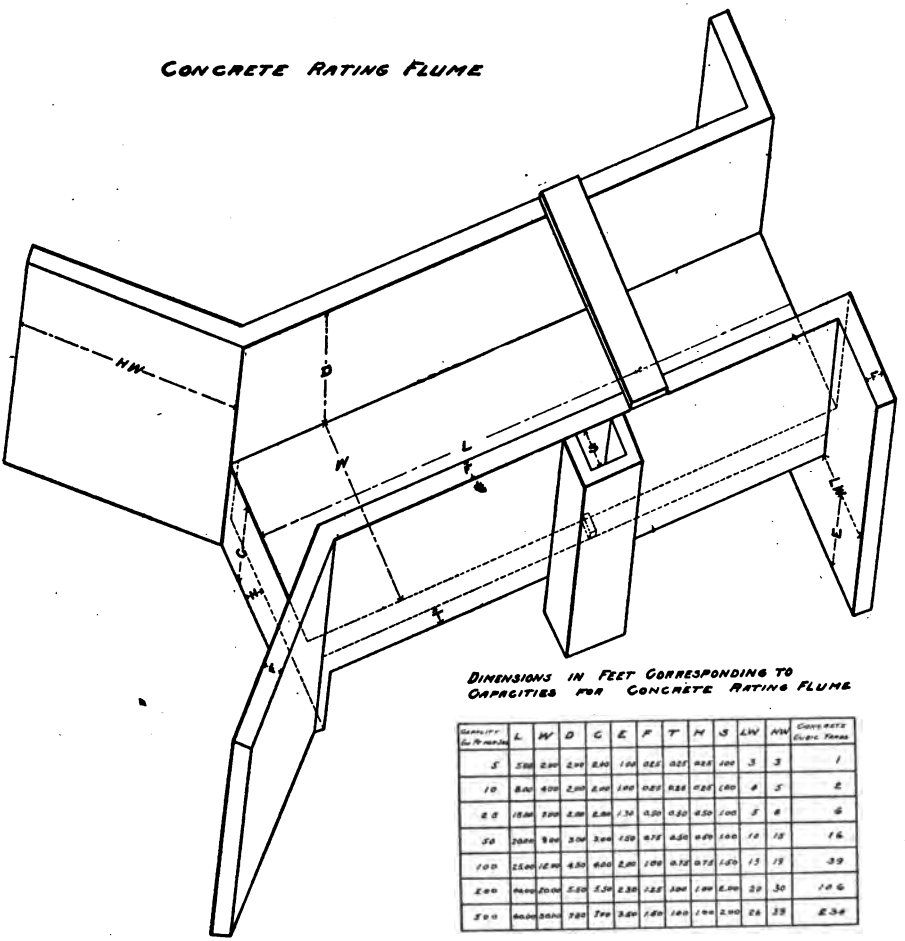
For all practical purposes it could be said that under average conditions a reservoir in the state of Colorado would lose a depth of sixty inches per annum; that of this sixty inches the depth lost in any particular month can be obtained by applying the percentages in Table I.

During these periods of the year when a stream-bed reservoir is not permitted to store, it is not entirely practicable and possible to administer this reservoir in such manner that its gage rod would be lowered a certain amount each week during the non-storage period? For example: If the annual evaporation loss is five feet per annum, during the month of July the gage rod of any stream-bed reservoir should be decreased 8.80 inches; and during any week of this month this gage rod would be lowered 2.2 inches, or at the rate of 0.284 inches per day.

It is believed that the direct right ditches on streams of this state should not be deprived of water to which they were entitled and had prior to the time of construction of a stream-bed reservoir, which reservoir now takes from the stream an amount of water sufficient to make up its evaporation losses.

This problem is becoming, and in some instances is already a vital one, and it is believed that the only equitable method of administering a stream-bed reservoir during the period of non-storage is to charge the reservoir in question its evaporation losses, and make weekly deductions from the gage rod to compensate for these losses.

CONCRETE RATING FLUME



DIMENSIONS IN FEET CORRESPONDING TO CAPACITIES FOR CONCRETE RATING FLUME

Capacity in Second Feet	L	W	D	C	E	F	T	H	S	LW	HW	Concrete Cubic Yards
5	5.00	2.00	2.00	2.00	1.00	0.25	0.25	0.25	1.00	3	3	1
10	8.00	4.00	2.00	2.00	1.00	0.25	0.25	0.25	1.00	4	5	2
25	15.00	7.00	2.00	2.00	1.50	0.50	0.50	0.50	1.00	5	6	6
50	20.00	9.00	3.00	3.00	1.50	0.75	0.50	0.50	1.00	12	13	16
100	25.00	12.00	4.50	4.00	2.00	1.00	0.50	0.75	1.50	13	19	39
200	40.00	20.00	5.50	5.50	2.50	1.25	1.00	1.00	2.00	20	30	104
500	60.00	30.00	7.00	7.00	3.50	1.50	1.00	1.00	2.00	26	39	234

CHAPTER VII

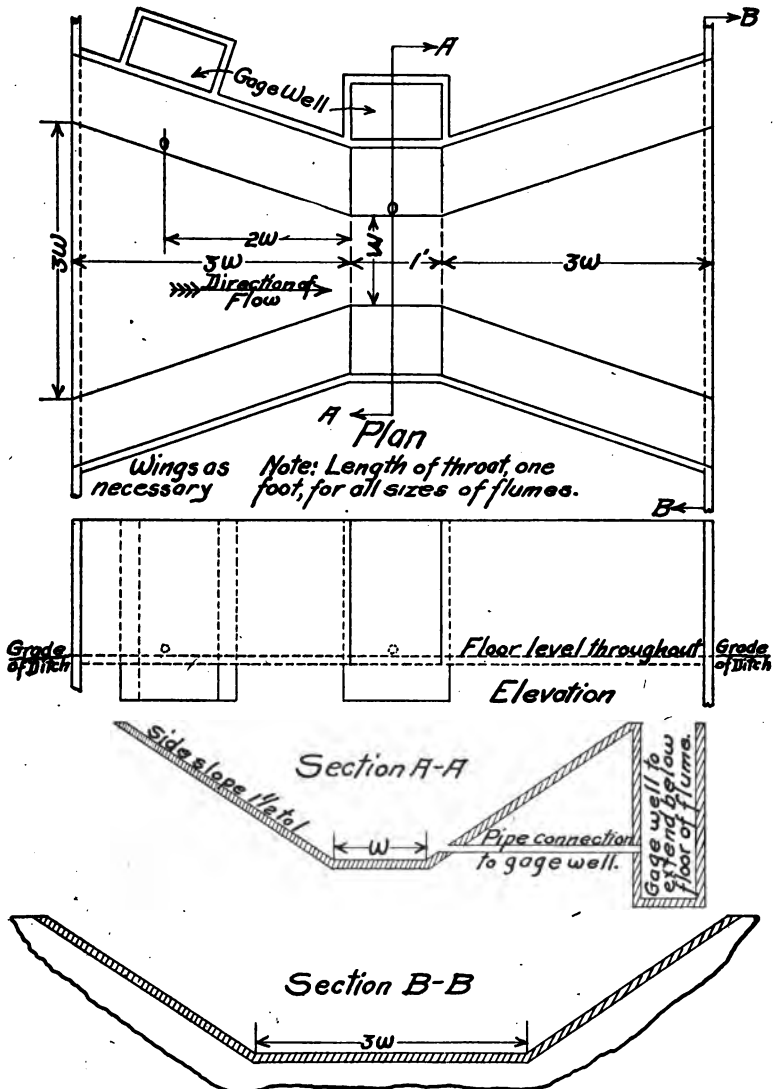
THE VENTURI FLUME

By V. M. Cone

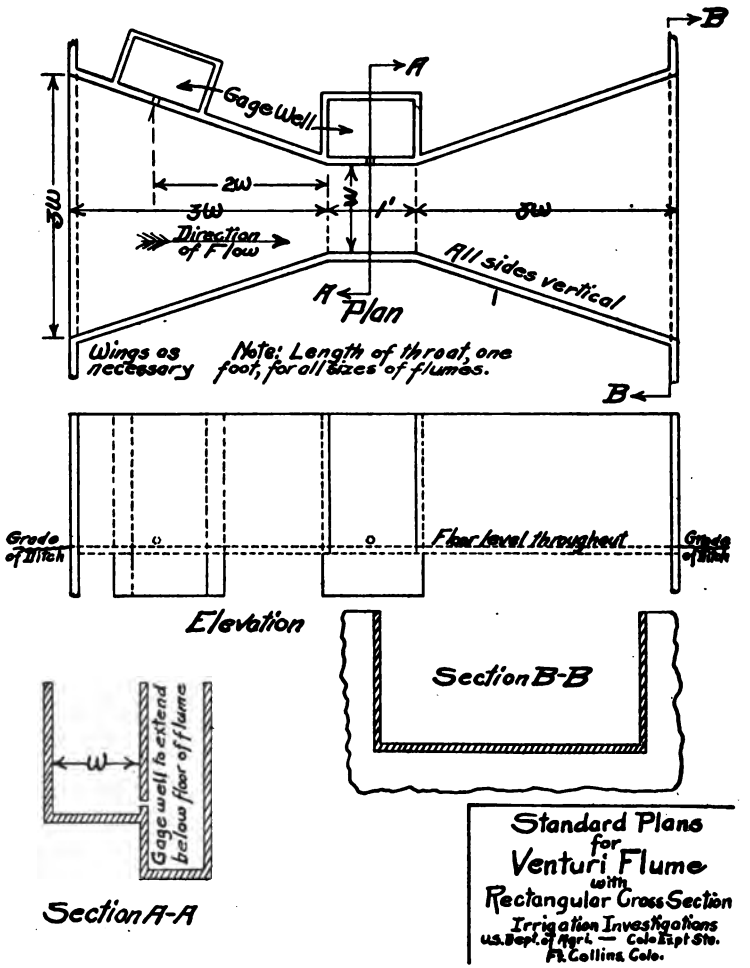
Although there are many devices for the measurement of irrigation water, none of them meets all field conditions equally well, The ideal measuring device would be (1) inexpensive to construct, (2) simple to operate, (3) require little maintenance, (4) free from working parts, (5) accurate in its measurement, (6) free from sand, silt or floating trash troubles, and (7) require little loss of head in the ditch. It is almost too much to expect that any one device will successfully meet all these conditions, especially for both large and small ditches, but it is believed that the Venturi Flume is an advance step in the right direction. It is the purpose of this article to present some of the fundamental plans and results of preliminary experiments on this new type of device for measuring the flow in open channels, in order that those in practical need of such a device may know of its existence. Furthermore, it is hoped that the construction of sizes of Venturi Flumes larger than were tested in the laboratory will be encouraged thereby and they can be calibrated.

The Venturi Flume was developed in the hydraulic laboratory at Fort Collins, Colorado, during the season of 1915, under a co-operative agreement between the Colorado Experiment Station and the U. S. Department of Agriculture. As shown in the plans, Figures 1 and 2, it consists essentially of a flume with a converging and a diverging section and a short "throat" section between them. The floor is level and placed at the elevation of the bottom of the channel in which it is set. The standards shown in the plans were chosen after many experiments had been made, and were adopted as most nearly meeting practical requirements.

As the water flows through the flume there is a slight surface slope in the converging section, a rather sudden depression in the "throat" section, and a rise in the diverging section. The actual loss of head is small. The determination of the flow is obtained from readings of two gages, one of which has been placed in the middle of the throat section and the other has been arbitrarily located upstream from the start of the throat a distance equal to two-thirds the length of the converging section. The zero of these gages must be at the elevation of the floor of the flume, and it is especially important that the zero of the two gages be at exactly the same elevation. An error in placing the gages will make all discharge measurements in error, and it is especially serious in the difference in heads. H_d, which is a more important factor in determining the flow than the depths of water in the channel, H_a or H_b.



Standard Plans for Venturi Flume
Trapezoidal Cross Section
U.S. Dept. of Agri. — Irrigation Investigations — Colo. Expt. Sta.
Ft. Collins, Colo.

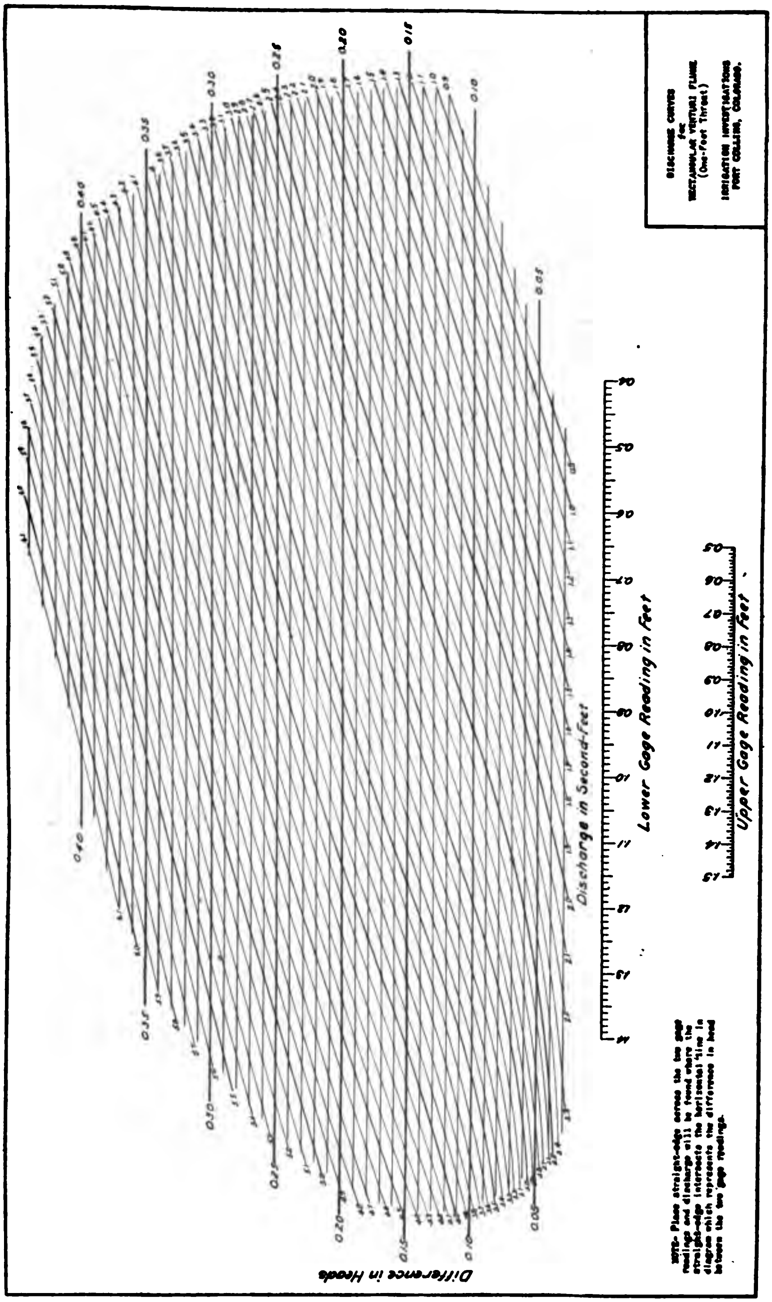

B
A
Gage Well
2w
3w
3w
1'
3w
3w
Direction of Flow
All sides vertical
A
Plan
Wings as necessary
Note: Length of throat, one foot, for all sizes of flumes.
B
Grade of Ditch
Floor level throughout
Grade of Ditch
Elevation
Section B-B
w
Gage well to extend below floor of flume
Section A-A
Standard Plans for Venturi Flume with Rectangular Cross Section
Irrigation Investigations
U.S. Dept. of Agri. — Colo. Expt Sta.
Ft. Collins, Colo.

Still-boxes, or gage-wells, are necessary for accurate readings of the water level, and are recommended for general use. Field tests have shown that readings taken to the nearest one-hundredth of a foot on staff gages placed inside the flume at the proper locations, but with the face of the gages countersunk flush with the surface of the side of the flume, will give results close enough for general purposes, but additional tests in the laboratory have shown that such staff gage readings do not agree with the readings taken in the still-wells when there is enough fall in the ditch to make a comparatively high velocity of flow through the flume. Until more is known about this point, it will be safest to use still-wells.

Instrument makers are at work on an automatic register to give a continuous record of the two gage heights on a single sheet.

The effect of velocity of approach seems to be automatically taken care of in the Venturi Flume, and all field tests indicate that it will be free from changes in indicated discharge due to weed growth, accumulations of sand or silt in the ditch, or other changes in the ditch section. Such changes make the ordinary rating flume unreliable, but results only in changing the relative gage readings of the Venturi Flume without altering the rating of the device. The increased velocity of the water in the flume makes it self-cleaning of sand, silt and floating trash. It must be remembered, however, that the floor of the flume must not be placed below canal grade, which might allow sand and silt to accumulate especially at low velocities, and the standing water in the structure would alter the calibration. It is also important that the size of Venturi Flume be not considerably smaller than the size of the ditch, as this gives an opportunity for silt banks to form at the side of the entrance to the flume.

The Venturi Flume is not an exact measuring device, but it is accurate enough for most irrigation needs. Although only the smaller sizes have been experimented with, it is believed that larger sizes built according to the general plans will be applicable to use in main canals, and when properly constructed it does not require rating. It is simple to build of lumber or concrete, makes a good connection with concrete canal living, does not obstruct the flow in the ditch, has a comparatively low cost, has no working parts, and is simple to operate.


DISCHARGE CURVES
for
RECTANGULAR VENTURI FLUME
(One-Foot Throat)
IRRIGATION INVESTIGATIONS
FORT COLLINS, COLORADO.
Discharge in Second-Feet
Lower Gage Reading in Feet
Upper Gage Reading in Feet
Difference in Heads
NOTE- Place straight-edge across the two gage readings and discharge will be found where the straight-edge intersects the horizontal line in diagram which represents the difference in head between the two gage readings.

The discharges through Venturi Flumes may be taken from curves as shown in figure 3, which is the flow through the rectangular Venturi Flume with a throat width of 1 foot. Curves have also been prepared to give the discharge through rectangular Venturi Flumes with throat widths of 1½ and 2 feet, but lack of space prevents their being shown here. A special type called the V-Notch Venturi Flume has been devised to measure flows of from 0.1 second-foot to a maximum of 2 or 3 second-feet under practical ditch conditions, and another type having trapezoidal cross-section with side slopes of 1 to 1 and a bottom throat width of 0.5 foot will measure flows of less than 1 second-foot to a maximum of approximately 10 second-feet. The plans and discharge curves for these special types are not shown here.

A public patent has been applied for on the Venturi Flume to insure its use by any one who may want it without payment of royalties. Further experiments and calibrations of larger sizes will be undertaken in the near future and this information will be supplied to those interested upon application to Irrigation Investigations, Experiment Station, Fort Collins, Colorado.

COMPARISON OF VERTICAL INTEGRATION, TWO POINT, AND ONE POINT MEAN VERTICAL VELOCITY METHODS

CANAL		VELOCITY DATA: True Vel* in Feet per Sec	COMPARATIVE ACCURACY OF THREE METHODS: First Method	First %Error	Second Method	Second %Error	Third Method	Third %Error	METHODS COMPARED FROM ERROR IN %: First	Second	Third	MEAN VELOCITY DEPTH	DEPTH OF WATER	DIST. FROM SIDE
⊙	A	7.76	.6	8.0	7-8	9.3						.80	7.70	.71
⊙	A	7.37	7-8	3.8	.6	7.7			V. I.	7-8	.6	.69	7.60	.47
	A	4.08	V. I.	-1.0	.6	7.0	7-8	34				.63	7.30	.37
⊙	B	7.71	7-8	0.8	.6	9.7			7-8	.6		.85	7.40	.30
⊙	B	7.98	7-8	-2.7	.6	5.4						.73	7.40	.41
	C	1.34	V. I.	0.0	7-8	7.2	.6	9.0	V. I.	7-8	.6	.72	7.50	.12
	C	2.24	V. I.	1.8	7-8	6.3	.6	11.6				.67	4.20	.25
	D	7.97	.6	1.7	7-8	4.4	V. I.	5.7	.6	7-8	V. I.	.63	1.90	.35
	E	3.21	V. I.	4.1	7-8	5.9	.6	10.9	V. I.	7-8	.6	.84	1.60	.29
⊙	F	4.10	7-8	5.9	.6	5.9						.71	3.50	.60
⊙	F	3.48	7-8	2.3	.6	12.1			7-8	V. I.	.6	.77	3.50	.20
	F	4.00	7-8	0.3	V. I.	0.6	.6	3.0				.64	3.45	.40
	G	2.77	V. I.	2.5	.6	8.3	7-8	5.4				.70	2.35	.33
	G	3.00	V. I.	2.3	7-8	4.3	.6	4.7	V. I.	.6	7-8	.72	2.65	.44
	G	1.90	V. I.	2.1	.6	5.2	7-8	6.3				.74	1.70	.41
	H	2.62	V. I.	0.8	7-8	2.7	.6	7.6	V. I.	7-8	.6	.85	1.60	.42
	I	2.83	V. I.	1.1	7-8	4.6	.6	8.1	V. I.	7-8	.6	.83	2.10	.25
	J	3.37	7-8	0.0	V-I	3.9	.6	5.6	7-8	V. I.	.6	.80	1.00	.28
⊙	K	2.07	.6	0.5	7-8	14.0			V. I.	.6	7-8	.60	1.40	.48
	K	2.54	V. I.	1.6	7-8	-8.0	.6	15.7				.67	2.60	.52
⊙	L	3.27	.6	7.4	7-8	7.7						.84	2.90	.24
⊙	L	3.29	.6	4.0	7-8	6.1						.83	2.60	.48
⊙	L	2.30	7-8	4.4	.6	12.7			V. I.	7-8	.6	.73	1.50	.44
	L	3.93	V. I.	1.3	7-8	4.1	.6	4.8				.70	2.00	.40
	L	3.39	.6	5.0	7-8	6.2	V. I.	-9.2				.81	2.70	.40
	L	3.00	.6	0.0	V. I.	0.7	7-8	7.3				.60	2.60	.20
	M	2.43	V. I.	-1.2	7-8	2.8	.6	7.0	V-I.	.6	7-8	.70	2.35	.38
	M	1.92	.6	3.1	V. I.	8.3	7-8	9.9				.75	1.60	.44
	N	3.10	.6	-2.6	V. I.	9.0	7-8	10.9	.6	V. I.	7-8	.74	2.70	.50
	O	7.84	7-8	0.7	V. I.	8.5	.6	11.9	7-8	V. I.	.6	.76	0.90	.38
	O	3.06	7-8	1.3	.6	2.0	V. I.	3.3				.63	1.08	.50
	P	1.79	.6	1.7	7-8	3.9	V. I.	6.1	7-8	.6	V. I.	.64	1.95	.33
	P	2.03	7-8	3.9	.6	7.4	V. I.	8.4				.76	1.35	.48
⊙	Q	2.19	7-8	2.3	.6	3.2						.67	3.00	.36
	Q	2.02	V. I.	-1.0	7-8	1.0	.6	3.0	V. I.	7-8	.6	.87	3.00	.45
	Q	2.21	V. I.	-2.3	7-8	3.6	.6	4.5				.71	3.10	.27
	R	2.03	.6	2.5	V. I.	10.3	7-8	11.3	.6	V. I.	7-8	.83	1.80	.31
⊙	S	2.16	.6	0.9	7-8	6.4			.6	7-8		.60	1.60	.43
	T	2.40	7-8	2.9	.6	3.3	V. I.	5.0				.68	3.00	.46
	T	3.18	.6	1.9	V. I.	3.1	7-8	5.7	7-8	.6	V. I.	.80	3.00	.39
	T	1.80	.6	3.3	7-8	6.1	V. I.	10.0				.65	2.60	.15
	T	2.54	7-8	-2.8	V. I.	-4.7	.6	11.4				.71	1.55	.23
	U	2.77	V. I.	-1.1	7-8	3.2	.6	9.1				.75	2.95	.39
	U	2.63	.6	3.4	7-8	5.7	V. I.	11.0	7-8	V. I.	.6	.68	1.85	.39
	U	2.92	7-8	-1.7	V-I.	-5.5	.6	8.2				.75	2.75	.48
	V	2.03	V. I.	0.5	7-8	1.0	.6	4.4	V. I.	.6	7-8	.80	2.60	.26
	V	2.07	.6	0.5	V. I.	4.4	7-8	5.3				.60	2.45	.26
⊙	W	4.09	7-8	0.7	.6	5.7			7-8	.6		.77	1.50	.24
⊙	X	3.20	7-8	0.9	.6	7.5						.73	2.40	.25
⊙	X	3.27	7-8	-2.2	.6	11.2			7-8	V. I.	.6	.67	2.40	.50
	X	2.64	7-8	1.9	.6	10.6	V. I.	12.1				.77	1.10	.37
	X	3.00	V. I.	1.3	7-8	3.0	.6	13.5				.85	2.25	.17
	Y	1.60	.6	0.0	V. I.	3.7	7-8	8.8	.6	V. I.	7-8	.60	2.15	.41
	Z	3.04	7-8	0.7	V. I.	1.3	.6	4.6	7-8	V. I.	7-6	.69	1.30	.45

* Determined from vertical velocity curve.
⊙ Vertical Integration method not used.

	V.I.	7-8	.6
Gross Mean Error%	4.12	4.33	5.95
Net	2.78	3.69	5.84

KEY

A	Amity Canal	F	Catlin Canal	K	Ft. Bent Canal	Q	Las A. Con. Canal	V	Park Center Canal
B	Baca	G	Colorado	L	Ft. Lyon	R	Town	W	Pulaski
C	Bessemer	H	De Weese Dye	M	Holbrook	S	Manvel	X	Rocky Ford
D	C.C.H.& I.	I	Dye Lake	N	"1"	T	Otero	Y	So. Canon
E	C.C.& O.C.	J	Fremont	O	Lamar	U	Ox Farmers'	Z	Union
				P	Sa. Lat.				

CHAPTER VIII.

VERTICAL VELOCITY DETERMINATIONS.

During the irrigation season of 1915 this office made a number of velocity measurements in the various canal rating flumes in the Arkansas Valley to determine the relative accuracy of the three most commonly used methods of determining the mean velocity in a vertical; that is, the Vertical Integration, the Two Point or 0.2—0.8 depth method, and the One Point or 0.6 depth method. These measurements were made under a wide range of conditions, including minimum and maximum depths and velocities.

At the outset, it was assumed that the vertical velocity curve, for the purpose of this determination, gives the correct mean velocity in a vertical and the accuracy of the other three methods was measured by the vertical velocity curve. This curve was determined by making velocity measurements at six point in each vertical; that is, at the surface and bottom and at the 0.2, 0.4, 0.6 and 0.8 depths.

These measurements were made with a Price current meter, the surface measurement being taken at such depth that no ripples existed over the head of the meter. This depth, for the meter in question, is about 0.2 feet. The bottom measurement was taken as near the bottom as is possible with the Price meter and is about 0.1 foot from the floor.

It was found that out of the total of 54 curves, the six points, of 22 of this number, fell at such locations that it was impossible to pass a smooth curve through them without at some point inserting a reverse curve.

In using the Vertical Integration method, the meter was moved slowly from surface to bottom and back again, care being taken to move the meter uniformly throughout the operation.

All measurements were timed for at least 20 seconds.

At the conclusion of these field tests, a curve was platted, as the mean of the 54 individual vertical velocity curves. This curve shows an error of 2.78 per cent for the Vertical Integration method, 3.69 per cent for the 0.2—0.8 method, and 5.84 per cent for the 0.6 method. The mean velocity as shown by this curve is found at 0.735 depth and the maximum velocity at 0.28 depth.

In addition to this eight curves were platted, each one being a mean of individual curves taken under similar conditions. Following is a description of these curves and results obtained from them:

First. A mean of 8 curves, taken at depths of 1.5 feet or less, was platted. This curve shows an error of 3.06 per cent for the 0.2—0.8 method, 6.25 per cent for the Vertical Integration method, and 6.5 per cent for the 0.6 method. The mean velocity was found to be at 0.76 depth and the maximum velocity at 0.37 depth.

Second. A mean of 9 curves, taken at depths of 3 feet and greater, was platted. This curve shows an error of 1.18 per cent for the Vertical Integration method, 3.36 per cent for the 0.2—0.8 method, and 5.43 per cent for the 0.6 method. The mean velocity was found to be at 0.68 depth, and the maximum velocity at 0.3 depth.

Third. A mean of 21 curves, whose mean velocity was 2½ feet per second or less, was platted. This curve shows an error of 3.74 per cent for the Vertical Integration method, 4.57 per cent for the 0.6 method, and 5.74 per cent for the 0.2—0.8 method. The mean velocity was found to be at 0.69 depth, and the maximum velocity at 0.28.

Fourth. A mean of 15 curves, whose mean velocity was 3 feet per second or greater, was platted. This curve shows an error of 1.98 per cent for the Vertical Integration method, 3.67 per cent for the 0.2—0.8 method, and 5.84 per cent for the 0.6 method. The mean velocity was found to be at 0.695 depth, and the maximum velocity at 0.31 depth.

Fifth. A mean of 12 curves taken at a distance from the side of the flume, equal to or less than 25 per cent of the total width of the flume, was platted. This curve shows an error of 1.46 per cent for the Vertical Integration method, 3.55 per cent for the 0.2—0.8 method, and 7.95 per cent for the 0.6 method. The mean velocity was found to be at 0.735 depth, and the maximum velocity at 0.33 depth.

Sixth. A mean of 23 curves, taken near the center of the rating flume, was platted. This curve shows an error of 2.02 per cent for the Vertical Integration method, 4.23 per cent for the 0.2—0.8 method, and 4.55 per cent for the 0.6 method. The mean velocity was found to be 0.74 depth and the maximum velocity at 0.25 depth.

Seventh. A mean of 32 curves, in which no reverse curves were included, was platted. This curve shows an error of 2.65 per cent for the 0.2—0.8 method, 3.27 per cent for the Vertical Integration method, and 6.88 per cent for the 0.6 method. The mean velocity appears at 0.755 depth, and the maximum velocity at 0.28 depth.

Eighth. A mean of 22 reverse curves was platted. This curve shows an error of 2.15 per cent for the Vertical Integration method, 4.3 per cent for the 0.6 method, and 5.2 per cent for the 0.2—0.8 method. The mean velocity was found to be at 0.72 depth, and the maximum velocity at 0.27 depth.

In addition to the results shown by these curves, it was determined that for depths of 1.5 feet or greater, the Vertical Integration method is the most accurate.

On page 144 is given a tabulation which shows a comparison of the three methods, for each canal measured.

Columns 3 to 8, inclusive, show the comparative accuracy of these methods in per cents for each measurement made, arranged in the order of their accuracy.

Columns 9 to 11, inclusive, show the relative accuracy of the three methods in per cents for each canal measured, arranged in the order of their accuracy. The results in these columns were obtained by taking the mean of results indicated in the preceding columns.

By "Gross Mean Error," indicated at the bottom of the tabulation, is meant the arithmetical mean error, and by "Net Mean Error" is meant the algebraical mean error; that is, in the former, no consideration was given to the sign of the result.

Conclusions to be drawn from these tests are:

First. That in general, the Vertical Integration method is most accurate under all conditions, except when the depth is 1.5 foot or less, and that this accuracy increases with the depth. The exception is likely due to the fact that the 0.2 foot at the surface and the 0.1 foot at the floor, of slow water, through which it is impossible to move the meter, make up such a large per cent of the total depth, that this method must give way to the 0.2—0.8 method in point of accuracy.

Second. That under ideal conditions the 0.2—0.8 method is the most accurate, as shown by the seventh curve, wherein all reverse curves have been eliminated.

Third. That if a One Point measurement is to be used as the mean velocity in the vertical, it should be taken a little below the 0.7 depth.

Fourth. That the maximum velocity is found near the 0.3 depth.

Fifth. That the surface velocity is about 75 per cent of the mean velocity.

Sixth. That the tendency of all these methods is to show an exaggerated velocity, as the tabulation shows only 14 instances, out of a possible 147, in which the resulting velocity is less than the mean.

Hydrographic Department

During the biennial period this department has made 330 canal ratings and 900 stream measurements.

In addition to the above, some special investigations have been made on seepage and return water, and loss of water in transit from reservoirs.

To accomplish the work in an efficient and economic manner, hydrographers have been stationed in various districts throughout the state, viz.: Alamosa, Pueblo, Denver, and Steamboat Springs.

The district in the vicinity of Steamboat Springs has been covered by automobile instead of by team, as heretofore. An examination of this country will show that good roads cannot be expected to be general; however, a glance at the summary of the cost of operating an automobile in this section, as shown below, would indicate that the other districts could be covered in a more efficient and economical manner by the same means.

COST OF OPERATING FORD RUNABOUT IN HYDROGRAPHIC WORK, APRIL TO OCTOBER, 1916, INCLUSIVE

Gasoline (33c to 45c per gallon)	$ 95.68
Oil and grease	14.50
Tires	57.85
Equipment	18.25
Storage	30.80
Repairs	20.05
Miscellaneous supplies	9.75
Total cost of operation	$246.88
Total miles run	5,523
Cost per mile	0.045

Depreciation is not included in the above, and would increase the cost considerably, owing to the reduction in the cost of Ford cars since this one was purchased. The car, however, is in good condition, and valued at $275.00.

There has been maintained during the biennial period about sixty permanent stream gaging stations. The number of stations should be increased, but unless more funds are allowed for traveling expenses and for gage readers' salaries, this cannot be done in a satisfactory manner.

The following pages contain estimates of daily discharge on the various gaging stations in the state.

The altitudes shown may be in error a few hundred feet—the altitude of the nearest town usually being given.

Later editions of maps have also made revision of drainage areas necessary at some stations.

Owing to lack of space in this report the actual discharge measurements have been omitted. These are on file in the State Engineer's office, and can be consulted at any time.

ARKANSAS DRAINAGE

TENNESSEE FORK NEAR LEADVILLE

Location.—At highway bridge in Sec. 16, T. 9 S., R. 80 W., a few hundred yards above the mouth of the stream and about three miles northwest of Leadville.

Records Available.—May 10 to October 31, 1890; June 18 to October 16, 1903; February 8, 1911, to November 11, 1916.

Drainage Area.—45 square miles.

Gage.—Vertical staff.

Channel.—Rough, put practically permanent.

Discharge Measurements.—Made from bridge during high water and by wading at ordinary stages.

Winter Flow.—Ice causes backwater during the winter months.

Diversions.—There are court decrees for diversions of 24 second-feet above the station. There is also a decree for diversion of 18.5 second-feet from the headwaters of Eagle River to Tennessee Fork above the station.

Co-operation.—Station maintained by the United States Geological Survey in co-operation with the United States Forest Service. Records were furnished by the United States Geological Survey.

EAST FORK OF ARKANSAS RIVER NEAR LEADVILLE

Localtion.—At highway bridge in Sec. 16, T. 9 S., R. 80 W., about 200 yards above mouth of Tennessee Fork, three miles northwest of Leadville.

Records Available.—April 25 to August 31, 1890; June 18 to September 29, 1903; June 5, 1911, to November 9, 1916.

Drainage Area.—52 square miles.

Gage.—Vertical staff.

Channel.—Somewhat shifting.

Discharge Measurements.—Made from bridge during high water and by wading at ordinary stages.

Winter Flow.—Ice causes backwater during the winter months.

Diversions.—There is a court decree for a diversion of 2 second-feet from the East Fork above the station by the Leadville Water Company.

Accuracy.—Results considered fair.

Co-operation.—Station maintained by the United States Geological Survey in co-operation with the United States Forest Service. Records furnished by the United States Geological Survey.

Discharge of East Fork Arkansas River near Leadville for 1915.
Drainage Area, 52 Square Miles. Altitude, 10,000 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	.....	113	94	35	15	23	20	.....
2	.....	.....	.....	.....	.....	.....	118	106	30	14	25	22	.....
3	.....	.....	.....	.....	.....	.....	55	94	34	12	25	28	.....
4	.....	.....	.....	.....	.....	.....	99	94	35	19	25	27	.....
5	.....	.....	.....	.....	.....	.....	118	71	30	19	28	23	.....
6	.....	.....	.....	.....	.....	.....	123	94	29	19	27	28	.....
7	.....	.....	.....	.....	.....	.....	132	76	28	18	23	32	.....
8	.....	.....	.....	.....	.....	.....	118	67	69	23	22	34	.....
9	.....	.....	.....	.....	.....	9	99	61	99	23	21	.....	.....
10	.....	.....	.....	.....	.....	9	167	71	61	22	20	.....	.....
11	.....	.....	.....	.....	.....	12	203	61	33	17	18	.....	.....
12	.....	.....	.....	.....	.....	23	197	67	30	21	17	.....	.....
13	.....	.....	.....	.....	.....	89	167	63	28	15	17	.....	.....
14	.....	.....	.....	.....	.....	167	145	69	28	15	18	.....	.....
15	.....	.....	.....	.....	.....	55	145	67	30	15	16	.....	.....
16	.....	.....	.....	.....	.....	76	145	61	28	15	15	.....	.....
17	.....	.....	.....	.....	.....	76	118	49	28	14	18	.....	.....
18	.....	.....	.....	.....	.....	197	167	43	23	14	22	.....	.....
19	.....	.....	.....	.....	.....	151	197	35	23	15	25	.....	.....
20	.....	.....	.....	.....	.....	140	173	41	22	12	28	.....	.....
21	.....	.....	.....	.....	.....	48	167	34	20	12	32	.....	.....
22	.....	.....	.....	.....	9	48	145	41	23	12	32	.....	.....
23	.....	.....	.....	.....	12	76	159	45	21	10	28	.....	.....
24	.....	.....	.....	.....	12	82	145	35	21	10	28	.....	.....
25	.....	.....	.....	.....	12	76	209	55	21	29	25	.....	.....
26	.....	.....	.....	.....	12	89	167	55	21	29	20	.....	.....
27	.....	.....	.....	.....	12	71	173	45	21	29	22	.....	.....
28	.....	.....	.....	.....	9	51	151	48	19	25	18	.....	.....
29	.....	.....	.....	.....	35	51	113	48	19	23	14	.....	.....
30	.....	.....	.....	.....	35	106	106	37	15	23	16	.....	.....
31	.....	.....	.....	.....	.....	140	.....	35	15	.....	18	.....	.....
Total	.....	.....	.....	.....	148	1842	4334	1862	939	539	686	214	.....
Mean	.....	.....	.....	.....	16.4	80.1	144	60.1	30.3	18	22.1	26.8	.....
Max.	.....	.....	.....	.....	35	197	209	106	99	29	32	34	.....
Min.	.....	.....	.....	.....	9	9	55	34	15	10	14	20	.....
Acre-ft.	.....	.....	.....	.....	293	3650	8570	3700	1860	1070	1360	425	.....

Discharge of East Fork Arkansas near Leadville for 1916.
Drainage Area, 52 Square Miles. Altitude, 10,000 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	35	191	82	75	82	25	49	.....
2	.....	.....	.....	.....	35	212	82	99	82	21	49	.....
3	.....	.....	.....	7	23	251	55	91	79	20	48	.....
4	.....	.....	.....	.....	23	274	43	72	75	19	45	.....
5	.....	.....	.....	.....	25	225	62	84	59	25	41	.....
6	.....	.....	.....	.....	32	153	49	91	53	20	37	.....
7	.....	.....	.....	.....	82	191	34	104	55	17	34	.....
8	.....	.....	.....	.....	172	216	35	88	49	19	25	.....
9	.....	.....	.....	.....	183	256	59	99	38	20	27	.....
10	.....	.....	.....	.....	199	274	82	91	48	17	.....	.....
11	.....	.....	.....	.....	172	279	99	75	49	19	.....	.....
12	.....	.....	.....	.....	161	328	110	62	43	17	.....	.....
13	.....	.....	.....	.....	161	270	99	66	48	17	.....	.....
14	.....	.....	.....	7	161	274	117	99	48	17	.....	.....
15	.....	.....	.....	.....	161	242	110	93	32	19	.....	.....
16	.....	.....	.....	.....	146	251	99	75	38	22	.....	.....
17	.....	.....	.....	.....	146	225	84	60	41	25	.....	.....
18	.....	.....	.....	.....	161	172	99	66	68	21	.....	.....
19	.....	.....	.....	.....	161	199	88	66	62	23	.....	.....
20	.....	.....	.....	.....	114	191	93	55	59	28	.....	.....
21	.....	.....	.....	.....	88	191	75	70	45	27	.....	.....
22	.....	.....	.....	10	66	146	75	91	37	30	.....	.....
23	.....	.....	.....	.....	62	140	53	88	48	30	.....	.....
24	.....	.....	.....	.....	66	127	70	91	48	32	.....	.....
25	.....	.....	.....	22	82	127	55	96	49	37	.....	.....
26	.....	.....	.....	.....	75	107	75	82	41	38	.....	.....
27	.....	.....	.....	35	99	99	59	79	38	48	.....	.....
28	.....	.....	.....	.....	114	75	75	75	30	38	.....	.....
29	.....	.....	.....	.....	127	70	99	82	25	45	.....	.....
30	.....	.....	.....	.....	140	70	99	66	23	34	.....	.....
31	.....	.....	.....	.....	168	.....	93	75	.....	43	.....	.....
Total	.....	.....	.....	.....	3440	5826	2409	2506	1492	813	355	.....
Mean	.....	.....	.....	.....	111	194	77.7	80.8	49.7	26.2	.....	.....
Max.	.....	.....	.....	.....	199	328	117	104	82	48	.....	.....
Min.	.....	.....	.....	.....	23	70	34	55	23	17	.....	.....
Acre-ft.	.....	.....	.....	.....	6820	11500	4780	4970	2960	1610	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Tennessee Fork at Leadville for 1915.
Drainage Area, 45 Square Miles. Altitude, 10,000 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1						161	90	12	10	10	7	
2		2				177	78	9	8	10	7	
3			1			95	58	12	7	11	10	
4						90	33	10	7	10	10	
5						36	27	12	7	10	10	
6		3	2			78	40	10	7	10	11	
7						67	36	9	7	9	11	
8						58	33	65	11	8	12	
9					27	45	33	58	12	7	16	
10			3		36	85	27	20	12	6	14	
11		2			36	130	31	14	14	5		
12			3		90	130	34	10	14	4		
13		1			122	95	34	10	13	8		
14	1.3				52	78	31	10	12	10		
15		2			23	78	31	11	12	8		
16					111	72	26	10	12	8		
17			2		139	90	16	10	11	8		
18			3		45	111	19	8	11	8		
19				48	23	151	16	12	10	7		
20				48	19	103	12	12	10	8		
21				53	58	116	14	10	10	10		
22				58	45	171	9	12	10	10		
23			3	40	52	122	7	12	8	11		
24		1		46	72	116	7	12	7	11		
25			4	52	63	90	26	12	11	10		
26				58	111	103	16	11	10	10		
27		2	5	48	111	95	21	10	10	9		
28				58	52	90	19	10	9	9		
29				72	52	95	16	10	9	9		
30	3			72	78	72	12	8	8	8		
31			5		95		11	10		8		
Total					1512	3000	863	441	299	270	108	
Mean	1.5	1.5	3.0	54.4	65.7	100	27.8	14.2	10.0	8.71	10.8	
Max.				72	139	177	90	65	14	11	16	
Min.				40	23	36	7	8	7	4	7	
Acre-ft.	92	83	184	1290	3000	5950	1710	873	595	536	214	

Discharge of Tennessee Fork at Leadville for 1916.
Drainage Area, 45 Square Miles. Altitude, 10,000 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1					166	194	52	65	22	9	13	
2					88	200	52	80	25	10	13	
3				32	93	166	71	80	26	8	10	
4					90	160	71	71	31	8	12	
5					117	144	88	63	30	9	11	
6					125	149	80	65	27	9	10	
7					160	117	93	63	22	8	10	
8					155	133	90	58	17	7	9	
9					144	144	84	46	18	8	9	
10					149	180	71	42	18	15	11	
11		9			180	172	65	27	21	16	10	
12					172	172	71	35	17	13		
13	6				152	172	65	43	22	12		
14				32	125	155	52	52	21	15		
15					133	152	56	45	17	15		
16					133	117	56	32	17	15		
17					100	133	42	34	27	10		
18					102	133	46	21	42	10		
19					102	125	35	30	42	11		
20					58	107	34	25	38	16		12
21					58	71	34	25	46	13		
22				48	50	52	18	18	38	15		
23					52	35	16	18	30	13		
24					71	35	19	27	25	10		
25				194	88	30	35	22	18	13		
26					110	22	19	19	15	13		
27				224	141	17	30	20	14	15		
28					155	22	35	22	12	11		
29					158	32	38	19	8	10		
30					172	35	93	18	8	14		
31					188		71	18		17		
Total					3787	3376	1682	1203	714	367	118	
Mean					122	113	54.3	38.8	23.8	11.8		
Max.					188	200	93	80	46	16		
Min.					50	17	16	18	8	7		
Acre-ft.					7500	6720	3340	2390	1420	726		

Unless otherwise noted, all discharges are in cubic feet per second.

ARKANSAS RIVER AT GRANITE.

Location.—At Granite, in sec. 31, T. 11 S., R. 79 W., below the mouth of Lake Creek and above Lost Canyon and Clear Creeks.

Records Available.—May 1, 1897, to September 10, 1899; April 6, 1910, to November 30, 1914.

Drainage Area.—425 square miles.

Gage.—Automatic recording gage established in 1910; datum of recording gage bears no determined relation to that of the vertical staff gage which was used from 1897 to 1899, and which was located at the highway bridge near the railroad station. During 1916 the automatic gage was out of order and estimates are based on readings of the staff gage.

Channel.—Practically permanent.

Discharge Measurements.—Made from car and cable.

Winter Flow.—Ice causes backwater during the winter months and the records are discontinued.

Artificial Control.—The discharge is affected by the operation of the Twin Lakes reservoir.

Diversions.—There are court decrees for diversions of 76 second-feet from the Arkansas between this station and the junction of Tennessee and East Forks, and diversions of 22 second-feet from the intervening tributaries.

Co-operation.—Station has been maintained in co-operation with the United States Geological Survey since 1913.

ARKANSAS RIVER AT SALIDA.

Location.—At Salida, Colorado, some distance above the mouth of the South Fork of Arkansas River, the nearest tributary of importance.

Records available.—April 11, 1895, to October 31, 1903; November 3, 1909, to December 31, 1916.

Drainage Area.—1,160 square miles.

Gage.—Automatic recording gage; no determined relation between automatic gage and the gage used from 1895 to 1903.

Channel.—Slightly shifting.

Winter Flow.—Springs keep the river open during the winter months.

Diversions.—There are court decrees for diversions of 199 second-feet from the Arkansas between this station and Granite, and diversions of 380 second-feet from intervening tributaries.

Co-operation.—This station has been maintained in co-operation with the U. S. Geological Survey.

Discharge of Arkansas River at Granite for 1915.
Drainage Area, 425 Square Miles. Altitude, 8,930 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	85	167	1040	770	290	139	115	85	.....
2	.....	.....	.....	.....	104	139	1190	770	269	153	104	76	.....
3	.....	.....	.....	.....	115	127	1140	730	232	167	94	85	.....
4	.....	.....	.....	.....	104	115	1040	690	232	182	85	76	.....
5	.....	.....	.....	.....	104	127	900	690	215	182	94	85	.....
6	.....	.....	.....	.....	104	153	770	730	250	182	94	85	.....
7	.....	.....	.....	.....	104	153	730	690	269	167	85	94	.....
8	.....	.....	.....	.....	104	139	650	690	428	182	85	85	.....
9	.....	.....	.....	.....	115	115	730	650	400	198	85	85	.....
10	.....	.....	.....	.....	115	104	900	580	378	182	85	85	.....
11	.....	.....	.....	.....	115	167	1190	548	250	167	85	76	.....
12	.....	.....	.....	.....	115	290	1410	548	250	153	85	85	.....
13	.....	.....	.....	.....	115	455	1140	615	250	139	94	85	.....
14	.....	.....	.....	.....	127	428	945	580	215	139	94	85	.....
15	.....	.....	.....	.....	139	455	900	580	215	127	104	85	.....
16	.....	.....	.....	.....	127	455	900	548	232	115	127	85	.....
17	.....	.....	.....	.....	139	485	990	485	232	115	115	85	.....
18	.....	.....	.....	.....	139	548	1090	378	232	269	104	85	.....
19	.....	.....	.....	.....	139	515	1090	355	198	232	94	85	.....
20	.....	.....	.....	76	167	485	1190	455	153	215	94	85	.....
21	.....	.....	.....	68	167	455	1240	485	167	232	94	85	.....
22	.....	.....	.....	76	167	378	1140	485	167	182	115	85	.....
23	.....	.....	.....	85	153	332	1240	485	153	115	115	85	.....
24	.....	.....	.....	85	139	355	1240	515	198	127	104	86	.....
25	.....	.....	.....	85	127	428	1300	615	167	139	94	86	.....
26	.....	.....	.....	94	127	428	1140	515	167	198	94	86	.....
27	.....	.....	.....	104	139	378	1040	548	167	115	94	86	.....
28	.....	.....	.....	85	139	310	900	378	167	115	85	86	.....
29	.....	.....	.....	85	167	400	810	310	153	104	94	86	.....
30	.....	.....	.....	85	215	428	770	332	139	115	104	86	.....
31	.....	.....	.....	76	.....	690	.....	310	127	.....	94	.....	.....
Total	.....	.....	.....	1004	3916	10204	30755	17060	6962	4847	3009	2539	.....
Mean	.....	.....	.....	83.7	131	329	1030	550	225	162	97.1	84.6	.....
Max.	.....	.....	.....	104	215	690	1410	770	428	269	127	94	.....
Min.	.....	.....	.....	68	85	104	650	310	127	104	85	76	.....
Acre-ft.	.....	.....	.....	1990	7800	20200	61300	33800	13800	9640	5970	5030	.....

Discharge of Arkansas at Granite for 1916.
Drainage Area, 425 Square Miles. Altitude, 8,930 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	148	490	910	1460	1560	280	130	165	130
2	.....	.....	.....	.....	148	490	910	1460	1560	240	130	165	100
3	.....	.....	.....	.....	148	490	910	1460	1560	240	130	165	.....
4	.....	.....	.....	.....	148	490	1360	1460	1170	240	130	130	.....
5	.....	.....	.....	.....	148	402	1460	1460	1170	240	130	130	.....
6	.....	.....	.....	.....	130	430	1460	1460	1170	240	165	130	.....
7	.....	.....	.....	.....	130	430	1460	1410	1170	165	165	130	.....
8	.....	.....	.....	.....	130	615	1460	1360	1170	165	165	130	.....
9	.....	.....	.....	.....	115	755	1460	1560	1170	165	165	165	.....
10	.....	.....	.....	200	130	830	1560	1560	1170	200	165	165	.....
11	.....	.....	.....	430	182	990	1660	1560	1170	240	165	130	.....
12	.....	.....	.....	490	220	1080	1660	1460	1170	200	200	130	.....
13	.....	.....	.....	490	220	1260	1560	1360	1170	200	200	130	.....
14	.....	.....	.....	430	220	1360	1660	1360	1170	200	200	130	.....
15	.....	.....	.....	460	220	1360	1660	1360	1170	165	200	165	.....
16	.....	.....	.....	460	200	910	1660	1360	1170	165	200	130	.....
17	.....	.....	.....	490	220	910	1660	1360	685	165	200	130	.....
18	.....	.....	.....	490	302	910	1560	1360	685	165	200	130	.....
19	.....	.....	.....	520	100	685	1560	1360	685	165	200	130	.....
20	.....	.....	.....	490	182	685	1560	1260	685	165	200	130	.....
21	.....	.....	.....	490	240	755	1560	830	685	165	165	130	.....
22	.....	.....	.....	460	260	755	1560	830	430	165	200	130	.....
23	.....	.....	.....	490	325	755	1460	615	430	130	240	130	.....
24	.....	.....	.....	490	350	755	1460	615	430	165	240	100	.....
25	.....	.....	.....	490	375	755	1360	550	430	130	200	130	.....
26	.....	.....	.....	260	402	755	1360	550	430	165	165	130	.....
27	.....	.....	.....	115	490	615	1360	550	430	200	165	130	.....
28	.....	.....	.....	148	430	615	1260	550	430	200	200	130	.....
29	.....	.....	.....	165	430	650	1360	615	325	200	165	130	.....
30	.....	.....	.....	148	430	685	1460	685	325	130	200	130	.....
31	.....	.....	.....	148	.....	910	.....	1260	325	.....	165	.....	.....
Total	.....	.....	.....	8354	7173	23577	43350	36100	27300	5655	5545	4080	.....
Mean	.....	.....	.....	380	239	761	1440	1160	881	188	179	136	.....
Max.	.....	.....	.....	.....	490	1360	1660	1560	1560	280	240	165	.....
Min.	.....	.....	.....	.....	100	402	910	550	325	130	130	100	.....
Acre-ft.	.....	.....	.....	16600	14200	46800	85700	71300	54200	11200	11000	8090	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Arkansas River at Salida for 1915.

Drainage Area, 1,160 Square Miles. Altitude, 7,038 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	230	196	218	230	385	1060	1480	540	385	368	300	270
2	230	198	230	230	315	1520	1420	520	368	350	300	270
3	230	200	205	255	300	1420	1420	500	385	332	300	285
4	242	202	205	270	285	1420	1310	460	402	315	300	270
5	242	204	218	255	285	1240	1240	420	402	315	300	270
6	218	205	205	285	300	1120	1280	420	420	315	300	270
7	230	206	205	270	285	1090	1150	500	402	285	315	242
8	230	208	218	255	285	970	1090	680	368	332	285	242
9	218	210	205	285	285	970	1090	885	368	350	300	255
10	230	212	205	285	270	1150	1060	755	385	385	300	270
11	230	214	218	270	270	1790	1000	655	368	350	255	255
12	230	216	205	285	300	2400	970	608	402	350	242	255
13	230	218	205	300	402	2120	1000	655	402	368	270	270
14	230	205	218	285	585	1710	1060	608	402	350	242	285
15	230	205	218	300	608	1560	1090	540	385	332	270	300
16	205	205	218	315	655	1590	1060	562	368	350	285	270
17	205	230	218	300	755	1790	940	540	332	385	270	285
18	218	230	230	285	780	1870	858	630	402	385	255	255
19	218	230	230	270	705	1990	730	562	440	402	270	242
20	218	242	218	300	630	2260	780	460	420	368	285	230
21	218	230	218	300	608	2440	805	420	420	350	300	242
22	218	218	218	315	520	2440	830	420	400	332	285	270
23	205	218	218	300	500	2580	830	420	332	350	270	285
24	170	218	230	285	500	2530	830	520	300	332	300	242
25	180	205	242	300	585	2480	912	480	350	350	285	242
26	180	218	255	315	630	2350	912	460	460	332	285	255
27	170	230	242	368	562	2260	1030	460	385	315	285	218
28	155	218	270	385	500	2080	940	440	350	300	230	242
29	192	.....	242	402	540	1670	705	420	368	300	255	285
30	192	.....	218	460	540	1480	630	420	385	315	300	285
31	194	.....	230	.....	705	.....	562	402	.....	315	.....	300
Total	6588	5991	6875	8960	14875	53350	31014	16362	11576	10578	8439	8157
Mean	213	214	222	299	480	1780	1000	528	386	341	281	263
Max.	242	242	270	460	780	2580	1480	885	460	402	315	300
Min.	155	196	205	230	270	970	562	402	300	285	230	218
Acre-ft.	13100	11900	13600	17800	29500	106000	61500	32500	23000	21000	16700	16200

Discharge of Arkansas at Salida for 1916.

Drainage Area, 1,160 Square Miles. Altitude, 7,038 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	282	192	238	264	679	1510	2590	2500	520	391	407	286
2	240	203	226	264	708	1550	2540	2320	545	373	407	338
3	264	226	203	264	651	1510	2540	2110	496	373	399	335
4	294	251	214	264	651	1830	2410	2110	496	355	391	348
5	291	251	278	264	708	2070	2360	2030	496	355	384	298
6	291	238	251	251	767	2190	2150	1950	496	373	384	274
7	245	251	214	251	925	2190	2110	1910	496	430	384	250
8	245	251	226	264	1100	2110	2110	1790	473	410	377	225
9	288	238	264	251	1350	2190	2280	1710	452	410	342	201
10	285	238	292	251	1510	2320	2590	1590	473	430	377	203
11	270	251	292	264	1630	2540	2500	1130	596	410	373	219
12	218	238	596	292	1910	2720	2460	1100	623	410	355	275
13	228	203	651	292	1990	2860	2360	1310	596	430	338	292
14	240	203	623	307	1950	2900	2190	1550	570	430	322	295
15	267	214	545	322	1830	2770	2030	1630	570	430	348	270
16	264	214	570	307	1590	2820	1750	1630	570	452	355	270
17	238	226	570	322	1130	2860	1750	1350	545	452	362	254
18	264	238	596	338	990	2860	1750	1200	496	452	373	259
19	278	238	651	373	925	2900	1590	1130	496	452	352	270
20	264	238	651	355	860	2860	1430	1060	473	430	355	270
21	251	238	679	452	892	2770	1350	958	452	452	322	270
22	226	238	623	545	892	2590	1310	892	410	452	355	292
23	264	238	679	520	860	2360	1130	737	430	473	384	292
24	264	226	623	570	737	2190	1060	828	430	496	355	292
25	264	214	520	623	651	2070	990	797	430	410	322	288
26	251	214	520	651	679	2070	958	767	430	410	322	285
27	238	238	307	708	737	2150	958	737	452	460	292	28[illegible]
28	251	238	307	828	797	2230	990	708	430	456	322	278
29	226	238	307	860	892	2320	990	651	430	443	233	274
30	226	.....	278	767	958	2460	1558	596	430	422	259	270
31	214	.....	278	.....	1240	.....	2190	570	.....	418	.....	272
Total	7931	6684	13272	12284	33189	70770	56966	41351	14809	13140	10551	8596
Mean	256	230	428	409	1070	2360	1840	1330	493	424	352	275
Max.	294	251	679	860	1990	2900	2590	2500	623	496	407	348
Min.	214	192	203	251	651	1510	958	570	410	355	233	201
Acre-ft.	15700	13200	26300	24300	65800	140000	113000	81800	29300	26100	20900	16900

Unless otherwise noted, all discharges are in cubic feet per second.

ARKANSAS RIVER AT CANON CITY.

Location.—Just below Hot Springs Hotel, at the mouth of the canyon, and 1½ miles above Canon City. Nearest important tributary is Grape Creek, which enters above.

Records Available.—May 1, 1888, to November 30, 1916.

Drainage Area.—3,060 square miles.

Gage.—Automatic recording gage established by the State Engineer in September, 1909.

Channel.—The channel shifts to such an extent during high water that at times it is necessary to move the gage in order to read the gage heights.

Discharge Measurements.—Made from car and cable.

Winter Flow.—Ice causes backwater during the winter months.

Diversions.—There are court decrees for diversions of 131 second-feet from the Arkansas between the stations at Canon City and Salida, and diversions of 2,286 second-feet from intervening tributaries.

ARKANSAS RIVER AT PUEBLO.

Location.—At Main Street Bridge in Pueblo, 2 miles above the mouth of Fountain Creek, the nearest tributary.

Records Available.—September 19, 1894, to November 30, 1916. From May 1, 1885, to September 30, 1886, a station was maintained at Pueblo by the State Engineer; from June 1, 1887, to September 30, 1887, a station was maintained at a point 9 miles above Pueblo; from May 1, 1889, to August 31, 1889, the United States Geological Survey maintained the station 9 miles above Pueblo.

Drainage Area.—4,600 square miles.

Gage.—An automatic gage located 150 feet below Main Street Bridge has been used since March 22, 1911.

Channel.—Shifting.

Discharge Measurements.—Made from Main Street Bridge.

Winter Flow.—Ice causes some slight backwater during the winter months.

Diversions.—There are court decrees for diversions of 637 second-feet from Arkansas River, between the station at Canon City and Pueblo, and diversions of 372 second-feet from intervening tributaries.

Co-operation.—This station is maintained in co-operation with the Arkansas Valley Ditch Association.

Discharge of Arkansas River at Canon City for 1915.

Drainage Area, 3,060 Square Miles. Altitude, 5,363 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	480	385	340	385	725	1220	1880	830	460	445	385	390
2	480	385	385	385	595	1940	1720	725	460	400	370	340
3	480	385	340	408	480	2000	1720	725	460	400	370	320
4	480	385	340	430	430	1880	1620	628	465	385	330	340
5	480	310	340	455	430	1560	1620	565	520	400	330	360
6	430	280	310	480	480	1510	1620	535	525	400	310	370
7	385	280	340	660	480	1460	1560	565	500	400	340	360
8	385	340	340	692	535	1320	1410	692	465	420	340	320
9	385	340	340	535	480	1320	1320	1170	460	445	340	340
10	430	385	340	628	430	1410	1270	1120	435	445	340	340
11	430	340	340	535	430	1880	1220	870	405	420	365	320
12	385	340	340	480	455	2530	1220	770	440	445	335	320
13	385	310	340	480	480	2470	1220	775	480	420	335	340
14	385	310	340	480	870	2000	1220	745	450	420	355	355
15	385	310	340	508	1120	1780	1170	750	465	440	385	355
16	385	310	340	692	1080	1720	1120	685	410	440	405	355
17	340	310	340	660	1220	1940	1080	690	380	440	405	355
18	340	340	340	910	1320	2060	910	760	360	420	405	355
19	340	385	430	692	1360	2230	760	1000	475	420	430	355
20	385	385	362	565	1270	2530	910	730	450	420	430	315
21	385	385	325	535	1220	2660	1080	580	450	390	430	355
22	385	385	340	535	1035	2780	1040	525	450	370	425	400
23	310	385	340	595	795	2910	910	590	405	390	420	425
24	295	385	408	595	725	2980	1080	620	315	390	400	400
25	280	340	508	535	725	2910	1270	685	340	390	400	335
26	280	340	480	508	832	2840	1360	600	525	390	360	355
27	385	340	455	480	910	2590	1880	540	525	385	420	355
28	310	340	430	480	760	2350	1940	545	450	385	355	315
29	340	.....	430	480	725	2110	1510	520	400	370	355	425
30	430	.....	430	628	725	2000	1220	555	460	385	390	450
31	385	.....	385	.....	795	.....	910	560	.....	385	.....	425
Total	11960	9715	11458	16431	23917	62890	40770	21650	13385	12655	11260	11145
Mean	386	347	370	548	772	2100	1320	698	446	408	375	360
Max.	480	385	508	910	1360	2980	1940	1170	525	445	430	450
Min.	280	280	310	385	430	1220	760	520	315	370	310	315
Acre-ft.	23700	19300	22800	32600	47500	125000	81200	42900	26500	25100	22300	22100

Discharge of Arkansas River at Canon City for 1916.

Drainage Area, 3,060 Square Miles. Altitude, 5,363 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	442	230	354	397	780	1380	2480	2410	630	397	490	.....
2	354	260	312	442	845	1460	2410	2540	572	375	490	.....
3	442	333	312	420	845	1460	2480	2220	545	397	490	.....
4	397	420	312	490	845	1660	2340	2100	518	397	518	.....
5	397	397	397	572	845	1930	2340	1930	518	397	442	.....
6	397	397	420	490	910	1980	2100	1820	518	397	442	.....
7	397	420	333	442	945	1980	2100	1710	545	442	466	.....
8	354	397	375	420	1130	1880	2100	1560	466	466	490	.....
9	354	397	420	420	1380	2100	2160	1560	442	466	490	.....
10	397	354	466	376	1460	2220	2540	1420	442	490	490	.....
11	354	354	518	354	1610	2610	2410	1370	545	490	466	.....
12	354	354	750	466	1760	2680	2410	1130	600	466	545	.....
13	246	354	780	442	1880	2900	2280	1380	600	518	490	.....
14	312	333	750	466	1820	3050	2220	1660	600	518	442	.....
15	354	333	690	490	1660	2900	2040	1660	572	490	442	.....
16	397	354	660	490	1460	2900	2100	1510	545	490	490	.....
17	354	354	660	630	1170	2900	1760	1420	545	490	572	.....
18	354	354	690	660	1060	2900	1660	1380	518	490	572	.....
19	397	333	720	490	1020	2980	1460	1250	518	490	545	.....
20	397	354	720	442	945	2980	1380	1090	518	466	572	.....
21	354	354	750	490	910	2750	1290	1060	490	490	572	.....
22	354	333	750	572	910	2610	1250	945	466	518	545	.....
23	354	333	690	545	878	2280	1200	910	442	545	572	.....
24	397	333	660	545	812	2220	1130	845	442	545	572	.....
25	397	312	660	600	750	2040	1020	810	442	570	545	.....
26	354	312	660	660	720	1980	945	780	442	545	518	.....
27	354	333	518	690	750	2100	910	810	442	570	545	.....
28	312	354	397	780	750	2220	910	780	442	518	518	.....
29	354	354	420	720	845	2280	945	720	442	518	490	.....
30	312	.....	420	780	945	2410	1710	690	442	490	466	.....
31	312	.....	397	.....	1130	.....	2340	690	.....	490	.....	.....
Total	11304	10100	16961	15781	33770	69740	56420	42160	15249	14931	15287	.....
Mean	365	348	547	526	1090	2320	1820	1360	508	482	509	.....
Max.	442	420	780	780	1880	3050	2540	2540	630	570	572	.....
Min.	246	230	312	354	720	1380	910	690	442	375	442	.....
Acre-ft.	22400	20000	33600	31300	67000	138000	112000	83600	30200	29600	30300	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Arkansas River at Pueblo for 1915.
Drainage Area, 4,600 Square Miles. Altitude, 4,665 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec
1	590	402	358	425	955	1170	1820	875	398	560	345	450
2	590	402	380	402	955	1980	1820	730	330	530	342	400
3	590	425	380	402	838	2260	1600	595	295	530	340	425
4	590	380	402	402	660	2080	1600	628	420	470	337	425
5	590	402	380	450	695	1860	1490	695	420	515	330	440
6	590	358	335	475	875	1760	1490	628	420	515	332	430
7	530	358	335	590	875	1650	1440	800	420	485	335	430
8	560	380	380	655	998	1450	1290	765	415	510	350	390
9	530	425	402	790	955	1310	1150	1040	380	530	355	360
10	530	380	380	655	800	1310	1230	1040	395	530	360	360
11	530	380	380	530	695	1500	1230	875	340	495	337	358
12	530	402	380	530	595	2490	1130	1080	330	490	337	328
13	530	425	380	530	628	3020	1130	765	325	490	340	330
14	475	380	335	530	838	2140	1210	660	348	550	340	332
15	475	335	335	530	1120	1810	1790	595	348	570	430	370
16	475	335	335	755	1120	1650	1150	628	370	570	430	368
17	425	335	335	1150	1120	1650	1150	2430	370	535	490	419
18	425	335	335	1620	1220	1920	1050	1760	302	535	463	420
19	402	358	358	1220	1360	2030	1000	1550	348	538	490	417
20	335	335	425	915	1310	2370	920	1220	420	540	530	415
21	530	335	335	800	1260	2620	1080	890	395	542	530	413
22	530	380	295	838	1080	2750	990	720	395	478	505	410
23	475	358	335	1120	915	3240	860	960	370	480	420	490
24	425	295	402	1220	800	3370	1380	1050	348	482	420	438
25	450	358	590	1120	800	3190	1150	890	1080	460	420	435
26	425	335	622	915	800	3110	1600	785	670	440	395	432
27	475	335	655	730	875	2970	1400	682	650	442	370	460
28	530	335	590	800	838	2510	2950	530	530	390	370	380
29	450	.....	622	730	765	2260	1760	470	510	392	370	405
30	502	.....	560	875	730	2040	1120	445	520	395	410	458
31	425	.....	475	.....	875	.....	955	420	.....	370	.....	455
Total	15509	10263	12811	22704	28350	65470	41935	27201	12862	15359	11825	12643
Mean	500	367	413	757	915	2180	1350	877	429	495	394	408
Max.	590	425	655	1620	1360	3370	2950	2430	1080	570	530	490
Min.	335	295	295	402	595	1170	860	420	302	370	330	328
Acre-ft.	30700	20400	25400	45000	56300	130000	83000	53900	25500	30400	23400	25100

Discharge of Arkansas River at Pueblo for 1916.
Drainage Area, 4,600 Square Miles. Altitude, 4,665 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	465	170	220	360	1070	1300	2130	2120	310	370	495	.....
2	430	272	245	360	1070	1490	2220	2120	310	310	495	.....
3	465	430	195	395	980	1540	2270	2060	250	280	495	.....
4	500	465	245	430	1120	1740	2210	1920	250	280	462	.....
5	500	465	300	430	1200	1790	2100	1980	225	310	430	.....
6	500	465	360	465	1200	1790	1940	1830	200	310	400	.....
7	500	465	330	430	1200	1840	1830	1760	178	280	430	.....
8	465	500	300	395	1120	1890	1980	1670	200	310	400	.....
9	465	465	330	360	1200	1940	2080	1560	370	430	400	.....
10	500	465	330	330	1440	2140	2340	1410	340	495	400	.....
11	465	360	395	300	1590	2250	2390	1140	340	495	400	.....
12	360	360	465	300	1590	2520	2240	1190	462	495	430	.....
13	300	330	735	330	1690	2640	2100	1550	430	495	560	.....
14	360	300	815	395	1790	2640	2200	1460	430	495	528	.....
15	430	300	735	430	1640	2640	1990	1690	462	495	495	.....
16	395	300	655	395	1490	2520	1830	1460	462	528	495	.....
17	395	330	655	430	1200	2640	1630	1280	430	430	528	.....
18	430	360	655	535	1120	2640	1620	1100	430	430	460	.....
19	465	300	695	430	1120	2640	1480	1010	430	430	528	.....
20	430	300	695	430	1070	2580	1280	890	400	430	560	.....
21	430	272	735	395	1020	2520	1230	850	370	430	560	.....
22	395	272	735	395	980	2270	1230	810	370	462	528	.....
23	330	272	695	430	980	2170	1230	560	370	528	495	.....
24	330	272	695	465	855	2010	1100	595	370	595	528	.....
25	330	195	655	500	735	1850	925	560	370	595	495	.....
26	330	195	655	615	695	1800	840	665	370	560	462	.....
27	330	220	615	615	655	1790	800	735	340	560	430	.....
28	330	195	395	695	695	1880	840	528	340	528	400	.....
29	300	220	300	895	775	1930	840	430	340	495	400	.....
30	330	.....	330	1070	855	2020	1070	370	370	528	370	.....
31	330	.....	395	.....	938	.....	2120	340	.....	528	.....	.....
Total	12585	9515	15560	14005	35083	63410	52085	37643	10519	13907	14059	.....
Mean	406	328	502	467	1130	2110	1680	1210	351	449	469	.....
Max.	500	500	815	1070	1790	2640	2390	2120	462	595	560	.....
Min.	330	170	195	300	655	1300	800	340	178	280	370	.....
Acre-ft.	25000	18900	30900	27800	69500	126000	103000	74400	20900	27600	27900	.....

Unless otherwise noted, all discharges are in cubic feet per second.

ARKANSAS RIVER NEAR BOONE.

Location.—Located at the Rocky Ford High Line Canal dam near Boone.

Records Available.—July 1 to October 27, 1916. Station used only as a substitute for the station near Nepesta while a temporary brush dam was being used at that point.

Discharge Measurements.—Made from highway bridge above or by wading.

Diversions.—There are no diversions between this station and the one near Nepesta.

Accuracy.—Results are fair.

ARKANSAS RIVER NEAR NEPESTA.

Location.—At the dam of the Oxford Farmers' Canal Co., in sec. 31, T. 21 S., R. 60 W. 1½ miles above Nepesta; about 6 miles below the mouth of Huerfano River, the nearest important tributary.

Records Available.—September 8, 1897, to October 31, 1903; July 14, 1909, to November 30, 1912; January 1, 1914, to November 30, 1916.

Drainage Area.—9,130 square miles.

Gage.—An automatic recording gage with its zero coinciding with the lowest point of the diversion dam has been in use since 1910. There is no known relation between the present gage and that used in 1903.

Channel.—The diversion dam is the control point, and as the results show shifting conditions it is evident that the dam is not permanent.

Discharge Measurements.—Made from the bridge at Nepesta except during low water, when measurements are made by wading.

Winter Flow.—Ice causes backwater during a portion of the winter months.

Diversions.—There are court decrees for diversions of 1,552 second-feet from the Arkansas between Pueblo and Nepesta, and approximately 1,600 second-feet from intervening tributaries. The discharge records given in this report do not include the flow of the canal.

Accuracy.—Results fair.

Co-operation.—Maintained in co-operation with the Arkansas Valley Ditch Association.

Discharge of Arkansas River near Boone for 1916.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	.....	2470	4320	140	265	.....	.....
2	.....	.....	.....	.....	.....	.....	2790	1690	180	265	.....	.....
3	.....	.....	.....	.....	.....	.....	2320	1800	105	310	.....	.....
4	.....	.....	.....	.....	.....	.....	2320	1800	70	365	.....	.....
5	.....	.....	.....	.....	.....	.....	2960	1690	70	365	.....	.....
6	.....	.....	.....	.....	.....	.....	2620	1930	35	365	.....	.....
7	.....	.....	.....	.....	.....	.....	2060	2060	35	310	.....	.....
8	.....	.....	.....	.....	.....	.....	1800	2060	70	310	.....	.....
9	.....	.....	.....	.....	.....	.....	2060	1690	310	420	.....	.....
10	.....	.....	.....	.....	.....	.....	2320	1470	605	420	.....	.....
11	.....	.....	.....	.....	.....	.....	2790	1170	605	605	.....	.....
12	.....	.....	.....	.....	.....	.....	2320	980	540	605	.....	.....
13	.....	.....	.....	.....	.....	.....	2320	8570	605	605	.....	.....
14	.....	.....	.....	.....	.....	.....	2060	8070	670	605	.....	.....
15	.....	.....	.....	.....	.....	.....	1930	2060	605	605	.....	.....
16	.....	.....	.....	.....	.....	.....	2060	5820	605	540	.....	.....
17	.....	.....	.....	.....	.....	.....	1800	1800	605	605	.....	.....
18	.....	.....	.....	.....	.....	.....	1470	1580	480	605	.....	.....
19	.....	.....	.....	.....	.....	.....	2060	1260	540	420	.....	.....
20	.....	.....	.....	.....	.....	.....	1800	1170	480	420	.....	.....
21	.....	.....	.....	.....	.....	.....	1590	365	420	420	.....	.....
22	.....	.....	.....	.....	.....	.....	1360	7820	420	540	.....	.....
23	.....	.....	.....	.....	.....	.....	1360	670	420	605	.....	.....
24	.....	.....	.....	.....	.....	.....	1260	420	420	605	.....	.....
25	.....	.....	.....	.....	.....	.....	1170	265	420	745	.....	.....
26	.....	.....	.....	.....	.....	.....	1080	670	310	605	.....	.....
27	.....	.....	.....	.....	.....	.....	900	980	310	605	.....	.....
28	.....	.....	.....	.....	.....	.....	820	980	310	.....	.....	.....
29	.....	.....	.....	.....	.....	.....	820	670	365	.....	.....	.....
30	.....	.....	.....	.....	.....	.....	820	540	310	.....	.....	.....
31	.....	.....	.....	.....	.....	.....	2060	310	.....	.....	.....	.....
Total	.....	.....	.....	.....	.....	.....	57560	66680	11060	13135	.....	.....
Mean	.....	.....	.....	.....	.....	.....	1860	2150	369	486	.....	.....
Max.	.....	.....	.....	.....	.....	.....	2960	8570	670	.....	.....	.....
Min.	.....	.....	.....	.....	.....	.....	820	265	35	.....	.....	.....
Acre-ft.	.....	.....	.....	.....	.....	.....	114000	132000	22000	26000	.....	.....

Discharge of Arkansas River near Nepesta for 1915.
Drainage Area, 9,130 Square Miles. Altitude, 4,396 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	450	400	205	195	2590	2200	1500	595	580	460	210	580
2	500	400	170	195	2800	3220	1330	735	580	520	345	580
3	500	400	230	238	2390	4010	1430	813	650	580	520	650
4	500	400	225	195	2000	4010	1260	735	520	580	460	650
5	500	400	155	238	2200	4010	940	665	520	580	460	345
6	500	450	180	238	2590	3550	1030	890	580	650	345	520
7	500	400	175	542	2390	3550	1200	1320	402	580	345	580
8	500	400	205	480	2390	3000	1220	1780	345	460	402	520
9	500	375	200	740	2800	2590	1320	1190	298	520	460	345
10	450	375	105	480	2000	2660	1150	1190	345	520	520	345
11	500	330	125	428	1820	2740	1070	1110	460	520	402	345
12	500	370	355	428	1450	3460	920	950	402	520	460	460
13	500	370	260	428	1190	3900	850	1030	345	520	402	298
14	500	315	255	428	1450	3410	860	1450	402	460	345	210
15	500	270	250	542	2000	2630	1460	950	520	460	520	345
16	500	235	75	740	1910	2210	1290	650	520	520	520	460
17	400	260	162	1200	1720	1890	800	870	520	520	520	460
18	400	225	162	2490	2290	1770	660	5420	520	520	520	580
19	400	220	*15	2900	2690	1940	600	3220	460	460	580	580
20	350	215	75	2200	2900	2110	740	2490	345	460	250	550
21	450	320	195	1720	2900	2280	605	1030	298	520	402	500
22	450	275	102	2100	2100	2390	605	650	345	520	520	450
23	450	270	75	2690	1540	2390	542	795	298	520	460	400
24	350	230	15	2800	1190	2920	740	1820	298	520	460	345
25	400	260	480	3110	1110	7680	1470	1720	580	250	345	345
26	400	255	605	2690	950	4780	1380	1030	1030	460	298	345
27	400	215	542	2200	1450	3640	1380	950	795	460	345	402
28	350	210	480	2100	1820	3040	1980	870	795	402	460	580
29	400	.....	375	2100	1450	2700	2080	720	580	402	402	580
30	400	.....	480	2390	1360	1980	1060	650	402	210	520	460
31	400	.....	280	.....	1910	.....	1980	580	.....	210	.....	600
Total..	13900	8845	7213	39225	61350	92660	35452	38868	14735	14884	12798	14410
Mean.....	448	316	233	1310	1980	3090	1140	1250	491	480	427	465
Max.....	500	450	605	3110	2900	7680	2080	5420	1030	650	580	650
Min.....	350	210	15	195	950	1770	542	580	298	210	210	210
Acre-ft.	27500	17600	14300	78000	122000	184000	70100	76900	29200	29500	25400	28600

*Estimated.

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Arkansas River near Nepesta for 1916.
Drainage Area, 9,130 Square Miles. Altitude, 4,396 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	600	600	210	390	730	760	.....	.....	.....	.....	680	.....
2	600	500	210	390	670	960	.....	.....	.....	.....	680	.....
3	600	500	210	350	670	1330	.....	.....	.....	.....	680	.....
4	600	480	210	440	620	1120	.....	.....	.....	.....	635	.....
5	650	480	210	490	670	960	.....	.....	.....	.....	580	.....
6	650	600	300	490	670	900	.....	.....	.....	.....	510	.....
7	650	600	270	310	670	1120	.....	.....	.....	.....	525	.....
8	650	600	335	250	730	1200	.....	.....	.....	.....	490	.....
9	525	600	335	350	790	1200	.....	.....	.....	.....	490	.....
10	525	600	400	350	870	1370	.....	.....	.....	.....	370	.....
11	525	600	400	280	940	1370	.....	.....	.....	.....	510	.....
12	600	600	510	280	940	1450	.....	.....	.....	.....	525	.....
13	600	480	470	310	940	1620	.....	.....	.....	.....	525	.....
14	500	325	470	390	1410	1710	.....	.....	.....	.....	525	.....
15	500	325	560	350	1180	1800	.....	.....	.....	.....	525	.....
16	600	260	390	350	1000	1710	.....	.....	.....	.....	525	.....
17	550	165	310	310	790	2000	.....	.....	.....	.....	525	.....
18	550	110	280	390	525	1900	.....	.....	.....	.....	580	.....
19	620	270	280	440	480	1710	.....	.....	.....	.....	680	.....
20	580	440	310	280	760	1710	.....	.....	.....	.....	510	.....
21	570	400	310	200	700	1800	.....	.....	.....	.....	525	.....
22	570	400	350	150	1020	2000	.....	.....	.....	.....	525	.....
23	570	400	310	250	960	2000	.....	.....	.....	.....	510	.....
24	570	335	280	250	820	1900	.....	.....	.....	.....	300	.....
25	570	370	250	390	700	1710	.....	.....	.....	.....	270	.....
26	570	335	200	435	610	1620	.....	.....	.....	.....	125	.....
27	570	400	180	525	610	1620	.....	.....	.....	.....	210	.....
28	550	300	280	480	660	1710	.....	.....	.....	580	400	.....
29	600	180	310	525	760	1900	.....	.....	.....	510	300	.....
30	600	.....	310	870	760	2000	.....	.....	.....	635	210	.....
31	600	.....	390	.....	760	.....	.....	.....	.....	680	.....	.....
Total	18015	12255	9840	11265	24415	46160	.....	.....	.....	.....	14445	.....
Mean....	581	423	317	376	788	1540	.....	.....	.....	.....	482	.....
Max.	650	600	560	870	1410	2000	.....	.....	.....	.....	680	.....
Min.	525	110	180	150	480	760	.....	.....	.....	.....	125	.....
Acre-ft.	35700	24300	19500	22400	48500	91600	.....	.....	.....	.....	28700	.....

Unless otherwise noted, all discharges are in cubic feet per second.

ARKANSAS RIVER AT LA JUNTA.

Location.—Half a mile below the east bridge at La Junta; no important tributary within several miles.

Records Available.—April 11, 1912, to November 30, 1916. From December 5, 1893, to December 31, 1895, a station was maintained near the city pumping plant. During 1899 and 1901 a station was maintained at the head of the Fort Lyon Canal by the Great Plains Water Co. From April 7, 1903, to October 31, 1903, a station was maintained one mile east of La Junta and a number of discharge measurements were made during 1904. From August 27, 1908, to November 30, 1908, a station was maintained half a mile northwest of La Junta, just below the mouth of Crooked Arroyo.

Drainage Area.—12,200 square miles.

Gage.—Automatic recording gage.

Channel.—Shifting.

Discharge Measurements.—Made from the bridge during high water and by wading at ordinary stages.

Winter Flow.—Ice causes backwater during the winter months.

Diversions.—There are court decrees for diversions of 2,735 second-feet from the Arkansas between Nepesta and La Junta, and 511 second-feet from intervening tributaries.

Co-operation.—Station maintained in co-operation with the Arkansas Valley Ditch Association.

ARKANSAS RIVER AT LAMAR.

Location.—Located at highway bridge, one mile north of Lamar.

Records Available.—May 11, 1913, to November 30, 1916.

Gage.—Bristol automatic gage and standard chain gage.

Channel.—Shifting.

Diversions.—With the exception of a few small ditches, below all diversions on the river.

Accuracy.—Results are considered fair.

Co-operation.—Maintained in co-operation with the Arkansas Valley Ditch Association.

Discharge of Arkansas River at La Junta for 1915.
Drainage Area, 12,200 Square Miles. Altitude, 4,052 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	90	20	55	285	165	1170	340	370	880	240	200	55
2	100	30	40	370	90	2080	170	360	560	240	155	70
3	100	50	40	285	145	5060	210	480	280	235	100	70
4	70	50	40	135	145	6940	190	465	255	205	100	115
5	60	5	40	110	90	5580	220	450	280	205	135	40
6	60	5	55	140	360	3670	175	435	130	230	155	20
7	90	30	85	235	325	2630	180	365	150	230	135	10
8	50	30	100	80	60	2570	180	310	70	235	135	20
9	50	5	100	170	125	2680	350	180	30	210	85	10
10	50	5	160	240	90	1850	440	220	30	165	40	10
11	40	10	230	145	165	2460	405	230	35	165	55	10
12	40	5	85	50	110	2620	410	260	30	200	85	10
13	40	10	55	70	190	3260	415	210	30	170	115	10
14	15	10	70	100	5	2480	460	690	25	145	115	55
15	100	5	160	100	165	895	285	470	110	145	100	10
16	100	15	160	85	295	550	430	150	5	170	100	10
17	135	15	30	100	430	360	320	305	10	200	135	10
18	100	10	15	200	395	190	615	1770	95	190	135	30
19	70	10	5	105	745	530	455	700	80	225	115	30
20	0	85	0	420	470	360	210	760	160	200	85	30
21	0	100	0	140	810	225	380	360	180	200	85	30
22	0	30	0	140	560	330	335	430	120	200	100	30
23	0	10	5	420	560	610	410	680	50	200	85	30
24	20	10	40	160	560	740	500	3680	55	225	55	30
25	50	10	100	680	360	3520	530	1760	100	200	100	30
26	50	15	180	1600	125	1330	170	1950	220	200	100	30
27	55	100	260	1080	295	515	205	1790	270	175	100	50
28	15	120	420	295	1430	520	370	1130	250	225	100	30
29	15	.....	465	165	2800	775	1040	1040	275	200	100	30
30	65	.....	305	145	2740	580	280	960	240	200	85	30
31	90	.....	305	.....	4500	.....	440	870	.....	200	.....	30
Total..	1720	800	3605	8250	19305	57090	11120	23830	5005	6230	3190	975
Mean....	55.5	28.6	116	275	623	1900	359	769	167	201	106	31.4
Max.....	135	120	465	1600	4500	6940	1040	3680	880	240	200	115
Min.....	0	5	0	50	5	190	170	150	5	145	40	10
Acre-ft.	3410	1590	7130	16400	38300	113000	22100	47300	9940	12400	6310	1930

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Arkansas River at La Junta for 1916.
Drainage Area, 12,200 Square Miles. Altitude, 4,052 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov	Dec.
1	50	225	55	80	320	225	400	480	30	58	55	.....
2	48	190	70	140	280	300	400	420	30	58	55	.....
3	48	110	48	140	260	515	375	450	22	50	55	.....
4	160	120	15	170	225	515	470	450	20	50	55	.....
5	90	190	20	260	240	360	470	420	18	50	55	.....
6	110	305	25	280	390	115	470	515	20	50	65	.....
7	400	425	22	270	460	160	390	550	18	50	65	.....
8	400	425	18	240	370	590	390	450	22	58	65	.....
9	350	425	18	220	360	560	440	410	18	58	165	.....
10	300	400	20	210	450	700	440	340	5	50	180	.....
11	208	380	15	180	460	490	490	430	45	58	180	.....
12	130	305	20	140	430	250	490	340	50	85	65	.....
13	80	208	20	130	420	150	520	330	50	95	65	.....
14	90	190	22	165	460	390	515	340	50	105	55	.....
15	100	145	18	260	560	320	480	530	50	125	55	.....
16	100	100	130	280	490	300	515	490	50	138	55	.....
17	90	130	90	300	500	285	240	500	45	138	55	.....
18	110	130	35	280	460	630	480	480	45	138	65	.....
19	100	90	55	260	460	560	370	290	65	138	45	.....
20	190	62	90	260	420	405	240	420	58	138	45	.....
21	175	48	80	240	450	560	515	2080	58	138	40	.....
22	242	48	110	210	480	380	480	3930	58	150	45	.....
23	260	25	120	195	320	420	450	420	58	150	50	.....
24	260	22	120	165	280	450	420	30	58	138	45	.....
25	208	28	140	120	240	400	420	30	58	138	55	.....
26	130	35	150	102	165	420	320	30	75	115	55	.....
27	260	80	100	165	110	360	210	30	65	105	55	.....
28	400	100	50	210	150	390	240	100	50	105	55	.....
29	305	80	30	210	195	380	195	30	50	58	55	.....
30	350	.....	65	300	180	305	240	30	50	58	55	.....
31	305	.....	60	.....	180	.....	260	30	.....	58	.....	.....
Total..	6049	5021	1831	6182	10765	11885	12335	15375	1291	2903	2010	.....
Mean....	195	173	59.1	206	347	396	398	496	43.0	93.6	67.0	.....
Max.....	400	425	150	300	560	700	520	3930	75	150	180	.....
Min.....	48	22	15	80	110	115	195	30	5	50	40	.....
Acre-ft.	12000	9950	3630	12300	21300	23600	24500	30500	2560	5760	3990	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Arkansas River at Lamar for 1915.

Drainage Area, ... Square Miles. Altitude, 3,610 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	290	130	160	10	890	4200	640	470	520	30	20	110
2	260	140	170	10	940	4090	400	740	520	15	10	110
3	245	120	130	10	890	4470	290	690	440	10	10	125
4	220	120	120	5	750	5740	260	310	375	10	10	115
5	180	190	130	5	710	5070	350	240	340	10	10	100
6	170	130	140	30	840	4370	300	165	230	15	10	85
7	150	100	120	55	1000	4130	180	165	205	10	10	80
8	130	115	105	170	1360	3300	90	155	160	10	5	55
9	130	105	105	180	850	2900	100	230	120	10	5	50
10	140	100	100	100	610	2680	130	120	100	10	5	45
11	150	120	105	400	400	2330	75	145	85	10	5	50
12	130	150	150	440	300	2140	85	120	65	10	5	50
13	120	105	170	305	240	1810	90	100	45	10	5	50
14	140	70	120	290	160	2250	150	260	30	10	10	35
15	160	75	105	340	120	1820	75	790	25	10	30	80
16	130	70	105	550	140	840	40	1180	75	10	30	95
17	100	55	105	710	150	490	30	370	120	10	10	55
18	100	25	50	3600	210	290	25	280	35	10	10	45
19	120	20	35	3120	380	160	35	1640	25	10	10	40
20	140	20	30	2400	820	90	235	1880	20	5	25	55
21	115	20	20	1700	780	40	380	1150	15	5	25	70
22	100	20	5	980	1020	0	160	1160	15	5	35	110
23	75	15	10	800	740	20	150	1740	15	5	30	190
24	85	15	10	1660	500	150	105	2620	15	5	20	190
25	75	15	5	1870	380	600	140	12000	20	10	20	140
26	105	15	10	3740	320	1260	840	5080	15	10	25	120
27	130	25	15	3620	2530	520	280	3520	15	5	30	140
28	130	105	10	2330	6780	310	260	2320	15	5	45	170
29	115	.....	5	1660	4420	820	600	1050	30	5	55	175
30	130	.....	10	1000	2960	1340	780	1000	25	5	100	175
31	120	.....	5	.....	3740	.....	410	585	.....	5	.....	180
Total	4385	2190	2360	32090	35930	58230	7685	42275	3715	290	620	3090
Mean....	141	78.2	76.1	1070	1160	1940	248	1360	124	9.3	20.7	99.7
Max.....	290	190	170	3740	6780	5740	840	12000	520	30	100	190
Min.....	75	15	5	5	120	0	25	100	15	5	5	35
Acre-ft.	8670	4340	4680	63700	71300	115000	15200	83600	7380	572	1230	6130

Discharge of Arkansas River at Lamar for 1916.

Drainage Area, ... Square Miles. Altitude, 3,610 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	240	100	5	4	8	5	5	3	490	5	5	.....
2	200	100	45	4	8	8	4	3	118	5	5	.....
3	215	85	180	4	8	22	4	3	30	5	5	.....
4	150	100	35	15	15	118	2	3	15	5	5	.....
5	205	140	5	78	22	1020	3	3	3	5	5	.....
6	185	150	5	95	22	195	3	3	3	5	5	.....
7	185	160	5	60	8	22	2	4	3	5	5	.....
8	165	180	5	30	5	8	3	4	2	5	5	.....
9	200	180	5	8	8	95	2	22	2	5	5	.....
10	800	400	5	5	15	195	1	440	2	5	5	.....
11	400	650	5	5	15	825	30	15	3	5	5	.....
12	600	800	4	5	8	650	30	15	3	5	5	.....
13	60	800	4	4	8	78	168	15	3	5	95	.....
14	25	1000	5	8	8	15	95	60	2	5	228	.....
15	25	600	5	5	22	60	15	955	2	5	540	.....
16	30	800	5	4	15	30	22	2080	2	5	705	.....
17	20	800	5	4	15	15	15	825	2	5	595	.....
18	20	600	5	8	8	8	3	490	2	5	390	.....
19	20	500	5	8	8	340	4	595	2	5	118	.....
20	40	360	4	8	5	760	15	1430	2	5	8	.....
21	50	270	5	8	5	60	15	4450	2	5	5	.....
22	65	80	4	8	8	22	8	6150	2	5	5	.....
23	75	5	4	5	8	15	8	4350	2	5	22	.....
24	175	5	4	8	8	5	22	2080	2	5	95	.....
25	245	5	4	22	8	5	15	1220	2	5	165	.....
26	400	5	4	15	8	8	8	890	2	5	118	.....
27	300	5	4	8	8	8	4	650	2	5	78	.....
28	200	5	5	5	8	22	8	390	2	5	30	.....
29	100	5	4	8	5	1500	5	228	2	5	15	.....
30	100	.....	4	15	5	5	3	300	2	5	5	.....
31	100	.....	4	.....	5	.....	3	2080	.....	5	.....	.....
Total..	5670	8890	388	464	307	6119	525	29755	711	155	3277	.....
Mean.....	183	307	12.5	15.5	9.9	204	16.9	960	23.7	5.0	109	.....
Max.....	800	1000	180	95	22	1500	168	6150	490	5	705	.....
Min.....	20	5	4	4	5	5	1	3	2	5	5	.....
Acre-ft.	11300	17700	769	922	609	12100	1040	59000	1410	307	6490	.....

Unless otherwise noted, all discharges are in cubic feet per second.
Discharge estimated Jan. 6—Feb. 21, acc't ice.

ARKANSAS RIVER AT HOLLY.

Location.—At highway bridge half a mile southeast of Holly, on line between secs. 14 and 15, T. 23 S., R. 42 W., 1 mile below the mouth of Wild Horse Creek, an intermittent stream.

Records Available.—October 15, 1907, to November 30, 1916.

Drainage Area.—Approximately 25,000 square miles.

Gage.—A number of gages have been used at the station, but all readings have been referred to the same datum except those from October 25 to December 31, 1911, when a different datum was used.

Channel.—Very shifting.

Discharge Measurements.—Made from bridge during high water and by wading at low stages.

Winter Flow.—Ice causes backwater during a portion of the winter months.

Diversions.—There are court decrees for diversions of 1,072 second-feet from Arkansas River between the stations at La Junta and Holly, and diversions of 1,253 second-feet from intervening tributaries. There are many diversions from Arkansas River below Holly, in Kansas.

Co-operation.—Station maintained in co-operation with the Arkansas Valley Ditch Association.

COTTONWOOD CREEK BELOW HOT SPRINGS, NEAR BUENA VISTA.

Location.—In the Leadville National Forest, at bridge in sec. 22, T. 14 S., R. 79 W., half a mile below Hot Springs Hotel and 6 miles west of Buena Vista; 2 miles below mouth of South Fork, the nearest tributary.

Records Available.—April 7, 1911, to December 31, 1916. From September 23, 1910, to September 13, 1911, a station was maintained in section 21, 1 mile above the present station.

Drainage Area.—72 square miles.

Gage.—Vertical staff.

Channel.—Practically permanent.

Discharge Measurements.—Made from bridge or by wading.

Winter Flow.—The river is open during the winter months on account of hot springs above.

Diversions.—There are court decrees for diversions of 148 second-feet from Cottonwood Creek, of which 28 second-feet are above the station.

Accuracy.—Records good.

Co-operation.—Station maintained by the United States Geological Survey in co-operation with the United States Forest Service. Records furnished by the United States Geological Survey.

Discharge of Arkansas River at Holly for 1915.
Drainage Area, 25,000 Square Miles. Altitude, 3,387 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec
1	250	230	240	138	985	4300	1220	460	360	138	110	175
2	250	240	285	105	1180	4850	560	1300	330	120	125	195
3	250	220	283	90	985	6450	360	1160	340	120	125	175
4	250	220	280	80	900	8850	690	750	550	120	125	195
5	240	290	240	80	700	7500	280	560	490	120	98	175
6	220	350	290	70	900	6100	420	310	420	85	90	240
7	220	490	310	90	1070	5450	500	160	320	120	65	218
8	220	415	375	80	1180	4850	320	165	340	120	50	155
9	220	345	370	90	900	3820	175	170	300	120	50	138
10	220	200	300	370	640	3370	158	160	275	120	60	175
11	220	200	355	340	450	2120	95	140	200	120	120	155
12	175	230	380	310	280	1790	72	150	200	120	90	70
13	175	185	490	225	178	1520	65	165	200	52	105	155
14	175	150	485	310	120	1790	65	210	200	70	70	155
15	175	155	330	590	90	1520	110	1020	155	50	95	155
16	175	150	325	985	70	760	110	1860	85	50	220	218
17	175	135	385	1280	70	450	95	950	225	50	260	155
18	175	105	460	3370	138	370	80	560	178	50	190	200
19	175	100	340	1960	700	200	72	1780	138	50	195	140
20	175	100	410	2480	830	70	125	2850	120	110	155	165
21	175	100	120	1960	900	40	1060	1380	120	110	70	200
22	175	100	155	1070	1180	25	340	1630	102	98	50	225
23	200	95	120	985	1180	25	220	1500	85	110	95	225
24	240	130	120	1280	700	60	198	2250	102	125	120	225
25	240	125	90	1790	450	450	260	13300	102	125	108	210
26	290	140	90	3600	450	1280	920	5150	102	110	120	225
27	265	155	80	4850	2300	900	600	4300	120	70	155	225
28	240	270	70	3370	8200	450	310	2250	102	70	138	250
29	290	.....	90	2120	4300	540	690	1310	120	110	155	275
30	290	.....	120	1180	3140	3600	1030	960	138	110	195	275
31	290	.....	120	.....	4850	.....	850	650	.....	125	.....	300
Total	6830	5625	8108	35248	40016	73500	11850	49560	6519	3068	3604	6044
Mean	220	201	262	1170	1290	2450	382	1600	217	99.0	120	195
Max	290	490	490	4850	8200	8850	1220	13300	550	138	260	300
Min	175	95	70	70	70	25	65	140	85	50	50	70
Acre-ft.	13500	11200	16100	69600	79300	146000	23500	98400	12900	6090	7140	12000

Discharge estimated Jan. 1-22; Feb. 1-5, 9-25; Dec. 18-31.

Discharge of Arkansas River at Holly for 1916.
Drainage Area, 25,000 Square Miles. Altitude, 3,387 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	160	225	120	68	30	2	68	5	900	40	65	.....
2	375	250	120	55	30	2	22	5	570	40	65	.....
3	275	230	80	55	30	3	8	5	460	40	65	.....
4	300	225	220	55	30	3	8	5	370	25	65	.....
5	300	270	160	55	22	22	15	5	270	40	48	.....
6	325	300	140	55	22	190	8	5	208	25	40	.....
7	300	300	100	80	22	100	5	5	170	25	48	.....
8	275	300	100	120	15	68	5	5	170	25	48	.....
9	300	300	80	100	8	55	8	5	150	40	40	.....
10	350	550	80	120	5	30	15	5	150	65	48	.....
11	850	750	100	120	5	80	15	5	120	65	48	.....
12	500	850	80	100	5	570	15	5	120	65	48	.....
13	500	850	80	80	5	220	22	5	120	32	75	.....
14	200	1600	80	80	5	160	15	5	105	40	150	.....
15	150	800	100	100	3	140	15	8	105	40	150	.....
16	150	1100	80	80	2	140	15	120	65	65	150	.....
17	150	1050	80	80	3	120	15	220	40	90	225	.....
18	125	750	80	80	5	100	15	140	32	65	250	.....
19	150	700	80	100	5	80	15	140	40	65	275	.....
20	150	500	80	80	5	570	15	120	40	65	250	.....
21	175	500	68	80	5	220	8	2460	40	65	225	.....
22	200	350	80	80	3	80	15	8560	40	65	150	.....
23	200	280	80	68	5	68	8	7360	40	65	190	.....
24	300	315	80	55	3	100	8	2160	40	120	150	.....
25	375	280	80	30	2	68	5	695	40	120	225	.....
26	500	220	68	15	2	42	5	315	40	120	315	.....
27	450	160	68	15	2	30	5	248	40	120	315	.....
28	350	55	55	30	3	15	5	170	25	90	270	.....
29	225	120	68	30	3	120	5	170	40	90	225	.....
30	225	.....	68	30	2	190	5	460	40	65	170	.....
31	225	.....	68	.....	2	.....	5	900	.....	65	.....	.....
Total	9110	14180	2823	2096	289	3588	393	24316	4590	1942	4388	.....
Mean	294	489	91.1	69.9	9.3	120	12.7	784	153	62.6	146	.....
Max	850	1600	220	120	30	570	68	8560	900	120	315	.....
Min	125	55	55	15	2	2	5	5	32	25	40	.....
Acre-ft.	18100	28100	5600	4160	572	7140	781	48200	9100	3850	8690	.....

Unless otherwise noted, all discharges are in cubic feet per second.
Discharge estimated Jan. 1—Feb. 22, acc't ice.

Discharge of Cottonwood Below Hot Springs near Buena Vista for 1915.
Drainage Area, 72 Square Miles. Altitude, 8,000 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	22	22	22	22	44	238	279	46	41	46	31	29
2	22	22	22	22	30	264	264	42	40	45	30	27
3	22	22	22	22	29	172	248	40	45	42	30	27
4	22	21	21	22	29	124	229	39	46	39	30	26
5	22	21	22	22	29	134	238	38	45	38	29	26
6	22	21	21	22	29	117	248	39	41	38	29	27
7	22	21	21	22	27	94	172	47	40	39	30	27
8	22	22	21	22	30	117	184	117	40	38	30	27
9	22	22	21	22	34	184	152	84	39	38	30	26
10	22	22	21	22	34	215	145	66	38	38	29	26
11	22	22	22	22	42	345	124	60	38	39	26	26
12	22	22	21	22	64	405	111	66	40	40	22	26
13	22	22	21	22	88	238	111	58	38	39	23	26
14	22	21	22	24	102	192	111	52	40	38	22	26
15	22	21	22	27	88	215	102	58	40	40	24	26
16	22	21	22	28	111	264	94	54	40	40	24	26
17	22	21	21	24	117	317	84	50	40	40	24	26
18	22	21	21	23	152	289	78	46	39	39	26	26
19	22	22	21	23	111	375	71	47	38	40	29	26
20	22	22	20	29	67	405	67	50	36	40	30	26
21	22	22	20	29	55	405	67	47	35	40	29	26
22	22	21	20	29	55	438	67	45	34	39	29	26
23	22	21	20	27	64	470	64	64	33	39	29	26
24	22	20	21	24	84	438	60	61	33	39	29	26
25	22	21	21	23	124	405	60	58	46	38	29	26
26	22	22	21	24	111	375	52	52	55	36	29	26
27	22	22	22	29	84	375	64	51	54	36	29	24
28	21	22	22	39	78	317	55	47	45	34	26	26
29	22	.....	22	47	111	289	52	46	45	34	27	26
30	22	.....	22	54	117	289	50	47	50	34	29	26
31	22	.....	22	.....	160	.....	46	46	.....	33	.....	26
Total	681	602	660	784	2300	8505	3749	1663	1234	1198	833	812
Mean....	22.0	21.5	21.3	26.1	74.2	284	121	53.6	41.1	38.6	27.8	26.2
Max.....	22	22	22	54	160	470	279	117	55	46	31	29
Min.....	21	20	20	22	27	94	46	38	33	33	22	24
Acre-ft.	1350	1190	1310	1550	4560	16900	7440	3300	2450	2370	1650	1610

Discharge of Cottonwood Below Hot Springs near Buena Vista for 1916.
Drainage Area, 72 Square Miles. Altitude, 8,000 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	24	22	22	22	42	215	256	184	58	40	38	30
2	26	24	22	22	48	215	248	134	55	45	38	30
3	26	23	22	23	35	229	248	124	55	44	36	30
4	25	23	21	22	42	264	229	145	52	45	36	30
5	25	23	22	22	46	229	201	117	52	41	32	30
6	24	23	21	22	60	215	201	111	52	48	30	30
7	23	23	21	21	78	192	184	111	52	52	35	25
8	24	23	22	22	111	184	192	102	52	50	32	23
9	24	23	22	22	134	238	192	102	50	50	30	29
10	25	23	22	22	172	317	201	94	47	50	28	29
11	25	22	22	23	172	375	172	88	64	50	36	29
12	22	22	22	22	152	405	145	88	55	50	32	29
13	23	22	23	25	117	470	160	88	55	50	27	29
14	23	22	23	24	111	470	145	117	55	47	26	29
15	23	22	22	23	84	470	134	102	52	46	30	29
16	23	22	22	23	60	470	145	102	50	45	32	29
17	23	22	22	27	71	540	134	94	48	44	32	29
18	24	22	22	29	60	540	134	88	47	40	32	28
19	22	22	24	29	67	540	124	84	47	40	32	27
20	22	22	24	26	71	540	117	78	46	38	34	27
21	22	22	26	24	64	540	102	73	45	32	32	27
22	22	22	24	29	64	470	94	67	44	40	32	27
23	23	22	26	35	55	317	88	61	45	40	32	28
24	23	22	24	37	55	264	84	67	46	42	32	27
25	23	22	22	40	67	289	78	67	46	38	30	27
26	23	21	22	45	71	264	84	67	45	41	32	26
27	23	22	23	50	71	264	88	66	42	40	32	26
28	24	22	23	55	78	289	88	61	42	40	32	26
29	23	22	23	64	84	289	84	61	40	38	30	26
30	24	.....	23	50	111	264	152	67	40	38	30	26
31	22	.....	24	.....	145	.....	134	61	.....	36	.....	26
Total..	728	647	703	900	2598	10368	4638	2871	1479	1340	972	863
Mean.....	23.5	22.3	22.7	30.0	83.8	346	150	92.6	49.3	43.2	32.4	27.8
Max.....	26	24	26	64	172	540	256	184	64	52	38	30
Min.....	22	21	21	21	35	184	78	61	40	32	26	23
Acre-ft.	1440	1280	1400	1790	5150	20600	9220	5690	2930	2660	1930	1710

Unless otherwise noted, all discharges are in cubic feet per second.

CHALK CREEK AT UPPER STATION NEAR ST. ELMO.

Location.—In sec. 27, T. 15 S., R. 80 W., in the Leadville National Forest, one-quarter mile below the power plant of the Tin Cup Gold Dredging Company, and one and one-quarter miles below St. Elmo. The nearest tributary is Coal Creek, which enters a quarter mile below.

Records Available.—November 15, 1913, to November 12, 1916.

Drainage Area.—48 square miles (measured from Forest atlas).

Gage.—Friez recording gage owned by the Tin Cup Gold Dredging Company.

Channel.—Apparently permanent.

Discharge Measurements.—Made from foot bridge and by wading.

Winter Flow.—Affected very little by ice.

Diversions.—There are no court decrees for diversions from Chalk Creek, the water of which is not returned to the stream above the station.

Regulated Flow.—Low-water flow regulated to a certain extent by a small reservoir at St. Elmo formed by the diversion dam for the Tin Cup Gold Dredging power house.

Accuracy.—Conditions are favorable for accurate results and the estimates are considered excellent.

Co-operation.—Records furnished by the United States Geological Survey.

CHALK CREEK NEAR ST. ELMO.
(Lower Station.)

Location.—In the Leadville National Forest at highway bridge in sec. 28, T. 15 S., R. 79 W., just below the cascades of Chalk Creek and 6 miles east of St. Elmo. Nearest tributary is a small intermittent stream entering from the north just below.

Records Available.—March 10, 1911, to March 31, 1916. From September 6 to December 28, 1910, a station was maintained in sec. 24, T. 15 S., R. 79 W. Station discontinued March 31, 1916.

Drainage Area.—75 square miles.

Gage.—Vertical staff.

Channel.—Somewhat shifting.

Discharge Measurements.—Made from the bridge during high water and by wading at ordinary stages.

Winter Flow.—Ice causes only slight backwater.

Diversions.—There are no court decrees for diversions from Chalk Creek above the station, but below there are decrees for 132 second-feet.

Accuracy.—Results fair.

Co-operation.—Records furnished by the United States Geological Survey.

Discharge of Chalk Creek at Upper Station near St. Elmo for 1915.
Drainage Area, 48 Square Miles. Altitude, 10,000 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	9	32	159	152	34	19	26	13	9
2	.....	.....	.....	10	21	148	148	32	18	23	16	10
3	.....	.....	.....	9	20	123	136	29	20	22	15	10
4	.....	.....	.....	12	18	99	134	28	20	19	17	10
5	.....	.....	.....	10	18	93	143	27	20	17	18	10
6	.....	.....	.....	9	18	86	148	33	20	18	23	10
7	.....	.....	.....	8	18	84	123	52	18	17	20	10
8	.....	.....	.....	9	18	105	113	60	18	18	13	10
9	.....	.....	.....	8	21	150	107	50	18	16	11	9
10	.....	.....	.....	9	27	176	105	41	16	17	11	10
11	.....	.....	.....	9	53	220	103	42	15	15	10	11
12	.....	.....	.....	10	68	210	97	45	15	14	10	11
13	.....	.....	8	13	92	171	95	40	14	15	10	10
14	.....	.....	.....	13	115	161	92	41	15	16	9	10
15	.....	.....	7	8	13	88	190	88	52	16	16	9	10
16	.....	.....	7	7	11	119	195	79	45	16	16	9	10
17	.....	.....	7	8	11	134	195	67	35	16	14	9	10
18	.....	.....	7	8	14	105	222	59	30	16	15	9	10
19	.....	.....	7	8	17	77	235	52	28	16	14	10	9
20	.....	.....	7	.....	20	60	225	49	25	16	16	10	10
21	.....	.....	8	8	22	53	228	46	24	15	14	10	13
22	.....	.....	.....	8	19	54	235	19	24	14	13	10	12
23	.....	.....	.....	8	18	74	232	20	40	14	15	10	10
24	.....	.....	.....	8	16	97	222	47	41	14	18	10	10
25	.....	.....	8	7	18	105	228	46	40	23	18	10	10
26	.....	.....	.....	7	17	79	220	47	28	27	14	10	10
27	.....	.....	.....	8	23	70	190	65	25	22	13	10	10
28	.....	.....	.....	8	34	86	176	53	22	21	12	9	9
29	.....	.....	.....	8	47	99	164	46	21	22	13	9	9
30	.....	.....	.....	8	52	99	161	41	22	24	12	9	9
31	.....	.....	.....	8	.....	130	.....	38	21	.....	13	.....	.....
Total	.....	.....	.....	.....	490	2068	5303	2558	1077	538	499	349	311
Mean	.....	7.0	8.0	16.3	66.7	177	82.5	34.7	17.9	16.1	11.6	10.0
Max	.....	.....	.....	.....	52	134	235	152	60	27	26	23	13
Min	.....	.....	.....	.....	8	18	84	19	21	14	12	9	9
Acre-ft.	.....	389	492	970	4100	10500	5070	2130	1070	990	690	615

Discharge of Chalk Creek at Upper Station near St. Elmo for 1916.
Drainage Area, 48 Square Miles. Altitude, 10,000 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov	Dec.
1	10	7	8	12	58	175	175	99	32	17	19	.....
2	10	7	8	12	53	175	168	109	30	22	18	.....
3	9	8	7	12	47	182	162	90	30	22	15	.....
4	9	8	7	12	53	185	150	79	29	18	15	.....
5	9	8	7	12	70	170	143	74	27	16	15	.....
6	9	8	8	11	101	178	134	79	30	27	15	.....
7	9	8	8	12	131	175	136	84	32	27	12	.....
8	8	8	8	12	145	182	143	70	32	32	13	.....
9	8	8	8	10	162	219	150	67	46	27	13	.....
10	8	8	9	13	165	243	148	67	53	27	13	.....
11	8	7	9	16	152	246	131	60	36	31	12	.....
12	8	7	9	17	162	255	140	58	45	28	14	.....
13	9	7	9	19	165	273	122	86	40	24	.....	.....
14	10	7	18	18	127	267	116	101	32	26	.....	.....
15	12	7	18	19	101	252	109	80	32	26	.....	.....
16	11	7	11	19	86	255	114	79	37	26	.....	.....
17	12	8	10	19	80	258	105	74	36	30	.....	.....
18	11	8	10	26	80	261	95	62	34	29	.....	.....
19	10	8	10	26	87	255	88	58	33	25	.....	.....
20	9	8	10	25	87	237	84	56	32	23	.....	.....
21	9	8	12	25	79	222	79	53	30	23	.....	.....
22	9	8	9	29	75	201	82	47	28	23	.....	.....
23	8	8	11	42	70	190	77	47	26	22	.....	.....
24	8	8	11	50	72	190	70	47	24	23	.....	.....
25	8	8	10	54	82	192	67	46	22	20	.....	.....
26	8	8	10	62	90	192	65	41	20	23	.....	.....
27	8	8	10	75	101	195	68	38	19	24	.....	.....
28	8	8	11	88	118	192	65	36	17	23	.....	.....
29	7	8	11	88	131	190	82	35	18	24	.....	.....
30	7	.....	12	60	152	185	129	35	16	22	.....	.....
31	7	.....	11	.....	172	.....	103	36	.....	20	.....	.....
Total	276	224	310	895	3254	6392	3500	1993	918	750	174	.....
Mean	8.90	7.72	10.0	29.8	105	213	113	64.3	30.6	24.2	.....	.....
Max	12	8	18	88	172	273	175	109	53	32	.....	.....
Min	7	7	7	10	147	170	65	35	16	16	.....	.....
Acre-ft.	547	444	615	1770	6460	12700	6950	3950	1820	1490	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Chalk Creek near St. Elmo (Lower Station) for 1915.
Drainage Area, 75 Square Miles. Altitude, 10,000 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	20	58	198	230	65	43	48	28	26
2	.....	.....	.....	.....	23	50	198	178	56	37	48	25	27
3	.....	.....	.....	.....	20	42	173	178	56	37	45	25	28
4	.....	.....	.....	.....	22	42	152	178	56	37	42	25	25
5	.....	.....	.....	.....	23	36	152	178	56	37	36	28	25
6	.....	.....	.....	.....	20	42	133	178	60	37	32	30	25
7	.....	.....	.....	.....	20	42	114	169	56	37	32	31	25
8	.....	.....	.....	.....	20	36	114	169	74	37	36	32	25
9	.....	.....	.....	.....	20	36	198	148	93	37	36	32	28
10	.....	.....	.....	.....	28	36	254	148	56	37	35	32	28
11	.....	.....	.....	.....	22	42	318	148	56	37	34	32	25
12	.....	.....	.....	.....	22	68	382	148	56	37	34	31	25
13	.....	.....	.....	.....	24	114	290	148	56	37	34	30	25
14	.....	.....	.....	.....	25	198	198	128	60	37	32	30	25
15	.....	.....	15	.....	36	132	254	121	58	37	36	29	22
16	.....	21	.....	.....	28	142	285	140	56	37	32	28	26
17	.....	.....	.....	.....	28	152	382	103	56	37	33	28	26
18	.....	.....	.....	.....	28	173	350	96	56	33	34	27	26
19	.....	.....	.....	.....	28	173	350	88	56	33	34	26	26
20	.....	.....	.....	.....	28	96	360	88	47	33	33	26	26
21	.....	.....	.....	.....	32	82	370	74	41	29	32	27	25
22	.....	.....	.....	.....	32	82	304	74	44	29	32	28	25
23	.....	.....	.....	.....	32	99	337	74	47	26	32	25	25
24	.....	.....	.....	.....	28	114	337	74	56	26	31	25	25
25	.....	.....	.....	.....	28	152	370	74	47	34	30	25	25
26	.....	.....	.....	.....	28	132	370	74	41	38	30	25	25
27	.....	.....	.....	.....	32	114	337	79	41	43	30	25	25
28	.....	.....	.....	.....	42	114	304	68	41	43	26	26	25
29	.....	.....	.....	16	48	114	261	74	41	43	25	26	25
30	.....	.....	.....	18	48	123	261	74	41	43	26	26	25
31	.....	.....	.....	16	.....	132	.....	74	41	.....	27	.....	25
Total	.....	.....	.....	.....	830	2968	8106	3775	1666	1088	1047	833	789
Mean	.....	.....	.....	.....	27.7	95.7	270	122	53.7	36.3	33.8	27.8	25.5
Max	.....	.....	.....	.....	48	198	382	230	93	43	48	32	28
Min	.....	.....	.....	.....	20	36	114	68	41	26	25	25	22
Acre-ft.	.....	.....	.....	.....	1650	5880	16100	7500	3300	2160	2080	1650	1570

Discharge of Chalk Creek near St. Elmo (Lower Station) for 1916.
Drainage Area, 75 Square Miles. Altitude, 10,000 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	25	22	22	.....	.....	.....	.....	.....	.....	.....	.....	.....
2	.....	25	22	22	.....	.....	.....	.....	.....	.....	.....	.....	.....
3	.....	25	22	23	.....	.....	.....	.....	.....	.....	.....	.....	.....
4	.....	25	22	24	.....	.....	.....	.....	.....	.....	.....	.....	.....
5	.....	25	22	26	.....	.....	.....	.....	.....	.....	.....	.....	.....
6	.....	25	22	28	.....	.....	.....	.....	.....	.....	.....	.....	.....
7	.....	25	22	28	.....	.....	.....	.....	.....	.....	.....	.....	.....
8	.....	22	22	25	.....	.....	.....	.....	.....	.....	.....	.....	.....
9	.....	24	22	25	.....	.....	.....	.....	.....	.....	.....	.....	.....
10	.....	25	20	22	.....	.....	.....	.....	.....	.....	.....	.....	.....
11	.....	22	20	22	.....	.....	.....	.....	.....	.....	.....	.....	.....
12	.....	23	20	22	.....	.....	.....	.....	.....	.....	.....	.....	.....
13	.....	25	26	22	.....	.....	.....	.....	.....	.....	.....	.....	.....
14	.....	25	32	20	.....	.....	.....	.....	.....	.....	.....	.....	.....
15	.....	24	26	20	.....	.....	.....	.....	.....	.....	.....	.....	.....
16	.....	23	24	24	.....	.....	.....	.....	.....	.....	.....	.....	.....
17	.....	22	22	21	.....	.....	.....	.....	.....	.....	.....	.....	.....
18	.....	22	20	22	.....	.....	.....	.....	.....	.....	.....	.....	.....
19	.....	22	42	22	.....	.....	.....	.....	.....	.....	.....	.....	.....
20	.....	22	34	22	.....	.....	.....	.....	.....	.....	.....	.....	.....
21	.....	22	25	22	.....	.....	.....	.....	.....	.....	.....	.....	.....
22	.....	22	22	21	.....	.....	.....	.....	.....	.....	.....	.....	.....
23	.....	22	20	25	.....	.....	.....	.....	.....	.....	.....	.....	.....
24	.....	22	20	25	.....	.....	.....	.....	.....	.....	.....	.....	.....
25	.....	22	20	25	.....	.....	.....	.....	.....	.....	.....	.....	.....
26	.....	22	20	25	.....	.....	.....	.....	.....	.....	.....	.....	.....
27	.....	22	21	25	.....	.....	.....	.....	.....	.....	.....	.....	.....
28	.....	22	22	25	.....	.....	.....	.....	.....	.....	.....	.....	.....
29	.....	22	22	25	.....	.....	.....	.....	.....	.....	.....	.....	.....
30	.....	22	.....	25	.....	.....	.....	.....	.....	.....	.....	.....	.....
31	.....	22	.....	25	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	.....	718	676	730	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean	.....	23.2	23.3	23.5	.....	.....	.....	.....	.....	.....	.....	.....	.....
Max	.....	25	42	28	.....	.....	.....	.....	.....	.....	.....	.....	.....
Min	.....	22	20	20	.....	.....	.....	.....	.....	.....	.....	.....	.....
Acre-ft.	.....	1430	1340	1440	.....	.....	.....	.....	.....	.....	.....	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

SOUTH FORK OF ARKANSAS RIVER AT PONCHA.

Location.—At highway bridge about half a mile from Poncha, in sec. 10, T. 49 N., R. 8 E. Nearest tributary, Poncha Creek, enters one-fourth mile below.

Records Available.—January 14, 1911, to November 9, 1916.

Drainage Area.—140 square miles.

Gage.—Vertical staff.

Channel.—Slightly shifting.

Discharge Measurements.—Made from bridge during high water and by wading at ordinary stages.

Winter Flow.—Springs keep this stream open during the winter months.

Diversions.—There are court decrees for diversions of 114 second-feet from the South Fork above the station, and 77 second-feet below. There are also decrees for diversions of 85 second-feet from the North Fork which enters above.

Accuracy.—Results good.

Co-operation.—Records furnished by the United States Geological Survey.

PONCHA CREEK AT PONCHA.

Location.—At highway bridge in sec. 10, T. 49 N., R. 8 E., near Poncha, about one-fourth mile above the mouth of creek.

Records Available.—January 14, 1911, to December 31, 1916.

Drainage Area.—89 square miles.

Gage.—Vertical staff.

Channel.—Slightly shifting.

Discharge Measurements.—Made from bridge during high water and by wading at ordinary stages.

Winter Flow.—Springs prevent the creek from freezing to any considerable extent.

Diversions.—There are court decrees for diversions of 7 second-feet above the station, but none below.

Accuracy.—Results good.

Co-operation.—Records furnished by the United States Geological Survey.

Discharge of South Fork Arkansas River at Poncha for 1915.
Drainage Area, 140 Square Miles. Altitude, 7,471 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	33	32	30	27	128	89	151	41	33	32	17	48
2	33	33	30	26	120	205	130	32	24	24	17	49
3	35	33	32	26	120	205	117	26	22	21	17	50
4	33	33	33	30	100	113	103	28	22	26	13	52
5	33	33	33	37	87	109	116	20	25	26	13	43
6	33	33	33	41	76	93	135	14	22	22	15	60
7	33	35	33	41	60	81	76	13	20	25	25	48
8	33	37	33	41	37	85	68	30	20	24	21	46
9	33	37	33	41	30	113	87	35	22	24	16	46
10	33	37	33	41	30	177	55	26	19	26	13	50
11	33	41	33	37	30	265	63	19	20	22	14	46
12	33	35	33	33	65	335	57	20	16	22	30	52
13	26	32	30	26	76	215	50	16	18	26	48	46
14	33	33	32	26	151	160	47	14	14	26	58	46
15	32	32	37	26	135	168	50	15	16	27	62	43
16	31	32	35	27	177	151	32	14	12	28	55	44
17	30	32	33	26	215	135	13	10	12	31	50	46
18	30	32	33	25	215	205	12	9	9	31	55	48
19	30	32	33	26	168	285	8	9	9	28	58	49
20	26	33	33	26	116	335	8	13	7	26	57	50
21	26	33	33	26	102	265	6	15	7	26	50	52
22	33	33	33	33	81	285	7	33	7	26	50	50
23	33	33	33	33	72	310	10	32	7	26	53	52
24	33	33	33	41	78	335	17	28	7	25	48	46
25	33	33	30	46	78	285	25	26	21	27	50	48
26	33	33	32	55	65	310	22	26	32	26	58	48
27	33	32	30	55	65	245	135	30	18	26	60	46
28	35	32	27	65	55	196	93	28	12	20	43	45
29	33	.....	26	87	58	160	67	37	21	20	44	44
30	33	.....	25	168	62	151	41	55	41	18	46	43
31	35	.....	30	.....	62	.....	46	33	.....	18	.....	48
Total	996	939	987	1238	2914	6066	1847	747	535	775	1156	1484
Mean	32.1	33.5	31.8	41.3	94.0	202	59.6	24.1	17.8	25.0	38.5	47.9
Max	35	41	37	168	215	335	151	55	41	32	62	60
Min	26	32	25	25	30	81	6	9	7	18	13	43
Acre-ft.	1970	1860	1960	2460	5780	12000	3660	1480	1060	1540	2290	2950

Discharge of South Fork Arkansas River at Poncha for 1916.
Drainage Area, 140 Square Miles. Altitude, 7,471 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	41	38	46	15	76	135	120	102	15	12	34	.....
2	41	43	48	29	62	135	106	130	12	12	34	.....
3	41	50	48	32	60	143	113	102	7	12	32	.....
4	41	50	48	26	59	160	93	72	8	12	30	.....
5	41	49	46	23	67	143	96	62	7	12	29	.....
6	50	50	48	13	87	135	81	67	12	12	27	.....
7	55	46	39	14	128	128	81	67	12	13	32	.....
8	55	46	46	11	135	135	83	57	12	46	31	.....
9	55	49	43	7	143	151	96	52	13	27	28	.....
10	55	50	44	7	186	235	117	52	13	28	.....	.....
11	50	50	48	6	160	265	110	57	14	30	.....	.....
12	41	50	38	7	151	255	98	52	16	34	.....	.....
13	41	46	36	12	143	285	102	72	27	32	.....	.....
14	45	41	37	8	151	310	109	89	26	30	.....	.....
15	50	41	39	6	120	310	119	83	24	33	.....	.....
16	50	46	38	6	100	285	107	78	22	32	.....	.....
17	45	46	39	6	87	245	106	62	21	33	.....	.....
18	47	50	33	7	60	265	81	62	20	32	.....	.....
19	50	46	37	8	51	265	76	47	19	30	.....	.....
20	50	41	35	7	81	245	76	50	17	30	.....	.....
21	47	46	36	6	59	196	76	46	16	30	.....	.....
22	45	46	32	5	53	186	81	46	15	28	.....	.....
23	41	46	30	8	38	168	76	35	18	36	.....	.....
24	33	41	20	7	26	151	65	37	19	38	.....	.....
25	33	37	20	10	33	151	32	39	18	32	.....	.....
26	33	41	13	18	26	151	26	35	15	57	.....	.....
27	33	46	14	19	30	160	19	28	13	41	.....	.....
28	41	46	14	35	29	151	18	25	12	33	.....	.....
29	38	46	13	46	32	143	14	20	10	41	.....	.....
30	38	.....	13	70	81	120	109	20	11	43	.....	.....
31	35	.....	20	.....	113	.....	123	20	.....	33	.....	.....
Total	1361	1323	1061	474	2627	5807	2609	1766	464	914	277	.....
Mean	43.9	45.6	34.2	15.8	84.7	194	84.2	57.0	15.5	29.5	.....	.....
Max	55	50	48	70	186	310	123	130	27	57	.....	.....
Min	33	37	13	5	26	120	14	20	7	12	.....	.....
Acre-ft.	2700	2620	2100	940	5210	11500	5180	3500	922	1810	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Poncha Creek at Poncha for 1915.
Drainage Area, 89 Square Miles. Altitude, 7,471 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	7	7	9	9	80	152	50	28	11	13	9	10
2	7	6	6	8	52	172	50	23	10	12	11	9
3	7	6	6	8	47	172	45	15	11	11	11	9
4	7	6	8	9	32	114	35	18	11	12	11	9
5	7	6	9	11	24	123	44	19	11	12	11	10
6	7	6	7	11	18	117	47	18	10	12	11	9
7	7	6	6	11	11	92	37	20	10	11	13	8
8	7	7	6	11	5	87	37	21	11	11	12	8
9	7	8	6	11	37	108	37	25	10	11	10	8
10	7	8	6	11	32	132	24	21	9	11	9	9
11	7	10	6	15	32	172	26	20	9	11	6	7
12	7	9	6	18	65	162	26	18	9	12	5	7
13	6	7	7	24	84	152	26	15	8	11	6	7
14	7	8	8	27	104	119	24	16	9	12	5	8
15	8	6	10	27	119	123	27	17	10	12	5	8
16	10	6	9	27	142	105	22	16	12	13	6	8
17	14	6	7	24	142	87	17	13	10	13	6	8
18	11	6	6	30	162	87	16	13	10	13	8	8
19	10	6	6	30	108	110	15	13	10	13	7	10
20	7	6	6	28	72	96	15	13	10	12	10	9
21	6	7	6	28	75	99	16	15	10	12	11	8
22	6	7	6	39	72	92	17	11	10	12	11	8
23	6	7	6	37	72	90	16	15	10	12	12	8
24	6	9	6	37	99	80	17	19	10	11	11	8
25	6	9	6	37	110	80	31	13	16	12	8	8
26	6	9	6	42	87	72	26	13	17	11	5	8
27	6	6	6	47	87	68	52	12	12	10	10	8
28	6	6	7	52	80	62	37	12	12	10	5	8
29	6	.....	11	58	87	52	29	12	13	10	8	8
30	6	.....	10	152	117	49	21	13	14	9	10	8
31	6	.....	12	.....	132	.....	22	10	.....	9	.....	8
Total	223	196	222	879	2386	3226	904	507	325	356	263	257
Mean	7.2	7.0	7.2	29.3	77.0	108	29.2	16.4	10.8	11.5	8.77	8.29
Max	14	10	12	152	162	172	52	28	17	13	13	10
Min	6	6	6	8	5	49	15	10	8	9	5	7
Acre-ft.	443	389	443	1740	4730	6430	1800	1010	643	707	522	510

Discharge of Poncha Creek at Poncha for 1916.
Drainage Area, 89 Square Miles. Altitude, 7,471 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	8	8	8	7	37	114	34	34	13	7	8	12
2	8	8	8	9	38	116	33	54	13	6	10	12
3	8	8	10	15	27	131	31	40	10	6	9	11
4	8	8	9	19	35	142	31	30	11	6	7	12
5	8	8	12	14	39	120	34	26	11	7	6	12
6	8	8	9	14	53	116	30	35	18	7	7	12
7	8	8	6	10	78	92	30	32	17	7	7	12
8	8	8	10	10	100	83	29	29	16	9	5	12
9	8	8	12	11	114	83	29	21	16	7	6	12
10	8	8	13	14	131	86	33	21	15	7	9	10
11	8	8	12	16	131	86	29	26	14	9	8	10
12	8	8	13	17	131	83	25	20	14	9	6	9
13	8	8	13	18	120	83	33	26	11	10	3	7
14	8	8	11	16	120	90	25	25	11	12	3	9
15	8	9	10	16	104	97	25	22	10	12	6	10
16	8	8	10	16	85	83	24	21	10	12	7	10
17	8	9	12	17	80	80	29	20	9	12	8	10
18	8	9	12	22	100	80	22	19	9	10	8	10
19	8	9	14	25	76	72	21	17	8	7	8	12
20	8	8	16	16	80	74	20	19	8	7	8	10
21	8	8	17	18	76	76	20	19	7	7	9	8
22	8	8	13	22	72	64	18	16	7	8	10	10
23	8	8	12	26	78	59	18	17	11	10	11	10
24	8	8	12	25	64	54	18	18	9	6	12	10
25	8	8	10	38	68	51	16	18	8	6	13	8
26	8	8	12	42	83	51	16	18	8	6	13	8
27	8	8	10	42	83	52	16	17	7	6	13	8
28	8	8	14	55	83	47	17	17	7	7	12	9
29	8	8	14	59	83	42	16	16	7	9	12	11
30	8	.....	14	60	118	35	31	22	7	9	12	10
31	8	.....	14	.....	131	.....	48	14	.....	9	.....	11
Total..	248	236	362	689	2618	2442	801	729	322	252	255	317
Mean	8.0	8.14	11.7	23.0	84.5	81.4	25.8	23.5	10.7	8.13	8.50	10.2
Max	8	9	17	60	131	142	48	54	18	12	13	12
Min	8	8	6	7	27	35	16	14	7	6	3	7
Acre-ft...	492	468	719	1370	5200	4840	1590	1440	637	500	506	627

Unless otherwise noted, all discharges are in cubic feet per second.

PURGATOIRE RIVER AT TRINIDAD.

Location.—About 200 feet above the Commercial Street bridge at Trinidad.

Records Available.—April 1, 1916, to November 11, 1916. From 1897 to 1899 and 1905 to 1912 a station was maintained about 1,000 feet above the present location.

Drainage Area.—742 square miles.

Channel.—Shifting.

Gage.—Painted on sloping concrete facing on north bank of river.

Discharge Measurements.—Made by wading at low stages and from Animas Street bridge during high water.

Winter Flow.—Observations discontinued during the winter months.

Diversions.—There are decrees for diversions of 186 second-feet from the Purgatoire River above this station.

Accuracy.—Results for 1916 cannot be considered better than fair.

Discharge of Purgatoire River at Trinidad for 1916.
Drainage Area, 742 Square Miles. Altitude, 5,990 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	15	148	45	30	5	5	10	5	.....
2	.....	.....	.....	15	280	45	20	5	5	15	5	.....
3	.....	.....	.....	15	280	45	15	5	5	15	5	.....
4	.....	.....	.....	15	280	1900	15	42	5	15	5	.....
5	.....	.....	.....	38	320	280	15	5	5	15	5	.....
6	.....	.....	.....	45	360	280	30	450	5	15	5	.....
7	.....	.....	.....	30	410	280	30	910	5	15	5	.....
8	.....	.....	.....	30	460	280	30	460	5	15	5	.....
9	.....	.....	.....	30	460	280	30	360	5	42	5	.....
10	.....	.....	.....	30	560	280	30	42	5	5	5	.....
11	.....	.....	.....	38	510	300	22	95	5	5	5	.....
12	.....	.....	.....	45	410	320	15	5	5	5	.....	.....
13	.....	.....	.....	38	460	360	320	20	5	5	.....	.....
14	.....	.....	.....	15	320	360	82	42	5	5	.....	.....
15	.....	.....	.....	30	320	410	15	270	5	5	.....	.....
16	.....	.....	.....	15	320	360	20	270	5	5	.....	.....
17	.....	.....	.....	15	280	410	30	270	5	5	.....	.....
18	.....	.....	.....	15	125	345	22	5	5	5	.....	.....
19	.....	.....	.....	15	125	280	125	5	5	5	.....	.....
20	.....	.....	.....	15	280	280	15	20	5	5	.....	.....
21	.....	.....	.....	15	160	280	15	42	5	5	.....	.....
22	.....	.....	.....	15	45	125	22	270	5	5	.....	.....
23	.....	.....	.....	15	125	125	22	42	5	5	.....	.....
24	.....	.....	.....	15	280	45	22	5	5	5	.....	.....
25	.....	.....	.....	15	280	45	110	5	5	5	.....	.....
26	.....	.....	.....	15	125	45	22	5	5	5	.....	.....
27	.....	.....	.....	38	125	360	30	5	5	5	.....	.....
28	.....	.....	.....	38	85	280	30	5	5	5	.....	.....
29	.....	.....	.....	30	45	38	30	5	5	5	.....	.....
30	.....	.....	.....	90	45	38	360	42	5	5	.....	.....
31	.....	.....	.....	.....	45	.....	270	42	.....	5	.....	.....
Total..	.....	.....	.....	790	8068	8521	1844	3754	150	267	.....	.....
Mean....	.....	.....	.....	26.3	260	284	59.5	121	5.0	8.6	.....	.....
Max.....	.....	.....	.....	90	560	1900	360	910	5	42	.....	.....
Min.....	.....	.....	.....	15	45	38	15	5	5	5	.....	.....
Acre-ft.	.....	.....	.....	1560	16000	16900	3660	7440	298	529	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

GRAND DRAINAGE.

NORTH FORK OF GRAND RIVER NEAR GRAND LAKE.

Location.—Three miles southwest of Grand Lake, in sec. 13, T. 3 N., R. 76 W. Nearest tributary, Grand Lake outlet, enters some distance below; no tributaries for several miles above the station.

Records Available.—July 29, 1904, to September 30, 1909; September 20, 1910, to December 31, 1916.

Gage.—Vertical staff.

Drainage Area.—107 square miles.

Channel.—Practically permanent.

Discharge Measurements.—Made from highway bridge at the gage.

Winter Flow.—Ice forms along the edges, but springs keep the river open.

Diversions and Storage.—There are court decrees for diversions of 699 second-feet from the headwaters above the station. Of this amount 525 second-feet are for diversion across the divide into the headwaters of the Cache la Poudre. There is also a reservoir decree for 19,000 acre-feet from the flood water.

Accuracy.—Results considered good.

Co-operation.—Station maintained in co-operation with the United States Geological Survey.

GRAND RIVER AT SULPHUR SPRINGS.

Location.—At the bridge connecting the Denver, Northwestern & Pacific Railway station with the town of Sulphur Springs, in sec. 2, T. 1 N., R. 78 W. Nearest tributary, Beaver Creek, enters the river 2 miles below the station.

Records Available.—July 22, 1904, to September 30, 1909, a station was maintained at this point by the United States Geological Survey; September 23, 1910, to November 11, 1916.

Drainage Area.—946 square miles.

Gage.—Chain gage.

Channel.—Somewhat shifting.

Discharge Measurements.—Made from bridge during high and ordinary stages and by wading during low water.

Winter Flow.—The river is frozen over during the winter months and discharge measurements are made to determine the winter flow.

Diversions.—Between this station and the mouth of North Fork there are court decrees for diversions of 96 second-feet from Grand River, and there is also a reservoir decree for 31,300 acre-feet from the flood waters of Grand River.

Accuracy.—Results considered good.

Co-operation.—Records furnished by the United States Geological Survey.

Discharge of North Fork of Grand River near Grand Lake for 1915.
Drainage Area, 107 Square Miles. Altitude, 8,153 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	22	228	380	332	85	58	61	48	41
2	.....	.....	.....	.....	22	160	405	310	85	56	59	46	39
3	.....	.....	.....	.....	23	140	270	290	82	56	66	45	37
4	.....	.....	.....	.....	24	100	252	270	74	58	64	45	38
5	.....	.....	.....	.....	24	91	235	290	71	58	62	43	39
6	.....	.....	.....	.....	24	85	221	310	79	56	61	43	38
7	.....	.....	.....	21	29	91	200	252	85	56	57	43	37
8	.....	.....	.....	20	31	94	200	252	91	85	57	45	36
9	.....	.....	.....	20	33	94	235	235	100	71	55	46	36
10	.....	.....	.....	20	35	108	332	235	94	66	55	48	37
11	.....	.....	.....	20	94	108	405	235	85	61	55	48	36
12	.....	.....	.....	20	150	182	510	235	79	61	55	49	37
13	.....	.....	.....	20	170	235	355	235	77	63	49	49	37
14	.....	.....	.....	20	182	310	290	207	71	61	55	49	38
15	.....	.....	.....	20	235	270	290	200	71	61	55	49	38
16	.....	.....	.....	20	235	270	270	176	71	61	55	48	38
17	.....	.....	.....	20	252	270	355	160	71	56	55	48	37
18	.....	.....	.....	20	270	290	430	150	66	53	55	46	36
19	.....	.....	.....	20	176	235	565	145	120	46	54	45	36
20	.....	.....	.....	20	228	221	510	140	100	48	54	45	36
21	.....	.....	.....	20	155	214	405	135	88	40	54	45	35
22	.....	.....	.....	20	160	200	455	125	79	42	52	46	35
23	.....	.....	.....	20	140	207	430	116	77	39	52	46	35
24	.....	.....	.....	20	120	214	405	112	74	39	52	45	35
25	.....	.....	.....	20	112	207	405	100	74	44	51	42	35
26	.....	.....	.....	20	104	207	405	100	71	77	51	46	36
27	.....	.....	.....	20	94	214	310	100	68	77	49	49	36
28	.....	.....	.....	20	120	242	310	97	66	68	48	48	37
29	.....	.....	.....	21	176	270	310	94	66	68	48	45	38
30	.....	.....	.....	21	252	310	355	94	63	66	48	43	37
31	.....	.....	.....	21	.....	332	.....	88	61	.....	48	.....	36
Total	.....	.....	.....	504	3692	6199	10500	5820	2444	1751	1692	1383	1142
Mean....	.....	.....	.....	20.2	123	200	350	188	78.8	58.4	54.6	46.1	36.8
Max.....	.....	.....	.....	21	252	332	565	332	120	85	66	49	41
Min.....	.....	.....	.....	20	22	85	200	88	61	39	48	42	35
Acre-ft.	.....	.....	.....	1000	7320	12300	20800	11600	4850	3480	3360	2740	2260

Discharge of North Fork of Grand River near Grand Lake for 1916.
Drainage Area, 107 Square Miles. Altitude, 8,153 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	36	36	34	52	225	420	322	107	56	69	55	40
2	36	36	34	52	172	395	322	90	63	72	55	40
3	36	35	34	54	135	370	300	128	60	72	55	40
4	36	34	34	55	155	420	280	197	62	72	56	41
5	36	35	34	48	190	560	260	152	74	69	53	41
6	36	34	34	41	260	472	242	128	69	65	55	43
7	37	34	34	42	345	420	214	152	72	67	56	43
8	38	34	34	45	345	370	181	142	74	65	58	43
9	36	33	34	48	445	420	214	128	76	63	60	43
10	36	33	34	55	560	560	225	111	78	63	55	41
11	37	34	34	62	445	472	242	107	78	63	55	41
12	38	35	34	69	445	420	181	94	102	65	55	40
13	38	36	34	77	395	472	152	88	107	67	55	40
14	37	34	34	80	370	530	128	107	102	69	55	40
15	36	35	34	82	300	590	152	98	84	72	55	40
16	36	34	34	80	260	652	169	88	74	76	55	40
17	37	34	34	92	242	530	169	84	74	80	55	41
18	36	34	34	113	225	590	152	88	74	80	55	40
19	36	34	37	109	197	530	148	74	74	63	55	40
20	35	34	37	105	225	500	128	69	69	62	55	40
21	36	34	38	109	242	420	107	69	67	60	47	40
22	36	34	41	109	242	500	102	65	63	58	47	40
23	36	34	53	131	260	395	102	65	63	63	46	40
24	36	34	51	155	190	322	94	65	88	74	46	40
25	35	34	51	260	260	322	88	65	78	63	44	41
26	36	34	51	242	242	322	88	65	74	63	43	41
27	35	34	50	345	260	345	88	74	74	62	40	41
28	36	34	50	300	260	322	96	65	74	60	38	41
29	36	34	50	345	260	322	102	63	74	58	41	41
30	38	.....	51	300	322	322	115	63	72	56	41	41
31	38	.....	51	.....	370	.....	128	55	.....	55	.....	41
Total.	1127	994	1223	3657	8844	13285	5291	2946	2247	2046	1541	1264
Mean....	36.4	34.3	39.5	122	285	443	171	95.0	74.9	66.0	51.4	40.8
Max.....	38	36	53	345	560	652	322	197	107	80	60	43
Min.....	35	33	34	41	135	322	88	55	56	55	38	40
Acre-ft.	2240	1970	2430	7260	17500	26400	10500	5840	4460	4060	3060	2510

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Grand River at Sulphur Springs for 1915.
Drainage Area, 946 Square Miles. Altitude, 7,665 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	300	1060	1930	2550	447	230	337	176	125
2	.....	.....	.....	.....	520	725	2550	2550	472	215	317	174	130
3	.....	.....	.....	.....	725	665	2050	2170	447	246	317	174	135
4	.....	.....	.....	.....	1280	578	1820	2050	424	263	317	176	141
5	.....	.....	.....	.....	898	550	1600	1930	400	280	357	176	146
6	.....	.....	.....	.....	497	497	1490	2290	378	263	280	176	153
7	.....	.....	.....	.....	378	400	1380	2050	378	263	263	180	153
8	.....	.....	.....	.....	357	636	1190	1930	492	280	230	184	146
9	.....	.....	.....	.....	400	542	1490	1700	606	337	246	174	138
10	.....	.....	.....	.....	424	447	1930	1820	578	317	238	176	134
11	.....	.....	.....	.....	298	497	2680	1820	472	317	230	174	138
12	.....	.....	.....	.....	337	695	3380	1820	447	280	230	162	142
13	.....	.....	.....	.....	357	975	2780	1820	424	280	246	153	146
14	.....	.....	.....	.....	400	1380	2170	1700	400	263	215	146	148
15	.....	.....	.....	.....	472	1490	1930	1600	400	263	215	138	150
16	.....	.....	.....	.....	447	1490	1820	1380	400	263	230	141	138
17	.....	.....	.....	.....	550	1490	2420	1190	378	246	230	150	125
18	.....	.....	.....	.....	497	1600	2420	1020	337	215	230	156	116
19	.....	.....	.....	.....	606	1490	3530	935	317	215	215	167	108
20	.....	.....	.....	.....	578	1190	3980	860	357	215	215	170	105
21	.....	.....	.....	.....	636	1020	3830	825	337	201	215	180	125
22	.....	.....	.....	.....	606	860	3830	790	327	187	215	190	153
23	.....	.....	.....	.....	606	935	3680	790	317	187	212	190	146
24	.....	.....	.....	.....	550	975	3830	695	298	187	198	184	135
25	.....	.....	.....	.....	524	1100	3830	650	298	174	184	167	123
26	.....	.....	.....	.....	497	1280	3680	606	298	246	192	162	110
27	.....	.....	.....	.....	497	1280	3680	665	280	317	208	153	105
28	.....	.....	.....	.....	578	1060	3680	578	263	337	200	138	110
29	.....	.....	.....	.....	758	1020	3530	578	263	357	192	132	120
30	.....	.....	.....	.....	1190	1190	2420	550	263	337	188	125	125
31	.....	.....	.....	.....	.....	1380	.....	497	230	.....	172	.....	130
Total	.....	.....	.....	.....	16763	30497	80530	42409	11728	7781	7334	4944	4099
Mean	.....	.....	.....	.....	559	984	2680	1370	378	259	237	165	132
Max.	.....	.....	.....	.....	1280	1600	3980	2550	606	357	357	190	153
Min.	.....	.....	.....	.....	298	400	1190	497	230	174	172	125	105
Acre-ft.	.....	.....	.....	.....	33300	60500	159000	84200	23200	15400	14600	9820	8120

Discharge of Grand River at Sulphur Springs for 1916.
Drainage Area, 946 Square Miles. Altitude, 7,665 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	138	120	110	190	1060	2740	1820	735	317	260	246	.....
2	153	125	105	215	975	2880	1700	665	300	253	280	.....
3	146	132	105	357	850	2600	1580	605	265	263	253	.....
4	138	138	120	215	772	2740	1360	735	263	269	253	.....
5	130	141	135	210	1160	3160	1360	735	280	249	215	.....
6	125	144	132	198	1160	2740	1160	665	357	246	246	.....
7	129	141	118	190	1820	2460	1060	735	357	249	180	.....
8	142	134	116	165	2330	2330	1060	605	298	263	202	.....
9	153	128	116	202	2880	2460	975	578	298	266	221	.....
10	156	123	125	215	3460	3020	1360	605	337	263	202	.....
11	150	120	138	337	3160	3020	1360	497	447	260	195	.....
12	130	120	162	378	2880	3020	1210	472	447	260	.....	.....
13	130	117	246	424	2600	3160	975	550	472	253	.....	.....
14	141	114	215	357	2600	3160	890	550	424	260	.....	193
15	142	112	270	424	2070	3160	810	524	424	349	.....	.....
16	140	110	180	436	1700	2880	850	498	400	325	.....	.....
17	135	110	215	447	1580	3160	810	472	337	357	.....	.....
18	132	109	280	550	1260	3310	735	378	317	400	.....	.....
19	134	109	357	578	1160	3160	735	357	298	409	.....	.....
20	135	112	735	472	1360	3310	665	357	280	357	.....	.....
21	132	114	447	378	1580	3020	605	378	263	325	.....	.....
22	132	114	280	472	1580	2880	605	357	246	310	.....	.....
23	132	110	280	497	1580	2330	550	317	246	366	.....	.....
24	130	105	246	700	1360	2070	497	317	317	357	.....	.....
25	129	104	215	810	1700	1940	497	317	337	337	.....	.....
26	128	103	317	1020	2070	2070	497	317	357	298	.....	.....
27	125	107	400	932	1940	2070	524	317	298	298	.....	.....
28	124	112	424	1260	1940	2200	524	317	280	294	.....	.....
29	125	112	298	1580	1820	2200	550	298	263	280	.....	.....
30	123	.....	230	1700	1820	1940	810	298	263	277	.....	.....
31	122	.....	180	.....	2460	.....	700	420	.....	263	.....	.....
Total	4181	3440	7197	15909	56687	81190	28834	14971	9788	9216	2493	.....
Mean	135	119	232	530	1830	2710	930	483	326	297	.....	.....
Max.	156	144	735	1700	3460	3310	1820	735	472	409	.....	.....
Min.	122	103	105	165	772	1940	497	298	246	246	.....	.....
Acre-ft.	8300	6840	14300	31500	113000	161000	57200	29700	19400	18300	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

GRAND RIVER NEAR KREMMLING.

Location.—At the entrance to Gore Canyon, 3 miles southwest of Kremmling, in sec. 23, T 1 N., R. 81 W. Nearest tributary, Blue River, enters a mile below Kremmling.

Records Available.—July 24, 1904, to November 30, 1916.

Drainage Area.—2,380 square miles.

Gage.—Automatic recording gage.

Channel.—Somewhat shifting.

Winter Flow.—Rapids below the station remain open and thus prevent backwater except for short periods when ice jams on the rapids.

Diversions.—Between this station and that at Sulphur Springs there are court decrees for diversions of 34 second-feet from Grand River and 2,315 second-feet from intervening tributaries exclusive of diversions for placer mining in the Blue River drainage.

Accuracy.—Although the channel is somewhat shifting, sufficient discharge measurements have been made to form a basis for fairly reliable estimates of flow.

Co-operation.—Station maintained in co-operation with the United States Geological Survey.

GRAND RIVER AT GLENWOOD SPRINGS.

Location.—At Glenwood Springs, at the point where the discharge from the hot springs enters the river. No Name Creek enters Grand River about 2 miles above the station and Roaring Fork enters one-half mile below.

Records Available.—May 12, 1899, to December 31, 1916.

Drainage Area.—4,520 square miles.

Gage.—Chain gage originally installed at the railroad bridge just above the Roaring Fork, but in 1900 a staff gage was installed at the present location. Since 1902 a number of automatic gages referred to the staff gage datum have been used, the present one being a Friez gage.

Channel.—Slightly shifting.

Discharge Measurements.—Made from a car and cable stretched beneath the State Street Bridge, which crosses the river one-third mile below the gage.

Winter Flow.—Ice never forms at the station, as the hot water from the springs keeps the water above the freezing point.

Artificial Control.—The Shoshone power plant of the Central Colorado Power Company, 6 miles above Glenwood Springs, has sufficient pondage to withhold the flow of the river for a portion of the day during low-water periods.

Diversions.—Between this station and the one near Kremmling there are court decrees for a diversion of 13 second-feet from Grand River for irrigation, 1,250 second-feet absolute for power and 14,400 second-feet conditional for power.

Accuracy.—Conditions are favorable for accurate results and the estimates are considered reliable.

Co-operation.—Records furnished by the United States Geological Survey.

Discharge of Grand River near Kremmling for 1915.
Drainage Area, 2,380 Square Miles. Altitude, 7,320 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	245	330	305	650	2820	4060	4990	1120	650	858	545	325
2	256	305	305	770	2270	5620	4990	1080	650	822	515	260
3	268	292	305	945	1970	4900	4540	1050	650	822	515	328
4	268	280	280	1200	1820	4380	4220	1020	710	822	515	365
5	255	268	268	1050	1560	3980	4060	945	680	788	500	405
6	242	242	318	1030	1480	3680	4380	945	710	770	515	435
7	205	218	318	1030	1360	3540	4060	945	710	740	545	435
8	205	218	330	962	1280	3330	3680	1160	710	710	560	405
9	192	242	280	1300	1280	3610	3400	1680	770	680	530	365
10	205	268	318	892	1320	4460	3400	1480	740	680	545	325
11	205	268	342	945	1520	5440	3400	1280	710	650	530	305
12	218	268	305	1160	1870	6630	3540	1160	710	680	410	328
13	230	280	305	1320	2580	6220	3400	1050	710	680	356	365
14	242	292	305	1360	3610	4990	3190	1020	680	650	302	378
15	205	268	330	1640	3610	4460	3000	980	680	650	328	390
16	230	242	355	1600	3540	4630	2760	980	680	680	315	350
17	218	280	342	1680	3820	5350	2520	945	680	680	328	305
18	218	292	342	1640	3900	5820	2320	910	680	680	378	260
19	218	305	342	1680	3540	6520	2120	875	605	650	420	225
20	242	292	330	1720	3190	7750	2020	840	575	650	495	205
21	268	318	330	1770	2700	8110	1770	840	545	635	480	300
22	268	292	368	1870	2470	7630	1680	840	530	635	510	450
23	268	292	380	1820	2370	7750	1680	805	515	635	510	350
24	268	318	380	1720	2580	7630	1640	770	500	620	495	350
25	268	305	395	1600	3190	7400	1600	770	515	605	405	300
26	268	280	455	1680	3610	7290	1480	770	605	575	450	250
27	255	280	500	1480	3470	6850	1480	770	620	575	405	200
28	255	280	545	1640	2940	6320	1480	740	875	575	288	260
29	268	.....	620	1520	2880	5440	1400	710	910	560	250	270
30	255	.....	635	2820	3120	5350	1320	710	875	545	230	325
31	255	.....	605	.....	3540	.....	1240	680	.....	545	.....	370
Total	7463	7815	11538	42494	81210	169140	86760	29870	20180	20847	13170	10184
Mean	241	279	372	1420	2620	5640	2800	964	673	672	439	329
Max.	268	330	635	2820	3900	8110	4990	1680	910	858	560	450
Min.	241	218	268	650	1280	3330	1240	680	500	545	230	200
Acre-ft.	14800	15500	22900	84500	161000	336000	172000	59300	40000	41300	26100	20200

Discharge of Grand River Near Kremmling for 1916.
Drainage Area, 2,380 Square Miles. Altitude, 7,320 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	425	300	365	630	2730	5990	4490	2430	1090	678	678	.....
2	455	315	365	660	2550	6210	4130	2130	975	695	645	.....
3	420	328	340	765	2250	6100	3970	2080	905	695	678	.....
4	390	352	328	695	2130	6100	3730	2430	905	695	660	.....
5	352	378	390	660	2250	6650	3490	2550	920	678	630	.....
6	352	340	435	630	2670	6430	3270	2310	940	660	615	.....
7	300	328	378	600	3570	5460	3130	2550	1050	645	585	.....
8	360	340	365	570	4760	5700	2990	2190	905	645	480	.....
9	415	340	378	600	5770	6800	3200	2030	870	645	630	.....
10	460	328	405	630	6880	6880	3340	2080	1050	630	660	.....
11	405	328	495	835	7120	7500	3410	1880	1330	615	630	.....
12	300	328	570	1050	6430	8100	3130	1680	1370	615	435	.....
13	315	315	660	1130	6100	7500	2730	1880	1330	615	340	.....
14	352	290	695	1090	5660	7000	2550	2080	1330	630	346	.....
15	365	290	600	1090	4960	7000	2370	1930	1210	870	352	.....
16	352	315	600	1130	4050	7240	2430	1680	1090	870	424	385
17	340	328	660	1170	3650	7480	2490	1580	975	870	495	.....
18	315	328	765	1370	3130	7600	2430	1450	905	975	540	.....
19	328	340	835	1490	2850	7600	2310	1330	870	1090	480	.....
20	328	340	975	1330	2920	7720	2130	1250	835	940	465	.....
21	290	328	1330	1170	3490	7120	1930	1250	800	835	450	.....
22	328	340	1050	1210	3490	6540	1830	1170	765	835	390	.....
23	365	328	975	1450	3340	5770	1730	1090	730	905	405	.....
24	352	340	870	1780	3130	5160	1630	1050	800	905	420	.....
25	365	340	730	2080	3570	5060	1580	1010	870	835	465	.....
26	340	340	730	2430	4400	4960	1580	1050	800	765	340	.....
27	328	340	695	2730	4310	4960	1680	1050	765	765	378	.....
28	340	365	765	3060	4310	4960	1980	1010	730	730	378	.....
29	325	365	870	3570	4400	4960	1880	940	695	765	390	.....
30	300	.....	765	3270	4490	4760	2250	940	695	730	390	.....
31	285	.....	630	.....	5260	.....	2610	1130	.....	702	.....	.....
Total	10947	9637	20014	40875	126620	191310	82400	51210	28505	25328	14774	.....
Mean	353	332	646	1360	4080	6380	2660	1650	950	817	492	.....
Max.	460	378	1330	3570	7120	8100	4490	2550	1370	1090	678	.....
Min.	285	290	328	570	2130	4760	1580	940	695	615	340	.....
Acre-ft.	21700	19100	39700	80900	251000	380000	164000	101000	56500	50200	29300	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Grand River at Glenwood Springs for 1915.
Drainage Area, 4,520 Square Miles. Altitude, 5,747 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	594	652	763	994	4940	7160	7890	1910	945	1430	1000	525
2	540	626	749	994	4360	9720	7590	1760	1000	1430	875	785
3	588	692	679	1170	3430	9720	7300	1710	828	1370	860	672
4	606	689	652	1540	3060	8040	6740	1630	905	1320	838	713
5	677	613	777	1760	2730	7160	6470	1590	985	1280	830	755
6	635	587	632	1760	2500	6740	6470	1500	961	1260	830	838
7	600	606	696	1760	2350	6470	6740	1510	985	1200	748	800
8	620	639	672	1820	2210	6200	5940	1550	1010	1140	969	792
9	606	619	665	2010	2080	6340	5560	2210	1030	1140	945	800
10	697	669	721	1940	2080	7440	5300	2570	1080	1110	898	770
11	626	642	646	1700	2210	9360	5180	2270	1180	1150	905	755
12	606	664	735	1760	2980	11200	5300	2090	1090	1110	845	748
13	594	691	639	2010	4140	11200	5430	1910	1050	1040	706	762
14	620	654	777	2210	5810	9360	5060	1680	1100	1060	574	770
15	620	594	728	2420	6600	8040	4820	1600	1120	1040	620	785
16	702	672	652	2500	6470	8200	4580	1550	1100	1100	762	808
17	620	673	632	2730	6740	8850	4360	1590	1070	1110	713	699
18	613	712	700	2730	7020	10300	3720	1510	1020	1110	734	581
19	620	679	770	2730	6360	10300	3340	1430	945	1120	785	562
20	620	695	652	2890	5690	11800	3150	1390	1030	1130	868	519
21	686	742	707	2890	5020	13000	2980	1350	913	1120	822	495
22	639	686	686	3060	4360	12600	2810	1290	860	1080	945	685
23	606	660	658	2980	4250	12200	2730	1280	868	1100	969	727
24	588	714	791	2810	4820	12200	2570	1240	800	937	921	827
25	576	658	692	2650	5560	11800	2420	1210	822	1180	890	741
26	626	770	957	2500	6070	11400	2420	1190	890	1110	755	672
27	626	770	865	2420	6340	11000	2210	1210	1020	945	699	607
28	626	652	745	2650	5680	10300	2210	1160	1340	945	741	490
29	707	.....	1010	3150	5300	9190	2210	1040	1380	937	594	588
30	665	.....	1020	4140	5680	8520	2140	1060	1390	945	543	594
31	696	.....	1010	.....	6340	.....	2010	1020	.....	898	.....	659
Total	19427	18715	23078	68678	143180	285810	137650	48010	30717	34847	24184	21519
Mean	627	668	744	2290	4620	9530	4440	1550	1020	1120	806	694
Max.	791	770	1020	4140	7020	13000	7890	2570	1390	1430	1000	838
Min.	540	582	632	994	2080	6200	2010	1020	800	898	543	490
Acre-ft.	38600	37100	45700	136000	284000	567000	273000	95300	60700	68900	48000	42700

Discharge of Grand River at Glenwood Springs for 1916.
Drainage Area, 4,520 Sqaure Miles. Altitude, 5,747 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	722	584	706	1240	5360	10400	8300	4440	1750	1360	1340	778
2	707	566	685	1200	4700	11100	7950	4090	1820	1430	1340	870
3	837	590	633	1280	4320	11100	7300	3660	1640	1450	1340	870
4	800	706	672	1390	3870	11100	7000	3870	1510	1460	1340	950
5	815	792	822	1290	4090	11800	6550	3980	1530	1430	1280	1030
6	808	755	934	1250	4960	12200	6100	4090	1630	1400	1270	1040
7	672	720	862	1200	6400	11100	5800	4090	1730	1410	1260	1020
8	608	778	830	1190	8650	10000	5650	4090	1870	1490	1240	713
9	646	734	815	1140	10000	10800	5650	3660	1730	1500	910	608
10	682	713	854	1100	11800	12200	6100	3660	1880	1490	1220	560
11	770	699	934	1220	12600	13400	6250	3550	2360	1500	1340	692
12	678	723	1040	1570	11800	14200	5650	3140	2600	1500	1230	646
13	602	627	1170	1940	11100	14200	5220	3240	2600	1470	950	762
14	688	694	1280	2010	10400	14600	4700	3870	2600	1450	626	846
15	785	647	1230	1940	9350	14200	4320	3870	2440	1630	633	640
16	792	668	1200	2010	7950	13800	4200	3340	2080	1880	659	830
17	699	673	1230	2080	6700	13800	4320	3040	1880	1750	894	727
18	706	672	1340	2220	6100	14200	4200	2860	1780	1820	1060	720
19	734	726	1510	2520	5500	14200	4090	2440	1690	1880	1100	838
20	672	580	1630	2520	5220	14200	3760	2360	1590	1940	1140	854
21	692	716	1880	2290	5800	13400	3550	2290	1520	1820	1090	846
22	672	699	2290	2150	6400	12200	3240	2150	1450	1690	958	822
23	706	659	1940	2290	6100	11100	3140	2010	1360	1630	878	902
24	770	713	1880	2770	5800	10000	2950	1820	1450	1630	918	755
25	808	700	1630	3340	6100	9700	2950	1750	1530	1690	886	770
26	785	770	1390	3980	7000	9350	2950	1750	1570	1630	906	699
27	720	594	1390	4570	7600	9350	3140	1820	1500	1510	928	685
28	741	664	1390	5360	7600	9350	3550	1750	1410	1510	950	668
29	720	720	1450	6250	7950	9000	3760	1690	1380	1450	910	650
30	720	.....	1570	6550	8650	9000	3980	1610	1360	1450	862	632
31	626	.....	1450	.....	9350	.....	4570	1690	.....	1450	.....	614
Total	22383	19882	38637	71860	229220	355050	150890	91670	53240	48700	31458	24037
Mean	722	686	1250	2400	7390	11800	4870	2960	1770	1570	1050	775
Max.	837	792	2290	6550	12600	14600	8300	4440	2600	1940	1340	1040
Min.	602	566	633	1100	3870	9000	2950	1610	1360	1360	626	560
Acre-ft.	44400	39500	76900	143000	454000	702000	299000	182000	105000	96500	62500	47700

Unless otherwise noted, all discharges are in cubic feet per second.

GRAND RIVER NEAR PALISADES.

Location.—At the State bridge 2 miles above Palisades, in sec. 2, T. 11 S., R. 98 W. Nearest important tributary, Plateau Creek, enters about 6 miles above the station.

Records Available.—April 9, 1902, to November 30, 1916.

Drainage Area.—8,550 square miles.

Gage.—Chain gage; location and datum unchanged.

Channel.—Practically permanent.

Discharge Measurements.—Made from bridge in Palisades.

Winter Flow.—The river usually freezes over a portion of the year, but except for slush and ice and an occasional thin ice cover the effect on the gage heights is slight.

Diversions.—There are court decrees for diversions of 1,828 second-feet from Grand River and 2,500 second-feet from intervening tributaries between Palisades and the Glenwood Springs station. The proposed high line canal of the United States Reclamation Service will divert 700 second-feet 7 miles above the Palisades station. Below the station the Grand Valley Irrigation Co. has a diversion of 400 second-feet.

Accuracy.—Conditions are favorable for accurate results, and the estimates should be reliable.

Co-operation.—Records furnished by the United States Geological Survey.

GRAND RIVER NEAR FRUITA.

Location.—At highway bridge, 1½ miles south of Fruita, in sec. 20, T. 1 N., R. 2 W., Ute principal meridian. Nearest important tributary, Little Salt Wash, enters a mile below the station; Gunnison River enters at Grand Junction, about 12 miles above.

Records Available.—Flood records during 1908, 1909, and 1910; April 1, 1911 (station established), to December 9, 1916.

Drainage Area.—16,800 square miles.

Gage.—Chain gage; datum was raised 0.05 foot May 3, 1911.

Channel.—Shifts at high water.

Discharge Measurements.—Made from the highway bridge.

Winter Flow.—The river is frozen over during a portion of the year and readings are discontinued.

Diversions.—Between the Palisades station and Fruita there are decrees for 788 second-feet from the Grand River.

Maximum Stage.—Since the establishment of the station the maximum stage has been 15.0 feet, which occurred June 9, 1909. The highest stage known was about 18.5 feet on July 4, 1884.

Accuracy.—Results considered good.

Co-operation.—Records furnished by the United States Geological Survey.

Discharge of Grand River near Palisades for 1915.
Drainage Area, 8,550 Square Miles. Altitude, 4,730 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	1370	1530	8180	11400	13200	2700	1320	2250	1420	1230
2	.....	.....	.....	1420	1420	7440	15600	12700	2460	1230	2540	1420	1370
3	.....	.....	.....	1420	1580	5960	17000	11900	2390	1230	2250	1370	1470
4	.....	.....	.....	1280	1880	5030	14700	11400	2250	1150	2180	1470	1470
5	.....	.....	.....	1320	1320	4180	12700	10700	2060	1150	2000	1420	1530
6	.....	.....	.....	1320	2540	3780	11500	10600	2000	1230	2060	1580	1470
7	.....	.....	.....	1280	2620	3390	11200	10700	2000	1230	2120	1580	1530
8	.....	.....	.....	1280	2700	3210	10900	9740	2120	1230	2060	2320	1420
9	.....	.....	.....	1230	2780	3030	10900	8950	3030	1230	1880	1880	1420
10	.....	.....	.....	1280	2780	2860	12700	8180	3680	1230	1530	2620	1420
11	.....	.....	.....	1370	2780	2940	15800	8180	3580	1190	1640	1820	1420
12	.....	.....	.....	1280	2320	3580	19000	8640	2860	1230	1640	1580	1420
13	.....	.....	.....	1320	2620	5600	19400	8640	2860	1230	1760	1530	1420
14	.....	.....	.....	1370	3210	8950	15800	8180	2540	1270	1700	1370	1420
15	.....	.....	.....	1480	3680	11400	14300	7740	2460	1370	1700	1320	1420
16	.....	.....	.....	1480	3780	10600	14300	7880	2390	1320	1640	1320	1470
17	.....	.....	.....	1480	4080	11000	15600	6610	2250	1320	1760	1530	1420
18	.....	.....	.....	1320	4080	11900	17200	6080	2120	1270	1700	1420	1370
19	.....	.....	.....	1370	3980	11700	17600	5600	2060	1320	1640	1370	1230
20	.....	.....	.....	1370	4280	10700	19200	5030	1820	1230	1640	1470	1110
21	.....	.....	.....	1150	4920	11000	20500	4810	1760	1230	1760	1530	1070
22	.....	.....	.....	1190	5250	7880	19700	4390	1640	1150	2000	1580	1190
23	.....	.....	.....	1370	5030	7020	19400	4080	1580	1150	1640	1820	1470
24	.....	.....	.....	1320	4700	7590	19700	3680	1580	1150	1640	1700	1420
25	.....	.....	.....	1420	4390	8030	18400	3880	1700	1420	1580	1640	1470
26	.....	.....	.....	1420	3980	10200	17800	3880	1640	1880	1760	1470	1420
27	.....	.....	.....	1580	3780	10700	17400	3300	1700	1820	1640	1420	1190
28	.....	.....	.....	1640	3880	10400	16800	3210	1640	1820	1530	1420	1230
29	.....	.....	.....	1280	4810	8630	14500	3210	1580	2250	1530	1470	1190
30	.....	.....	.....	1530	6740	9000	13600	3120	1230	2060	1530	1320	1190
31	.....	.....	.....	1580	.....	10400	.....	2860	1420	.....	1530	.....	1190
Total	.....	.....	.....	42520	103440	236280	474600	221070	67100	40870	55830	47180	42060
Mean	.....	.....	.....	1370	3450	7620	15800	7130	2160	1360	1800	1570	1360
Max.	.....	.....	.....	1640	6740	11900	20500	13200	3680	2250	2540	2620	1530
Min.	.....	.....	.....	1150	1320	2860	10900	2860	1230	1110	1530	1320	1070
Acre-ft.	.....	.....	.....	84200	205000	469000	940000	438000	133000	80900	111000	93400	83600

Discharge of Grand River near Palisades for 1916.
Drainage Area, 8,550 Square Miles. Altitude, 4,730 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	1640	2700	11000	18600	16600	8180	2700	2460	2860	.....
2	.....	.....	.....	1580	2540	9260	19200	15600	7590	2700	2540	2860	.....
3	.....	.....	.....	1420	2390	8480	19700	15000	7880	2700	2940	2780	.....
4	.....	.....	.....	1470	2780	7730	19900	14300	8480	2460	4180	2700	.....
5	.....	.....	.....	3030	2620	7730	21000	13600	7590	2320	2940	2700	.....
6	.....	.....	.....	2180	2780	9420	21200	12000	7300	2540	2620	2700	.....
7	.....	.....	.....	1940	2540	13100	20300	11700	7590	2460	5840	2620	.....
8	.....	.....	.....	1880	2540	16000	19000	11400	7160	2180	4390	2540	.....
9	.....	.....	.....	2000	2390	18200	19000	11500	7020	2620	3780	2460	.....
10	.....	.....	.....	2000	2390	20500	21200	11900	6210	3300	3880	2120	.....
11	.....	.....	.....	2060	2700	21900	23800	11500	6080	3580	8790	2390	.....
12	.....	.....	.....	2120	2940	21200	24800	11200	5600	3880	4080	2460	.....
13	.....	.....	.....	2250	3580	19700	25300	10200	8630	3980	3680	2320	.....
14	.....	.....	.....	2460	3980	18400	25800	9580	7590	3980	3580	1880	.....
15	.....	.....	.....	2460	3980	16600	25300	9100	7590	3780	4390	1530	.....
16	.....	.....	.....	2320	3980	14300	24000	8480	6740	3580	3980	1640	.....
17	.....	.....	.....	2250	4180	12600	23800	8640	5720	3300	3980	1880	.....
18	.....	.....	1530	2540	4600	11200	23800	8330	5360	2940	4080	2180	.....
19	.....	.....	1580	2780	4920	10200	24800	8030	4920	2860	4080	2250	.....
20	.....	.....	1700	3120	5140	11400	24800	7440	4600	2700	4180	2180	.....
21	.....	.....	1700	3880	4920	12000	23500	6880	4280	2780	3980	2250	.....
22	.....	.....	1530	4500	4500	12000	22600	6470	3880	2460	3780	2180	.....
23	.....	.....	1640	4700	4810	11700	19900	5960	3680	2390	3580	2000	.....
24	.....	.....	1640	4080	5600	11400	18200	5600	3300	2390	3580	2000	.....
25	.....	.....	1580	3580	6600	11900	17800	5250	3030	2460	3580	2000	.....
26	.....	.....	1640	3030	7590	12600	17800	5360	2940	2390	3580	2000	.....
27	.....	.....	1580	2540	8480	13600	17600	5480	2860	2390	3210	1880	.....
28	.....	.....	1580	2940	9740	13900	17400	6880	2860	2390	3210	2060	.....
29	.....	.....	1580	3120	12000	14300	17200	7020	2700	2250	3210	2000	.....
30	.....	.....	.....	3030	12400	15400	17000	6740	2700	2250	3030	1940	.....
31	.....	.....	.....	2940	.....	17200	.....	7300	2780	.....	2940	.....	.....
Total	.....	19280	81840	142310	425010	634300	295040	172840	84710	118070	67360	.....	
Mean	.....	1610	2640	4740	13700	21100	9520	5580	2820	3810	2240	.....	
Max.	.....	.....	4700	12400	21900	25800	16600	8630	3980	8790	2860	.....	
Min.	.....	.....	1420	2390	7730	17000	5250	2700	2250	2460	1530	.....	
Acre-ft.	.....	38200	162000	282000	842000	1260000	585000	343000	168000	234000	133000	.....	

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Grand River near Fruita for 1915.
Drainage Area, 16,800 Square Miles. Altitude, 4,500 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	3140	15500	16400	16400	3770	1630	3290	2300	2430
2	.....	.....	.....	.....	3290	13800	21600	14600	3610	1540	3290	2430	2700
3	.....	.....	.....	.....	3290	11000	23900	14200	3290	1540	3290	2300	2700
4	.....	.....	.....	.....	3770	9200	19400	14200	2990	1730	3140	2430	2560
5	.....	.....	.....	.....	4110	8670	18400	13100	2990	1730	2990	2430	2840
6	.....	.....	.....	.....	5450	7910	17400	12800	2430	1940	2990	2430	2990
7	.....	.....	.....	2430	5050	7200	17400	13500	2560	1730	2990	2560	2990
8	.....	.....	.....	2430	5450	6740	16400	12400	2430	1630	2990	2990	2990
9	.....	.....	.....	2430	5450	6300	15900	11400	3140	1540	2840	2840	2700
10	.....	.....	.....	2700	5660	6080	17400	10400	2990	1940	2700	3290	2700
11	.....	.....	.....	2560	5450	5870	21600	10400	4470	1940	2300	3140	2700
12	.....	.....	.....	2560	5050	6740	26300	10400	3940	1830	2430	2990	2700
13	.....	.....	.....	2430	5660	10400	26300	10400	3290	1730	2430	2700	2700
14	.....	.....	.....	2560	6740	16400	23900	10100	3290	1730	2430	2300	2700
15	.....	.....	.....	2560	7200	18900	19400	9200	2990	1730	2560	2170	2700
16	.....	.....	.....	2700	7200	17400	20000	9200	2700	1730	2700	2300	2700
17	.....	.....	.....	2700	7670	17400	20500	8670	2840	1730	2560	2300	2330
18	.....	.....	.....	2700	7670	18400	22700	8160	2700	2050	2700	2560	2330
19	.....	.....	.....	2700	7670	17900	23900	6970	2700	1940	2700	2700	2330
20	.....	.....	.....	2700	8160	15500	24500	6300	2430	1730	2700	2700	2330
21	.....	.....	.....	2560	9200	14600	26900	6300	2170	1730	2560	2700	2330
22	.....	.....	.....	2430	10400	13800	26300	5660	2170	1540	2700	2990	2330
23	.....	.....	.....	2700	10400	13100	25100	5050	2430	1540	2560	3140	2330
24	.....	.....	.....	2560	9200	13800	25100	4660	2300	1540	2700	2990	2330
25	.....	.....	.....	2700	8670	15000	24500	4660	2170	2300	2560	2990	2330
26	.....	.....	.....	2990	8160	16400	23900	4660	2170	2700	2560	2990	2330
27	.....	.....	.....	3140	8160	16400	23300	4470	2170	3290	2560	2990	2330
28	.....	.....	.....	3290	8160	15000	20000	4660	2430	3290	2560	2840	2330
29	.....	.....	.....	3290	10400	13800	19400	4660	1940	3290	2430	2700	2330
30	.....	.....	.....	3610	13100	13800	17900	4470	1730	3290	2430	2430	2330
31	.....	.....	.....	3610	.....	14600	.....	4110	1730	.....	2300	.....	2330
Total	.....	.....	.....	69040	208980	397610	645700	276160	84960	59600	83940	80620	78750
Mean	.....	.....	.....	2760	6970	12800	21500	8910	2740	1990	2710	2690	2540
Max	.....	.....	.....	3610	13100	18900	26900	16400	4470	3290	3290	3140	.....
Min	.....	.....	.....	2430	3140	5870	15900	4110	1730	1540	2300	2170	.....
Acre-ft.	.....	.....	.....	137000	415000	787000	1280000	548000	168000	118000	167000	160000	156000

Discharge of Grand River near Fruita for 1916.
Drainage Area, 16,800 Square Miles. Altitude, 4,500 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	2990	5450	19200	28600	21400	11400	4110	3610	4850	3290
2	.....	.....	.....	2700	4850	16500	30600	20400	11000	3940	4110	4660	3140
3	.....	.....	.....	2700	5250	14800	29900	19200	12100	3610	4290	4660	3290
4	.....	.....	.....	2560	5660	14000	31700	18700	12900	3290	5660	4660	3450
5	.....	.....	.....	3290	5660	15600	33100	17600	12900	3290	4470	4470	3290
6	.....	.....	.....	4470	5250	17300	33100	16700	11400	3290	4290	4290	3450
7	.....	.....	.....	3450	5660	22000	32400	16000	12100	3290	8000	4470	3290
8	.....	.....	.....	3140	4660	27200	32000	15200	11000	3450	8270	4290	3450
9	.....	.....	.....	3140	4660	31300	28600	15400	10700	3610	7270	3940	3610
10	.....	.....	.....	3290	4850	34900	30600	15600	10700	4110	7470	3940	.....
11	.....	.....	.....	3940	5250	38100	34100	15400	10700	5450	14000	4110	.....
12	.....	.....	.....	3940	6520	35900	37400	14200	10300	5870	9120	4290	.....
13	.....	.....	.....	4110	7220	33800	38800	12900	10000	5870	7220	3770	.....
14	.....	.....	.....	4660	7730	31700	39600	12100	11700	5450	6890	3610	.....
15	.....	.....	.....	4660	7470	27900	39200	11400	12100	5250	7730	3290	.....
16	.....	.....	.....	4290	7730	23600	37700	11000	11400	5050	6980	3450	.....
17	.....	.....	.....	4290	8270	20400	37000	11000	9710	4850	6750	3610	.....
18	.....	.....	.....	4660	9120	17600	38100	11000	8830	4290	6980	3610	.....
19	.....	.....	2990	4850	10300	16900	38800	10300	8550	4110	6750	3770	.....
20	.....	.....	3290	5450	10000	18200	38800	9710	8270	3940	6750	3940	.....
21	.....	.....	2990	6750	8830	20100	35900	8830	6750	3610	6750	3940	.....
22	.....	.....	2990	10000	8550	20100	32100	8000	6080	3610	6300	3610	.....
23	.....	.....	2990	8830	9710	20400	30600	7470	5450	3450	5870	3610	.....
24	.....	.....	2990	8270	11700	19400	26600	6750	4850	3450	5870	3450	.....
25	.....	.....	3140	7220	14000	18900	25600	6980	4470	3450	5870	3450	.....
26	.....	.....	2700	6080	15200	20400	25000	6980	4290	3610	5870	3290	.....
27	.....	.....	2990	5450	16500	21700	24800	8000	4470	3610	5660	3290	.....
28	.....	.....	3290	5660	18200	22200	24200	8550	4110	3450	5660	3290	.....
29	.....	.....	3290	5870	21700	22800	23900	10000	3940	3450	5450	3610	.....
30	.....	.....	.....	6080	22200	23900	22800	9710	3940	3450	5250	3290	.....
31	.....	.....	.....	5870	.....	26600	.....	10300	3770	.....	5050	.....	.....
Total	.....	.....	.....	152660	278150	713400	962600	386780	269880	121260	200160	116510	30260
Mean	2650	2850	.....	4920	9270	23000	32100	12500	8710	4040	6460	3880	.....
Max	.....	.....	.....	10000	22200	38100	39600	21400	12900	5870	14000	4850	.....
Min	.....	.....	.....	2560	4660	14000	22800	6750	3770	3290	3610	3290	.....
Ac.-ft.	163000	164000	303000	552000	1410000	1910000	769000	536000	240000	397000	231000	.....	

Unless otherwise noted, all discharges are in cubic feet per second.
First 18 days February estimated 2,720.

FRASER RIVER NEAR ARROW.

Location.—In sec. 4, T. 2 S., R. 75 W., ¼ mile from Vasquez Siding; 1½ miles southwest of Arrow.

Records Available.—September 23, 1910, to November 11, 1916.

Drainage Area.—28 square miles.

Gage.—Friez automatic gage on left bank. Prior to June 3, 1916, vertical staff gage located one mile upstream.

Discharge Measurements.—Made from log bridge and by wading.

Channel.—Probably permanent.

Diversions.—There is a court decree for the diversion of 53 second-feet from the headwaters of this stream across the divide to the Clear Creek basin.

Accuracy.—Records are considered good.

Co-operation.—Station maintained by the United States Geological Survey, by whom the records are furnished.

WILLIAMS FORK NEAR SCHOLL.

Location.—About 5 miles southeast of Scholl, Colo., in sec. 3, T. 2 S., R. 78 W., at the Horseshoe ranger station in the Arapahoe National Forest. Nearest important tributary, Keyser Creek, enters from the east three-quarter mile above the station.

Records Available.—September 22, 1910, to June 30, 1912; April 27, 1913, to November 30, 1916.

Drainage Area.—141 square miles.

Gage.—Vertical staff.

Channel.—Rough but practically permanent.

Discharge Measurements.—Made from car and cable 400 ft. above gage.

Winter Flow.—Ice causes very little backwater during the winter months.

Diversions.—There are court decrees for the diversion of 858 second-feet from Williams Fork above the station. Of this amount 700 second-feet are to be diverted to the eastern slope. This latter diversion has not yet been made.

Accuracy.—Results are considered good.

Co-operation.—Station maintained by the United States Geological Survey, by whom the records were furnished.

Discharge of Fraser River near Arrow for 1915.
Drainage Area, 28 Square Miles. Altitude, 9,500 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	5	7	48	.....	275	62	25	16	16	14
2	.....	.....	4	6	42	.....	275	52	25	16	16	14
3	.....	.....	5	7	36	.....	275	42	30	16	16	14
4	.....	4	4	8	25	.....	245	42	25	16	16	13
5	.....	.....	5	8	20	84	245	42	30	20	14	13
6	.....	.....	5	9	16	.....	245	42	28	16	13	13
7	.....	.....	4	10	8	.....	216	62	25	16	13	13
8	.....	.....	4	10	30	.....	245	81	36	16	15	13
9	.....	3	4	12	36	.....	216	62	30	16	14	13
10	.....	4	4	12	42	.....	189	52	25	16	15	13
11	.....	.....	4	16	69	.....	164	42	25	16	16	12
12	.....	.....	4	20	101	120	164	42	25	16	16	12
13	.....	.....	5	21	141	306	141	36	20	16	16	12
14	.....	.....	5	22	101	245	164	36	25	16	18	12
15	.....	4	5	30	110	338	152	36	28	16	18	12
16	.....	.....	5	26	126	405	141	33	25	16	20	12
17	.....	4	5	22	141	507	141	30	25	16	20	12
18	.....	.....	5	30	92	541	120	30	25	16	20	12
19	.....	.....	4	25	69	609	120	30	25	16	16	12
20	.....	.....	5	30	48	507	101	30	20	16	16	12
21	.....	.....	5	30	54	473	101	30	20	16	15	12
22	.....	.....	5	28	62	507	101	30	20	16	15	12
23	.....	2 4	4	25	69	575	101	36	20	16	14	12
24	.....	.....	4	20	75	541	101	32	20	16	15	12
25	.....	.....	6	20	69	507	84	30	20	16	13	12
26	.....	4	6	20	112	473	84	30	20	16	13	12
27	.....	5	6	30	112	439	62	30	20	16	14	12
28	.....	.....	6	30	84	338	69	25	25	16	14	12
29	.....	4	6	69	69	306	69	25	20	16	13	12
30	.....	.....	6	62	101	306	62	25	20	16	14	12
31	.....	.....	6	.....	130	.....	62	25	.....	16	.....	12
Total	.....	.....	151	665	2238	8127	4730	1202	729	500	464	385
Mean	.....	4.0	4.87	22.2	72.2	406	153	38.8	24.3	16.1	15.5	12.4
Max	.....	.....	6	69	141	609	275	81	36	20	20	14
Min	.....	.....	4	6	8	84	62	25	20	16	13	12
Acre-ft.	.....	222	299	1320	4440	16100	9410	2390	1450	990	922	762

Discharge of Fraser River near Arrow for 1916.
Drainage Area, 28 Square Miles. Altitude, 9,500 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	12	9.5	8.5	8.5	74	202	122	50	26	20	20	.....
2	12	9.0	7.1	7.7	74	230	116	48	24	20	20	.....
3	12	9.0	9.5	8.0	76	158	109	50	23	19	18	.....
4	12	9.0	10.5	8.0	76	190	103	52	22	19	18	.....
5	12	9.0	7.1	7.7	76	260	96	50	21	18	19	———
6	11	9.5	7.7	7.7	100	230	86	50	23	18	17	.....
7	11	9.5	8.0	8.0	140	200	83	46	20	19	38	.....
8	10	10	7.1	7.7	150	170	86	44	20	18	78	.....
9	10	10	6.8	9.5	210	215	86	43	18	18	125	.....
10	10	10	6.8	9.5	260	260	76	42	22	18	116	.....
11	10	10	7.1	10.5	190	254	70	41	25	17	98	.....
12	10	10	6.8	10.0	117	260	60	42	26	18	.....	12
13	10	10	7.1	11	108	284	56	42	28	17	.....	.....
14	10	10	6.8	12	100	272	52	41	26	17	.....	.....
15	10	10	9.5	13	94	260	50	39	24	17	.....	.....
16	10	10	6.8	14	93	260	52	41	23	19	.....	.....
17	10	10	6.8	14	90	248	54	41	22	20	.....	.....
18	11	9.	7.1	13	100	260	50	38	22	19	.....	.....
19	11	9.	7.1	14	110	266	46	36	22	17	.....	.....
20	11	9.	6.8	13	130	260	44	36	21	21	.....	.....
21	12	9.	6.8	14	130	236	43	35	21	32	.....	.....
22	12	9.5	7.1	14	130	215	43	32	21	36	.....	.....
23	12	9.	6.8	20	152	180	42	31	21	18	.....	.....
24	12	10	6.8	27	130	171	42	31	21	17	.....	.....
25	12	10	7.1	37	110	158	41	31	20	17	.....	.....
26	12	10	7.1	42	130	153	43	30	18	16	.....	.....
27	9	11	7.4	50	152	153	43	29	18	18	.....	.....
28	10	11	7.4	69	160	153	46	26	20	20	.....	.....
29	10	10	9.5	74	176	135	48	25	20	21	.....	.....
30	10	.....	9.5	69	202	125	49	30	19	20	.....	.....
31	10	.....	9.0	.....	202	.....	54	29	.....	20	.....	.....
Total	336	281	235.5	622.8	4042	6418	1991	1201	657	604	567	.....
Mean	10.8	9.69	7.59	20.8	130	214	64.2	38.7	21.9	19.5	.....	.....
Max	12	11	10.5	74	260	284	122	52	28	36	.....	.....
Min	9	9	6.8	7.7	74	125	41	25	18	17	.....	.....
Acre-ft.	664	557	467	1240	7990	12700	3950	2380	1300	1200	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Williams Fork near Scholl for 1915.

Drainage Area, 141 Square Miles. Altitude, 9,000 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	20	22	22	19	190	400	770	89	84	83	52	.....
2	20	22	23	20	74	425	730	73	84	85	49	.....
3	20	22	24	20	82	425	690	68	84	85	48	.....
4	20	22	24	20	82	480	650	68	84	83	48	.....
5	20	22	26	20	89	508	620	65	84	82	49	.....
6	20	22	26	21	93	590	590	60	84	82	46	.....
7	20	22	26	21	97	535	562	54	81	77	48	.....
8	20	26	26	20	115	562	508	68	81	75	49	.....
9	20	23	30	29	123	680	480	74	79	75	49	.....
10	20	22	27	38	125	770	480	84	78	72	50	.....
11	21	21	28	47	133	1030	480	84	78	70	.....	.....
12	21	21	24	56	302	1100	480	84	78	69	.....	.....
13	22	23	28	65	350	1030	480	84	78	69	.....	.....
14	22	22	19	74	350	1030	425	84	78	69	.....	.....
15	22	22	19	74	375	1030	425	84	78	69	.....	.....
16	23	25	19	73	375	1030	400	84	74	69	.....	.....
17	23	23	20	97	375	1030	400	102	74	69	.....	.....
18	22	27	19	79	375	1100	375	102	74	69	.....	.....
19	22	27	19	84	375	1030	350	102	73	69	.....	.....
20	22	23	19	93	350	1030	325	102	68	69	.....	.....
21	23	24	19	93	350	1030	325	102	68	69	.....	.....
22	23	25	19	98	350	1030	280	100	65	69	.....	.....
23	23	25	19	112	350	1030	276	97	64	69	.....	.....
24	22	24	19	112	350	1030	268	95	54	66	.....	.....
25	22	22	20	123	350	1030	248	93	54	66	.....	.....
26	23	23	20	123	375	965	236	89	58	61	.....	.....
27	23	24	20	112	375	930	230	89	62	56	.....	.....
28	23	24	19	145	400	890	205	84	65	59	.....	.....
29	23	.....	19	190	400	850	205	84	71	55	.....	.....
30	22	.....	20	186	375	810	174	84	78	54	.....	.....
31	22	.....	20	.....	375	.....	102	84	.....	54	.....	.....
Total..	669	660	682	2264	8480	25410	12769	2616	2215	2168	488	.....
Mean.....	21.6	23.6	22.0	75.5	274	847	412	84.4	73.8	69.9	48.8	.....
Max.....	23	33	30	190	400	1100	770	102	84	85	52	.....
Min.....	20	21	19	19	74	400	102	54	54	54	46	.....
Acre-ft.	1330	1310	1350	4490	16800	50400	25300	5190	4390	4300	968	.....

Discharge of Williams Fork near Scholl for 1916.

Drainage Area, 141 Square Miles. Altitude, 9,000 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	40	48	136	440	469	266	122	72	82	.....
2	.....	.....	39	48	139	498	469	246	116	74	80	.....
3	.....	.....	40	45	146	498	469	246	111	72	77	.....
4	.....	.....	44	48	152	498	440	246	109	71	75	.....
5	.....	.....	43	48	152	498	412	246	109	82	77	.....
6	.....	.....	43	42	180	528	412	246	105	82	72	.....
7	.....	.....	44	54	200	528	412	239	105	82	69	.....
8	.....	.....	44	54	240	528	384	239	103	82	69	.....
9	.....	.....	45	50	310	528	384	235	103	82	69	.....
10	.....	.....	44	60	400	528	384	224	101	80	69	.....
11	.....	.....	45	70	370	528	384	224	99	79	68	.....
12	.....	.....	45	72	340	528	384	190	99	79	68	.....
13	.....	.....	45	74	300	528	384	190	98	79	65	.....
14	.....	.....	46	72	220	588	384	190	96	79	64	.....
15	.....	.....	47	71	200	618	384	190	94	90	62	.....
16	.....	.....	48	69	200	678	286	187	92	88	61	.....
17	.....	.....	49	72	260	709	266	184	90	92	61	.....
18	.....	.....	50	80	270	740	266	180	87	100	59	.....
19	.....	.....	49	86	180	772	266	160	85	94	59	.....
20	.....	.....	50	71	180	804	266	155	80	89	59	.....
21	.....	.....	49	71	180	678	266	149	77	80	58	.....
22	.....	.....	50	82	185	709	266	146	77	74	58	.....
23	.....	.....	50	82	190	678	266	136	77	74	57	.....
24	.....	.....	50	92	200	678	266	136	77	75	56	.....
25	.....	.....	49	94	210	678	266	132	75	75	59	.....
26	.....	.....	49	99	230	618	266	132	74	83	57	.....
27	.....	.....	50	103	266	588	266	129	74	83	57	.....
28	.....	.....	50	103	384	588	266	126	74	85	57	.....
29	.....	.....	50	118	384	588	266	124	72	85	56	.....
30	.....	.....	50	136	384	528	266	122	72	83	56	.....
31	.....	.....	49	.....	412	.....	266	120	.....	83	.....	.....
Total	.....	.....	1446	2214	7600	17896	10431	5735	2753	2528	1936	.....
Mean....	.....	.....	46.6	73.8	245	597	336	185	91.8	81.5	64.5	.....
Max.....	.....	.....	50	136	412	804	469	266	122	100	82	.....
Min.....	.....	.....	39	42	136	440	266	120	72	71	56	.....
Acre-ft.	.....	.....	2870	4390	15100	35500	20700	11400	5460	5010	3840	.....

Unless otherwise noted, all discharges are in cubic feet per second.

WILLIAMS FORK NEAR PARSHALL.*

Location.—On highway bridge at Field's ranch, 4 miles above the mouth of the river, about sec. 36, T. 1 N., R. 79 W. Nearest tributary is Battle Creek, which enters from the west 2 miles below the station.

Records Available.—July 25, 1904, to November 15, 1916.

Drainage Area.—185 square miles.

Gage.—Vertical staff; location and datum unchanged.

Channel.—Shifting after high water.

Discharge Measurements.—Made from bridge to which the gage is attached.

Winter Flow.—The main channel is kept open by springs, but ice forms along the edges and slush ice frequently forms. The morning readings are usually affected by backwater from ice, but the afternoon readings are practically unaffected.

Diversions.—There are court decrees for the diversion of 558 second-feet from Williams Fork between this station and the one near Scholl, and 25 second-feet from tributaries. There is also a storage decree for 80,700 and 1,420 acre-feet from Williams Fork.

Accuracy.—Conditions are favorable for accurate results, and the estimates should be reliable.

Co-operation.—Station maintained in co-operation with the United States Geological Survey.

*Formerly designated Williams Fork near Sulphur Springs.

BLUE RIVER AT DILLON.

Location.—At the cemetery bridge on the outskirts of Dillon, in sec. 18, T. 5 S., R. 77 W., on the edge of the Leadville National Forest, a short distance above the mouth of Snake River. Ten-Mile Creek also enters below the station.

Records Available.—October 15, 1910, to November 13, 1916.

Drainage Area.—110 square miles.

Gage.—Vertical staff; location and datum unchanged.

Channel.—Practically permanent.

Discharge Measurements.—Made by wading near by and from bridge.

Winter Flow.—Ice causes backwater during the winter and discharge measurements are made to determine the flow.

Diversions.—There are court decrees for diversions of 2.3 second-feet from Blue River above the station and 63 second-feet below, exclusive of a decree for 350 second-feet for the Green Mountain Canal. There is an unadjudicated diversion from the headwaters of the Blue across Boreas Pass to Tarryall Creek. There are also decrees for diversions of 5 second-feet from tributaries entering above. In addition, there are decrees for placer mining, where practically all of the water used is returned to the river.

Accuracy.—Records considered reliable.

Co-operation.—Records furnished by the United States Geological Survey.

Discharge of Williams Fork near Parshall for 1915.
Drainage Area, 185 Square Miles. Altitude, 7,800 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	37	45	41	49	190	510	840	142	68	96	70	40
2	38	44	41	55	138	590	795	129	66	100	69	35
3	40	46	42	63	113	475	750	116	64	89	73	50
4	42	46	42	71	103	408	710	103	70	93	76	56
5	44	41	44	70	107	475	710	100	68	93	77	52
6	46	41	44	70	101	408	670	102	66	91	71	52
7	42	41	42	64	96	375	670	103	65	76	77	45
8	44	41	41	67	71	375	670	132	69	73	74	40
9	46	41	42	60	89	375	590	172	77	77	68	38
10	44	41	42	60	101	440	590	140	66	74	74	35
11	46	41	41	70	165	670	510	111	62	73	89	32
12	44	45	41	85	178	795	550	105	61	76	56	30
13	37	45	42	85	217	630	510	102	62	78	69	37
14	37	41	41	105	275	670	510	96	65	83	50	46
15	37	41	41	109	256	670	475	102	65	86	59	50
16	44	42	41	126	320	670	440	111	68	77	57	56
17	46	41	40	124	298	710	408	93	65	86	56	50
18	43	41	41	109	348	750	408	93	61	80	80	44
19	46	41	41	122	256	795	375	91	60	77	86	37
20	44	42	38	124	224	995	270	89	59	76	84	30
21	46	41	42	124	204	1050	270	88	57	80	64	52
22	44	41	37	131	201	1100	248	89	53	76	50	52
23	43	42	39	122	224	1160	218	89	52	76	61	50
24	42	41	39	109	298	1160	195	88	52	76	59	50
25	41	44	41	103	320	1220	188	84	53	74	89	61
26	40	41	45	105	375	1050	182	83	77	73	68	40
27	39	41	48	109	320	1100	175	80	86	69	57	30
28	38	41	44	144	256	1100	162	77	91	71	40	40
29	37	.....	50	170	298	1050	162	77	100	68	35	50
30	37	.....	50	256	320	940	162	77	105	64	30	61
31	37	.....	42	.....	320	.....	151	74	.....	64	.....	48
Total	1291	1179	1305	3061	6782	22716	13564	3138	2033	2445	1968	1389
Mean	41.6	42.1	42.1	102	219	757	438	101	67.8	78.9	65.6	44.8
Max.	46	46	50	256	375	1220	840	172	105	100	89	61
Min.	37	41	37	49	71	375	151	74	52	64	30	30
Acre-ft.	2560	2340	2590	6070	13500	45000	26900	6210	4030	4850	3900	2750

Discharge of Williams Fork near Parshall for 1916.
Drainage Area, 185 Square Miles. Altitude, 7,800 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
1	40	32	47	74	172	475	590	195	111	89	78	.....
2	42	33	46	71	169	475	550	169	96	93	78	.....
3	36	34	50	71	134	475	510	169	114	91	82	.....
4	44	34	54	66	140	475	510	275	114	91	77	.....
5	42	31	54	73	151	550	475	300	103	88	76	.....
6	36	42	49	58	182	475	440	210	116	88	76	.....
7	33	42	56	68	280	440	408	225	105	86	73	.....
8	30	40	50	68	370	475	375	203	96	94	71	.....
9	38	43	50	61	408	510	375	195	96	88	84	.....
10	34	43	53	71	510	630	353	206	116	84	76	.....
11	33	40	57	80	440	630	315	166	122	84	82	.....
12	32	42	61	84	440	710	310	178	114	82	98	.....
13	31	40	53	86	408	795	285	192	129	82	100	.....
14	40	40	62	83	300	750	266	199	134	80	47	.....
15	48	40	73	82	252	750	261	172	120	100	55	.....
16	34	48	71	80	225	750	248	162	114	98	.....	.....
17	40	50	73	83	342	750	234	159	96	102	.....	.....
18	44	46	68	98	252	795	225	142	96	114	.....	.....
19	44	40	68	105	206	940	206	132	96	107	.....	.....
20	40	48	69	83	230	840	195	118	96	102	.....	.....
21	36	47	74	83	218	840	178	122	94	100	.....	.....
22	34	42	89	89	243	795	162	120	94	98	.....	.....
23	32	40	68	118	218	710	151	109	96	102	.....	.....
24	32	40	68	129	243	710	132	105	107	103	.....	.....
25	40	42	77	151	336	630	132	103	98	89	.....	.....
26	42	48	59	162	364	630	140	114	94	88	.....	.....
27	41	52	74	192	336	630	134	118	91	82	.....	.....
28	39	49	71	225	331	630	162	111	91	88	.....	.....
29	36	48	76	252	358	630	159	98	93	80	.....	.....
30	33	.....	66	199	358	670	182	122	91	82	.....	.....
31	30	.....	80	.....	440	.....	203	127	.....	82	.....	.....
Total	1156	1216	1966	3145	9056	19565	8866	5016	3133	2837	1153	.....
Mean	37.3	41.9	63.4	105	292	652	286	162	104	91.5	.....	.....
Max.	48	52	89	252	510	940	590	300	134	114	.....	.....
Min.	30	31	46	58	134	440	132	98	91	80	.....	.....
Acre-ft.	2290	2410	3900	6250	18000	38800	17600	9960	6190	5630	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Blue River at Dillon for 1915.
Drainage Area, 110 Square Miles. Altitude, 8,815 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	17	.....	33	78	345	458	126	70	78	53	45
2	.....	.....	.....	.....	33	76	390	458	121	70	78	53	45
3	.....	.....	.....	.....	33	108	345	458	164	70	78	53	44
4	.....	.....	.....	.....	34	96	345	325	185	70	78	53	44
5	.....	.....	.....	.....	36	96	390	285	134	70	78	48	43
6	.....	.....	.....	.....	37	96	390	285	108	70	78	48	43
7	.....	.....	.....	.....	38	96	345	345	134	70	70	48	43
8	.....	.....	.....	.....	39	96	345	305	208	96	70	48	42
9	.....	.....	14	.....	40	86	325	305	208	86	64	48	41
10	.....	.....	.....	.....	40	86	345	245	179	86	70	48	40
11	.....	.....	.....	.....	40	83	325	208	179	86	70	48	39
12	.....	.....	.....	.....	40	78	305	345	143	70	70	48	39
13	.....	.....	.....	.....	43	78	345	305	108	70	70	48	39
14	.....	.....	.....	.....	47	390	345	285	88	86	78	48	39
15	.....	.....	.....	.....	50	502	345	285	116	73	78	48	38
16	.....	.....	.....	.....	54	170	390	245	116	58	78	48	38
17	.....	.....	.....	.....	58	185	480	245	108	58	70	47	37
18	.....	.....	.....	.....	62	185	665	245	106	53	70	47	37
19	.....	.....	.....	.....	67	191	592	245	106	50	64	46	37
20	.....	.....	.....	20	72	208	592	245	106	48	64	46	37
21	.....	.....	.....	.....	64	225	502	225	86	48	64	46	36
22	.....	.....	.....	.....	60	245	592	185	86	48	64	46	36
23	.....	.....	.....	26	64	170	665	179	86	48	64	46	35
24	.....	.....	.....	.....	64	305	665	208	86	48	64	45	35
25	.....	.....	.....	.....	58	325	665	208	96	167	64	45	34
26	.....	.....	.....	.....	64	325	592	179	70	167	64	46	34
27	.....	.....	.....	30	111	345	502	208	86	161	64	46	34
28	.....	.....	.....	.....	96	345	525	191	106	118	64	46	33
29	.....	.....	.....	33	96	345	502	191	106	118	64	46	33
30	.....	.....	.....	.....	96	345	458	164	96	118	53	46	33
31	.....	14	.....	.....	.....	345	.....	149	90	.....	53	.....	33
Total..	.....	.....	.....	.....	1669	6304	13617	8209	3737	2451	2136	1432	1186
Mean.....	.....	.....	.....	.....	55.6	203	454	265	121	81.7	68 9	47.7	38.3
Max.....	.....	.....	.....	.....	111	502	665	458	208	167	78	53	45
Min.....	.....	.....	.....	.....	33	76	305	149	70	48	53	45	33
Acre-ft.	.....	.....	.....	.....	3310	12500	27000	16300	7440	4860	4220	2840	2360

Discharge of Blue River at Dillon for 1916.
Drainage Area, 110 Square Miles. Altitude, 8,815 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	33	26	24	23	126	412	368	285	98	60	50	.....
2	33	26	24	23	111	412	368	225	86	60	50	.....
3	33	27	25	22	92	412	368	191	86	59	50	.....
4	32	27	25	22	94	435	325	245	80	59	49	.....
5	31	27	25	22	104	480	305	325	78	58	51	.....
6	30	27	25	20	161	458	285	245	78	58	53	.....
7	30	28	25	20	176	345	245	208	78	56	51	.....
8	30	28	24	18	285	325	225	225	78	58	50	.....
9	30	29	24	22	345	368	265	208	76	57	49	.....
10	30	29	24	26	368	412	265	176	80	56	47	.....
11	30	29	24	30	368	480	245	158	98	56	47	.....
12	30	29	24	34	345	502	208	161	96	58	45	.....
13	29	28	23	34	325	502	225	208	104	57	46	.....
14	29	27	22	35	305	502	225	245	94	55	.....	.....
15	28	27	22	35	285	458	208	225	86	59	.....	.....
16	28	27	23	36	225	458	208	176	84	62	.....	.....
17	28	27	23	38	208	435	225	155	81	65	.....	.....
18	28	27	24	43	191	412	225	143	80	69	.....	.....
19	28	26	24	46	176	502	208	131	78	65	.....	.....
20	28	26	24	43	191	480	176	118	78	56	.....	.....
21	28	25	24	45	191	435	161	137	72	57	.....	.....
22	28	25	24	48	208	412	161	126	72	58	.....	.....
23	28	24	24	55	176	285	161	121	72	58	.....	.....
24	28	24	24	75	176	325	155	116	69	59	.....	.....
25	28	23	24	88	285	325	152	116	68	60	.....	.....
26	27	23	24	116	265	325	161	108	68	56	.....	.....
27	27	23	24	140	245	305	208	111	68	52	.....	.....
28	27	23	24	158	285	325	191	98	65	50	.....	.....
29	27	24	23	191	305	368	176	94	65	55	.....	.....
30	27	.....	24	158	325	368	285	108	64	53	.....	.....
31	26	.....	23	.....	368	.....	265	98	.....	51	.....	.....
Total..	899	761	740	1666	7310	12263	7248	5286	2380	1792	638	.....
Mean.....	29.0	26.2	23.9	555	236	409	234	171	79.3	57.8	.....	.....
Max.....	33	29	25	191	368	502	368	325	104	69	.....	.....
Min.....	26	23	22	18	92	305	152	94	64	51	.....	.....
Acre-ft.	1780	1510	1470	3300	14500	24300	14400	10500	4720	3550	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

SNAKE RIVER AT DILLON.

Location.—At a highway bridge 200 yards above the mouth of the river in sec. 18, T. 5 S., R. 77 W. Nearest tributary is a small stream that enters from the north 1 mile above station.

Records Available.—October 15, 1910, to November 6, 1916.

Drainage Area.—92 square miles.

Gage.—Vertical staff; location and datum unchanged.

Channel.—Practically permanent.

Discharge Measurements.—Made from the bridge and by wading.

Winter Flow.—Ice gorging causes backwater of varying amount.

Diversions.—There are court decrees for diversions of 4.5 second-feet from Snake River above the station and 11 second-feet from tributaries entering above. The Summit County Power Company diverts about 30 second-feet around the station.

Accuracy.—Records reliable.

Co-operation.—Records furnished by the United States Geological Survey.

TEN-MILE CREEK AT DILLON.

Location.—At the highway bridge in Dillon, in sec. 18, T. 5 S., R. 77 W., 300 yards above the mouth of the creek. Nearest tributary, Canon Creek, enters from the west about 4 miles above the station.

Records Available.—October 15, 1910, to November 7, 1916.

Drainage Area.—113 square miles.

Gage.—Vertical staff; location and datum unchanged.

Channel.—Practically permanent.

Discharge Measurements.—Made by wading and from bridge.

Winter Flow.—Ice causes backwater during the winter months, and discharge measurements are made to determine the flow during that period.

Diversions.—There are court decrees for diversions of 11 second-feet from Ten-Mile Creek above the station and 14.5 second-feet from tributaries entering above.

Accuracy.—Records considered reliable.

Co-operation.—Records furnished by the United States Geological Survey.

Discharge of Snake River at Dillon for 1915.
Drainage Area, 92 Square Miles. Altitude, 8,815 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	14	22	26	195	165	380	57	23	285	14	12
2	.....	.....	.....	27	55	165	240	55	23	285	13	12
3	.....	.....	.....	28	55	148	240	50	20	14	13	12
4	.....	.....	.....	30	55	134	240	47	17	14	13	12
5	.....	.....	.....	32	55	98	200	47	17	14	13	.....
6	.....	.....	17	32	53	90	200	74	17	14	13	12
7	.....	.....	.....	33	53	96	200	76	17	13	13	12
8	.....	15	.....	34	32	126	176	90	20	13	13	12
9	.....	13	23	35	32	126	165	88	17	14	13	.....
10	.....	.....	.....	35	32	126	165	88	17	14	12	.....
11	.....	.....	.....	41	32	150	165	77	17	14	12	.....
12	14	.....	.....	47	32	150	156	76	17	14	12	.....
13	.....	11	27	47	32	165	179	76	17	13	12	.....
14	.....	.....	.....	46	32	258	176	60	16	13	.....	.....
15	14	.....	22	46	32	240	153	60	16	13	.....	.....
16	.....	.....	.....	45	13	240	105	60	15	13	.....	.....
17	.....	14	.....	45	13	330	90	57	14	14	.....	.....
18	.....	.....	.....	45	14	330	90	45	13	14	.....	.....
19	15	.....	.....	45	14	380	96	45	13	14	.....	.....
20	.....	.....	14	45	14	380	103	45	13	13	.....	.....
21	.....	.....	.....	26	14	660	90	32	13	13	.....	.....
22	.....	.....	.....	14	53	485	92	32	13	13	.....	.....
23	13	.....	19	14	45	485	85	32	12	13	.....	.....
24	.....	.....	.....	14	45	512	79	32	12	13	.....	.....
25	.....	17	.....	14	90	485	83	38	25	13	.....	.....
26	17	.....	.....	45	94	458	76	32	25	13	.....	.....
27	.....	20	22	66	240	430	86	32	25	13	.....	.....
28	.....	.....	.....	179	240	430	70	32	16	13	.....	.....
29	.....	.....	25	172	240	405	66	32	16	14	.....	.....
30	15	.....	.....	186	189	380	66	32	16	14	.....	.....
31	.....	.....	.....	.....	172	.....	63	32	.....	14	.....	.....
Total..	.....	.....	.....	1494	2268	8627	4375	1626	512	961	370	372
Mean.....	15.0	14.0	20.0	49.8	73.2	288	141	52.5	17.1	31.0	12.3	12.0
Max.....	.....	.....	.....	186	240	660	380	90	25	285	.....	.....
Min.....	.....	.....	.....	14	13	90	63	32	12	13	.....	.....
Acre-ft.	922	778	1230	2960	4500	17100	8670	3230	1020	1910	732	738

Nov. 14 to Nov. 31, estimated 12 sec. ft.
Dec. 9 to Dec. 31, estimated 12 sec. ft.

Discharge of Snake River at Dillon for 1916.
Drainage Area, 92 Square Miles. Altitude, 8,815 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	11	10	11	12	47	249	262	136	49	14	17	.....
2	11	10	11	12	44	240	244	128	41	14	17	.....
3	11	10	11	12	37	254	236	116	41	13	15	.....
4	11	11	11	12	45	280	228	121	33	13	15	.....
5	11	11	11	11	45	285	216	131	38	12	14	.....
6	10	11	11	11	74	249	193	126	40	12	17	.....
7	10	11	11	11	94	196	168	111	31	13	.....	.....
8	10	11	11	11	126	216	168	121	28	12	.....	.....
9	10	11	11	12	165	280	220	128	27	12	.....	.....
10	10	11	11	13	212	330	204	105	33	12	.....	.....
11	11	12	11	14	182	380	182	92	42	12	.....	.....
12	11	13	11	16	190	380	176	92	42	12	.....	.....
13	11	12	10	16	190	405	142	103	45	12	.....	.....
14	11	12	10	16	159	405	136	103	38	14	.....	.....
15	11	11	10	15	136	405	131	103	33	16	.....	.....
16	10	11	10	16	105	430	128	96	29	17	.....	.....
17	10	11	11	18	94	405	139	88	26	21	.....	.....
18	10	11	11	20	92	355	136	79	25	20	.....	.....
19	10	11	11	19	90	380	142	76	24	15	.....	.....
20	10	11	11	25	100	380	107	70	22	22	.....	.....
21	10	11	11	19	107	355	100	68	21	31	.....	.....
22	10	12	11	22	105	355	100	60	20	17	.....	13
23	10	12	11	25	92	276	100	60	19	15	.....	.....
24	10	12	11	28	98	285	105	56	23	15	.....	.....
25	10	12	11	36	111	308	92	57	22	15	.....	.....
26	10	12	11	57	139	262	85	55	18	20	.....	.....
27	10	12	11	60	131	267	153	53	16	25	.....	.....
28	10	12	11	72	142	285	172	47	16	18	.....	.....
29	10	12	11	70	168	308	124	46	17	15	.....	.....
30	10	.....	11	58	190	280	258	58	14	16	.....	.....
31	10	.....	11	.....	200	.....	165	53	.....	16	.....	.....
Total..	320	329	337	739	3710	9485	5012	2738	873	491	95	.....
Mean.....	10.3	11.3	10.9	24.6	120	316	162	88.3	29.1	15.8	.....	.....
Max.....	11	12	11	72	212	430	262	136	49	31	.....	.....
Min.....	10	10	10	11	37	196	85	46	14	12	.....	.....
Acre-ft.	633	650	670	1460	7380	18800	9960	5430	1730	972	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Ten-Mile Creek at Dillon for 1915.
Drainage Area, 113 Square Miles. Altitude, 8,815 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	116	465	370	90	43	52	40	36
2	.....	.....	.....	.....	.....	95	370	400	80	43	52	40	36
3	.....	.....	.....	.....	.....	67	432	340	70	49	52	40	36
4	.....	.....	.....	.....	.....	116	465	340	70	55	52	40	35
5	.....	.....	.....	.....	.....	190	465	312	70	43	46	38	35
6	.....	.....	.....	.....	.....	190	400	296	70	43	46	36	35
7	.....	.....	.....	.....	.....	235	329	285	90	43	46	36	35
8	.....	.....	.....	.....	.....	212	312	226	340	45	42	36	34
9	.....	.....	.....	.....	.....	190	465	212	190	55	40	36	34
10	.....	.....	.....	.....	.....	212	465	212	116	55	40	36	33
11	.....	.....	.....	.....	.....	190	465	116	116	55	40	36	33
12	.....	.....	.....	.....	.....	212	465	230	103	43	40	36	32
13	.....	.....	.....	.....	.....	260	465	226	80	43	40	36	32
14	.....	.....	.....	.....	.....	285	465	212	80	49	46	36	31
15	.....	.....	.....	.....	.....	340	432	212	74	55	46	36	31
16	.....	.....	.....	.....	.....	190	465	182	58	43	46	36	31
17	.....	.....	.....	.....	.....	212	782	170	90	43	40	35	31
18	.....	.....	.....	.....	.....	212	670	190	55	38	40	35	30
19	.....	.....	.....	.....	.....	212	670	182	55	38	36	35	30
20	.....	.....	.....	.....	80	235	820	170	70	38	36	36	29
21	.....	.....	.....	.....	82	245	935	143	62	38	36	36	28
22	.....	.....	.....	.....	82	296	858	133	55	38	36	36	28
23	.....	.....	.....	.....	82	340	670	123	62	38	36	36	28
24	.....	.....	.....	.....	70	370	670	170	62	38	36	36	28
25	.....	.....	.....	.....	55	530	670	116	62	123	36	36	27
26	.....	.....	.....	.....	55	530	635	116	55	116	40	36	27
27	.....	.....	.....	.....	55	635	600	170	43	116	40	36	26
28	.....	.....	.....	.....	70	670	498	116	55	116	40	36	26
29	.....	.....	.....	.....	80	670	370	103	103	116	40	36	26
30	.....	.....	.....	.....	80	565	340	90	70	90	40	36	26
31	.....	.....	.....	.....	.....	530	.....	90	49	.....	40	.....	26
Total	.....	.....	.....	.....	791	9352	16113	6253	2645	1748	1298	1095	955
Mean	.....	.....	.....	.....	71.9	302	537	202	85.3	58.3	41.9	36.5	30.8
Max.	.....	.....	.....	.....	82	670	935	400	340	123	52	40	36
Min.	.....	.....	.....	.....	55	67	312	90	43	38	36	35	26
Acre-ft.	.....	.....	.....	.....	1570	18600	32000	12400	5240	3470	2580	2170	1890

Discharge of Ten-Mile Creek at Dillon for 1916.
Drainage Area, 113 Square Miles. Altitude, 8,815 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	25	23	24	31	137	715	540	170	64	41	36	.....
2	25	24	24	31	125	680	470	167	55	47	35	.....
3	25	24	24	31	110	680	400	159	55	45	42	.....
4	25	24	24	31	108	750	376	174	54	45	41	.....
5	25	24	24	31	119	645	352	192	54	42	42	.....
6	25	25	24	31	178	540	322	159	61	42	40	.....
7	25	25	24	30	202	505	280	151	55	44	24	.....
8	25	26	24	30	435	575	247	151	50	51	.....	.....
9	25	27	24	33	540	715	292	167	52	46	.....	.....
10	25	28	24	36	575	820	292	134	67	45	.....	.....
11	25	29	24	39	575	820	304	122	75	44	.....	.....
12	24	29	24	41	575	858	247	148	66	45	.....	.....
13	24	28	24	41	540	820	230	148	82	45	.....	.....
14	24	28	24	40	376	820	216	163	80	45	.....	.....
15	24	27	24	40	334	820	202	131	69	48	.....	.....
16	24	26	25	44	264	858	206	113	62	54	.....	.....
17	24	26	25	48	220	785	216	110	58	54	.....	.....
18	24	25	26	51	206	715	216	96	55	60	.....	.....
19	24	25	26	52	202	750	197	91	55	52	.....	.....
20	24	24	26	50	211	715	174	86	54	36	.....	.....
21	24	24	27	48	211	680	151	86	50	28	.....	.....
22	23	24	28	55	183	610	151	80	48	38	.....	42
23	23	24	28	60	192	540	151	78	45	50	.....	.....
24	23	24	28	62	220	505	159	75	48	51	.....	.....
25	23	24	28	84	292	540	131	75	47	51	.....	.....
26	23	24	28	119	394	470	131	73	45	40	.....	.....
27	23	24	28	148	352	470	151	67	44	32	.....	.....
28	23	24	29	197	376	505	148	64	44	36	.....	.....
29	23	24	29	225	505	505	148	61	44	41	.....	.....
30	23	.....	30	181	645	435	274	69	42	36	.....	.....
31	23	.....	30	.....	680	.....	211	66	.....	42	.....	.....
Total	745	732	801	1940	10082	19846	7585	3626	1680	1376	260	.....
Mean	24.0	25.2	25.8	64.7	325	662	245	117	56.0	44.4	.....	.....
Max.	25	29	30	225	680	858	540	192	82	60	.....	.....
Min.	23	23	24	30	108	435	131	61	42	28	.....	.....
Acre-ft.	1480	1450	1590	3850	20000	39400	15100	7190	3330	2730	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

EAGLE RIVER AT RED CLIFF.

Location.—In sec. 29, T. 6 S., R. 80 W., in the town of Red Cliff, in the Holy Cross National Forest, 100 yards above mouth of Turkey Creek, and 1 mile above the mouth of Homestake Creek.

Records Available.—January 8, 1911, to November 2, 1916.

Drainage Area.—74 square miles.

Gage.—Chain gage; location and datum unchanged.

Channel.—Slightly shifting.

Discharge Measurements.—Made from highway bridge at 800 feet above during high water and by wading at ordinary stages.

Winter Flow.—Little, if any, ice forms at this station.

Diversions.—There are court decrees for diversions of 22 second-feet from Eagle River and tributaries above the station; 18.5 second-feet of this amount for diversion to the Arkansas Basin.

Accuracy.—Records considered good.

Co-operation.—Records furnished by the United States Geological Survey.

EAGLE RIVER AT EAGLE.

Location.—At the highway bridge at Eagle, in Eagle County, three-fourths of a mile above the mouth of Brush Creek.

Records Available.—March 12, 1905, to February 10, 1907, at site a short distance below the mouth of Brush Creek; January 17, 1911, to November 13, 1916, at present site.

Drainage Area—630 square miles.

Gage.—Chain gage.

Channel.—Practically permanent.

Discharge Measurements.—Made from highway bridge at ordinary and high stages and by wading during low water.

Winter Flow.—Ice causes backwater during the winter. Discharge measurements are made to determine the winter flow.

Diversions.—Between Eagle and the station at Red Cliff there are court decrees for diversions of 380 second-feet from Eagle River, of which 300 second-feet is for power, and for diversions of 286 second-feet from intervening tributaries. Between Eagle and the mouth there are decrees for 22 second-feet from Eagle River.

Accuracy.—Records considered good.

Co-operation.—Records furnished by the United States Geological Survey.

Discharge of Eagle River at Red Cliff for 1915.
Drainage Area, 74 Square Miles. Altitude, 8,598 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	4	6	10	15	97	336	78	34	19	21	13	13
2	5	9	10	16	85	280	81	33	17	20	12	14
3	4	6	9	20	67	191	79	35	18	20	12	14
4	4	5	9	20	68	167	86	32	18	21	12	13
5	5	9	9	20	65	191	78	30	18	20	12	13
6	3	9	10	22	63	156	72	30	18	19	13	13
7	7	9	10	23	57	145	68	41	2	19	13	14
8	3	9	11	29	57	136	71	67	5	19	13	14
9	4	9	10	29	77	167	68	49	5	17	14	13
10	4	9	9	28	76	247	65	40	9	16	16	14
11	4	9	8	35	108	264	63	33	12	16	12	12
12	6	8	8	37	145	375	59	32	18	16	13	15
13	4	10	8	44	280	191	59	29	15	17	12	13
14	5	9	13	50	298	191	57	29	15	18	12	13
15	4	9	13	57	167	191	52	29	15	18	12	14
16	5	9	13	51	179	204	49	29	15	20	12	13
17	5	9	15	49	232	218	46	28	16	20	11	12
18	6	9	14	46	232	191	41	27	17	20	10	12
19	6	9	14	51	167	218	40	27	17	20	10	13
20	6	9	11	65	145	218	40	26	16	20	10	14
21	5	10	11	65	117	218	40	26	15	20	10	14
22	6	10	11	69	145	167	40	24	15	17	10	13
23	6	10	11	59	117	167	39	24	15	17	8	13
24	7	10	11	44	167	218	38	26	15	17	5	13
25	5	9	13	68	280	156	38	26	16	17	8	12
26	7	9	14	57	167	136	38	28	17	16	11	12
27	5	10	14	67	167	146	40	27	18	16	12	12
28	6	11	14	117	156	126	40	25	20	16	12	12
29	6	.....	14	156	191	108	39	25	22	15	13	12
30	8	.....	14	145	156	93	38	24	23	15	15	15
31	8	.....	15	.....	191	.....	36	23	.....	14	.....	12
Total	163	249	356	1554	4519	5811	1678	958	461	557	348	406
Mean	5.3	8.9	11.5	51.8	146	194	54.1	30.9	15.4	18.0	11.6	13.1
Max.	8	11	15	156	298	375	86	67	23	21	16	15
Min.	3	5	8	15	57	93	36	23	2	14	5	12
Acre-ft.	326	494	707	3080	8980	11500	3330	1900	916	1110	690	806

Discharge of Eagle River at Red Cliff for 1916.
Drainage Area, 74 Square Miles. Altitude, 8,598 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	11	12	17	27	170	410	127	64	25	22	22	.....
2	11	14	21	35	147	370	121	53	24	22	22	.....
3	12	17	20	36	147	430	118	51	24	22	.....	.....
4	12	20	22	36	170	410	115	51	24	22	.....	.....
5	13	18	19	35	147	470	112	50	24	23	.....	.....
6	14	22	22	33	147	385	109	48	26	24	.....	.....
7	12	16	20	32	184	300	106	46	24	23	.....	.....
8	13	19	18	32	220	265	92	44	29	22	.....	.....
9	11	17	19	30	510	390	93	40	22	21	.....	.....
10	14	16	22	38	550	350	94	38	30	22	.....	.....
11	14	18	15	51	450	330	95	36	38	22	.....	.....
12	13	20	18	57	430	315	109	35	30	25	.....	.....
13	13	12	20	62	470	350	84	35	32	23	.....	.....
14	13	17	20	62	368	350	80	36	33	25	.....	.....
15	14	18	20	64	265	280	78	36	28	27	.....	.....
16	13	20	22	62	182	280	76	38	30	29	.....	.....
17	14	29	24	69	178	270	74	37	28	28	.....	.....
18	16	25	28	89	175	260	72	36	27	28	.....	.....
19	16	22	33	92	172	250	67	32	24	28	.....	.....
20	14	20	35	65	168	220	62	32	24	27	.....	.....
21	15	17	39	73	165	220	52	32	27	27	.....	.....
22	14	21	33	89	161	195	51	32	23	26	.....	.....
23	15	37	36	104	158	182	47	30	23	26	.....	.....
24	16	25	35	83	147	174	44	30	23	26	.....	.....
25	15	22	28	170	170	165	43	29	23	26	.....	.....
26	14	18	28	208	250	156	48	28	23	20	.....	.....
27	13	21	29	170	220	147	55	27	23	20	.....	.....
28	12	24	35	170	235	147	57	26	23	21	.....	.....
29	11	13	35	170	250	137	59	24	23	21	.....	.....
30	10	.....	35	195	291	137	60	28	22	22	.....	.....
31	10	.....	25	.....	332	.....	62	27	.....	22	.....	.....
Total	408	570	793	2439	7629	8341	2462	1151	780	743	.....	.....
Mean	13.2	19.7	25.6	81.3	246	278	79.4	37.1	26.0	24.0	.....	.....
Max	16	37	39	208	550	470	127	64	38	29	.....	.....
Min	10	12	15	27	147	137	43	24	22	20	.....	.....
Acre-ft.	812	1170	1570	4840	15100	16500	4880	2280	1550	1480	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Eagle River at Eagle for 1915.
Drainage Area, 630 Square Miles. Altitude, 6,558 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	118	126	982	2340	1860	390	167	265	158	.....
2	.....	.....	.....	119	129	705	2850	1800	390	167	246	158	.....
3	.....	.....	.....	119	147	570	2850	1740	445	167	246	158	.....
4	.....	.....	.....	120	163	480	1740	1740	505	190	227	158	.....
5	.....	.....	.....	120	143	390	1740	1740	505	190	211	147	.....
6	.....	.....	.....	121	163	364	1520	1740	445	190	211	147	.....
7	.....	.....	.....	122	153	338	1310	1420	570	190	195	158	.....
8	.....	.....	.....	123	163	314	1360	1520	940	190	195	147	.....
9	.....	.....	.....	123	185	338	1420	1470	635	167	170	152	.....
10	.....	.....	.....	126	174	390	2100	1420	635	167	182	158	.....
11	.....	.....	.....	118	210	505	2850	1420	505	167	182	158	.....
12	.....	.....	.....	123	245	860	2850	1420	338	167	195	158	.....
13	.....	.....	.....	118	245	1640	2980	1210	390	167	195	154	.....
14	.....	.....	.....	118	390	2220	3110	1310	291	167	195	155	.....
15	.....	.....	.....	114	364	1640	2980	1120	218	167	195	155	.....
16	.....	.....	.....	114	364	1860	2720	860	190	147	195	156	.....
17	.....	.....	.....	109	390	1980	2590	860	190	147	195	156	.....
18	.....	.....	.....	112	404	2100	2460	860	167	167	195	157	.....
19	.....	.....	.....	109	418	1740	2590	860	167	190	195	157	.....
20	.....	.....	.....	114	390	1310	2850	860	147	190	211	158	.....
21	.....	.....	.....	114	364	1980	2850	860	147	167	211	158	.....
22	.....	.....	.....	114	364	1740	3630	705	167	167	211	158	.....
23	.....	.....	.....	112	364	1860	3760	705	190	167	195	147	.....
24	.....	.....	.....	123	418	1210	3110	635	190	167	195	147	.....
25	.....	118	.....	123	418	1740	2980	570	218	167	195	147	.....
26	.....	118	.....	123	418	2100	2940	635	190	167	182	147	.....
27	.....	118	.....	123	364	1310	2910	570	190	252	170	147	.....
28	.....	.....	.....	120	475	780	2880	445	190	338	170	147	.....
29	.....	.....	.....	118	705	1420	2850	505	190	252	158	147	.....
30	.....	.....	.....	118	1160	1120	2100	445	190	218	158	147	.....
31	.....	.....	.....	118	.....	1740	.....	338	167	.....	158	.....	.....
Total	.....	354	3666	10016	37726	77220	33643	10092	5523	6104	4597	.....	
Mean	.....	118	118	334	1220	2570	1090	326	184	197	153	.....	
Max.	.....	.....	126	1160	2220	3760	1860	940	338	265	158	.....	
Min.	.....	.....	109	126	314	1310	338	147	147	158	147	.....	
Acre-ft.	.....	702	7260	19900	75000	153000	67000	20000	10900	12100	9100	.....	

Discharge of Eagle River at Eagle for 1916.
Drainage Area, 630 Square Miles. Altitude, 6,558 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	217	825	2340	2660	1120	400	190	265	.....
2	.....	.....	.....	.....	217	825	2460	2590	1120	375	201	246	.....
3	.....	.....	.....	.....	221	825	2460	2340	1080	375	195	246	.....
4	.....	.....	.....	.....	227	748	2590	2220	1030	350	211	227	.....
5	.....	.....	.....	.....	211	785	2720	1980	1030	350	217	227	.....
6	.....	.....	.....	.....	211	1030	2460	1860	988	350	246	221	.....
7	.....	.....	.....	.....	195	1510	2220	1740	988	328	246	214	.....
8	.....	.....	.....	.....	195	2100	2220	1740	945	328	246	211	.....
9	.....	.....	.....	138	195	2720	2460	1620	905	305	246	198	.....
10	.....	.....	.....	147	195	3110	2850	1620	865	285	246	190	.....
11	.....	.....	.....	170	285	2720	3110	1510	785	285	227	185	.....
12	.....	.....	.....	170	350	2720	3370	1510	748	285	227	185	.....
13	.....	.....	.....	170	400	2460	3630	1410	710	285	224	182	.....
14	.....	.....	.....	182	350	2340	3500	1410	675	285	224	.....	.....
15	.....	.....	.....	195	350	1980	3370	1310	675	285	227	.....	.....
16	.....	.....	.....	195	375	1980	3500	1310	640	285	227	.....	.....
17	.....	.....	.....	195	400	1980	3500	1260	640	265	246	.....	.....
18	.....	.....	.....	211	428	1980	3500	1210	608	265	265	.....	.....
19	.....	.....	.....	211	428	1860	3630	1210	608	265	285	.....	.....
20	.....	.....	.....	208	400	1740	3760	1210	575	246	305	.....	.....
21	.....	.....	.....	205	400	1510	3630	1160	545	246	328	.....	.....
22	.....	.....	.....	205	400	1260	3500	1080	545	227	328	.....	.....
23	.....	.....	.....	211	608	1410	3240	1080	515	211	328	.....	.....
24	.....	.....	.....	214	640	1510	3110	1030	515	208	328	.....	.....
25	.....	.....	.....	214	748	1510	3110	1030	485	201	305	.....	.....
26	.....	.....	.....	214	710	1740	2850	988	455	201	305	.....	.....
27	.....	.....	.....	211	865	1310	2720	988	455	195	305	.....	.....
28	.....	.....	.....	208	1030	1620	2720	988	455	190	285	.....	.....
29	.....	.....	.....	211	1160	1740	2590	1310	428	188	285	.....	.....
30	.....	.....	.....	211	1120	1860	2720	1210	428	188	285	.....	.....
31	.....	.....	.....	214	.....	2220	.....	1210	400	.....	265	.....	.....
Total	.....	.....	4510	13531	53928	89840	45794	21961	8252	8048	2797	.....	
Mean	.....	.....	196	451	1740	2990	1480	708	275	259	.....	.....	
Max.	.....	.....	.....	1160	3110	3760	2660	1120	400	328	.....	.....	
Min.	.....	.....	.....	195	748	2220	988	400	188	190	.....	.....	
Acre-ft.	.....	.....	8940	26800	107000	178000	91000	43500	16400	15900	.....	.....	

Unless otherwise noted, all discharges are in cubic feet per second.

HOMESTAKE CREEK NEAR RED CLIFF.

Location.—In sec. 30, T. 6 S., R. 80 W., one-fourth mile above the mouth of the creek and three-fourths of a mile from Red Cliff; below all tributaries.

Records Available.—January 8, 1911, to December 20, 1916.

Drainage Area.—64 square miles.

Gage.—Vertical staff.

Channel.—Apparently permanent.

Discharge Measurements.—Made by wading near by.

Winter Flow.—Ice causes backwater, and discharge measurements are made to determine the winter flow.

Diversions.—There are court decrees for diversions of 1.2 second-feet from Homestake Creek.

Accuracy.—Records considered good.

Co-operation.—Records furnished by the United States Geological Survey.

TURKEY CREEK AT RED CLIFF.

Location.—At highway bridge in Red Cliff, 800 feet above the mouth of the creek.

Records Available.—June 30, 1913, to October 11, 1916.

Drainage Area.—27 square miles.

Gage.—Vertical staff.

Discharge Measurements.—Made from single span bridge, and by wading.

Winter Flow.—Ice causes backwater during the winter months, and discharge measurements are made to determine the flow.

Accuracy.—Records considered good.

Co-operation.—Records furnished by the United States Geological Survey.

Discharge of Homestake Creek near Red Cliff for 1915.
Drainage Area, 64 Square Miles. Altitude, 8,598 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	3	146	610	205	44	10	17	7	.....
2	.....	.....	.....	3	99	450	218	38	10	17	7	.....
3	.....	.....	.....	3	79	257	205	44	10	17	7	.....
4	.....	.....	.....	3	153	215	225	30	15	19	7	.....
5	.....	.....	.....	3	76	257	205	28	20	24	7	.....
6	.....	.....	.....	13	73	194	187	28	15	19	8	.....
7	.....	.....	.....	16	68	142	174	76	10	15	8	.....
8	.....	.....	.....	28	56	161	182	161	8	14	8	.....
9	.....	.....	.....	33	62	230	174	84	21	14	8	.....
10	.....	.....	.....	26	79	388	161	65	21	13	8	.....
11	.....	.....	.....	38	128	432	153	50	20	13	9	.....
12	.....	.....	.....	40	176	670	148	40	20	13	10	.....
13	.....	.....	.....	57	485	257	142	36	20	13	10	.....
14	.....	.....	.....	58	415	244	138	35	19	13	7	.....
15	.....	.....	.....	69	230	257	133	34	19	15	7	.....
16	.....	.....	.....	62	230	331	107	33	18	20	7	.....
17	.....	.....	.....	58	347	381	99	30	17	18	7	.....
18	.....	.....	.....	52	315	432	84	27	16	16	6	.....
19	.....	.....	.....	62	218	485	84	25	14	16	5	.....
20	.....	0.7	.....	79	142	485	84	23	12	16	5	.....
21	.....	.....	.....	76	124	468	79	21	10	16	5	.....
22	.....	.....	.....	80	94	415	73	20	10	16	5	.....
23	.....	.....	.....	69	257	398	72	20	8	16	4	.....
24	.....	.....	.....	76	285	381	70	21	7	15	2	.....
25	0.6	.....	.....	80	485	398	68	22	12	13	1	.....
26	.....	.....	.....	68	215	347	66	20	50	11	2	.....
27	.....	.....	.....	79	161	364	64	19	33	10	4	.....
28	.....	.....	.....	137	126	347	62	18	36	9	6	.....
29	.....	.....	.....	142	257	300	57	16	37	8	7	.....
30	.....	.....	.....	176	194	257	54	14	40	8	8	.....
31	.....	.....	.....	.....	285	.....	49	12	.....	8	.....	.....
Total	.....	.....	.....	1689	6060	10553	3822	1134	558	452	192	.....
Mean	.....	.....	.....	56.3	195	352	123	36.6	18.6	14.6	6.40	.....
Max	.....	.....	.....	176	485	670	218	161	50	24	10	.....
Min	.....	.....	.....	3	56	142	49	12	7	8	1	.....
Acre-ft.	.....	.....	.....	3350	12000	20900	7560	2250	1110	898	381	.....

Discharge of Homestake Creek near Red Cliff for 1916.
Drainage Area, 64 Square Miles. Altitude, 8,598 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	45	129	350	347	118	35	.....	.....	25
2	.....	.....	.....	44	112	347	325	116	30	.....	.....	.....
3	.....	.....	.....	42	102	400	300	114	28	.....	.....	.....
4	.....	.....	.....	40	110	381	270	110	30	.....	.....	.....
5	.....	.....	.....	40	118	450	250	100	30	.....	.....	.....
6	.....	.....	.....	40	134	410	230	90	31	.....	.....	.....
7	.....	.....	.....	40	170	390	218	85	27	29	.....	.....
8	.....	.....	.....	38	300	390	230	80	35	.....	.....	.....
9	.....	.....	.....	38	432	381	210	75	40	.....	.....	.....
10	.....	.....	.....	47	520	480	185	70	48	.....	.....	.....
11	.....	.....	.....	58	398	520	180	68	50	.....	44	.....
12	.....	.....	.....	68	364	468	172	66	48	34	.....	.....
13	.....	.....	.....	78	347	650	180	70	48	.....	.....	.....
14	.....	9	.....	90	240	610	200	80	48	.....	26	.....
15	.....	.....	.....	96	205	468	190	93	49	.....	.....	.....
16	.....	.....	.....	100	200	460	180	80	45	.....	.....	.....
17	.....	.....	.....	107	195	500	160	70	40	.....	.....	.....
18	.....	.....	.....	110	192	580	145	63	35	.....	.....	.....
19	.....	.....	.....	126	190	590	135	58	34	.....	.....	.....
20	.....	.....	.....	100	188	500	128	55	30	47	.....	16
21	.....	.....	.....	90	186	468	120	57	30	.....	26	.....
22	.....	.....	.....	80	186	468	110	54	30	.....	.....	.....
23	.....	.....	.....	100	188	460	105	50	30	.....	.....	.....
24	.....	.....	.....	117	190	455	104	48	30	.....	.....	.....
25	.....	.....	.....	129	194	450	110	48	28	34	.....	.....
26	.....	.....	.....	112	205	445	114	48	28	.....	.....	.....
27	.....	.....	.....	172	210	435	118	45	28	.....	.....	.....
28	.....	.....	.....	155	205	425	120	42	28	.....	.....	.....
29	.....	.....	.....	155	230	415	120	40	27	.....	.....	.....
30	.....	.....	.....	162	285	380	120	40	27	.....	.....	.....
31	.....	.....	.....	.....	381	.....	120	39	.....	26	.....	.....
Total	.....	.....	.....	2619	7106	13726	5496	2172	1047	.....	.....	.....
Mean	.....	.....	.....	87.3	229	458	177	70.1	34.9	.....	.....	.....
Max	.....	.....	.....	172	520	650	347	118	50	.....	.....	.....
Min	.....	.....	.....	38	102	347	104	39	27	.....	.....	.....
Acre-ft.	.....	.....	.....	5190	14100	27300	10900	4310	2080	.....	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Turkey Creek at Red Cliff for 1915.
Drainage Area, 27 Square Miles. Altitude, 8,598 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	4	4	5	10	58	151	110	20	10	8	6	4
2	4	4	6	11	50	135	102	18	10	8	6	5
3	4	4	6	14	41	120	95	18	10	8	6	4
4	4	4	7	14	39	110	89	18	10	9	6	4
5	4	4	6	14	37	104	87	18	9	9	6	5
6	4	4	6	14	34	101	76	17	9	8	6	5
7	5	4	6	14	30	92	73	21	9	8	6	4
8	4	4	6	14	31	101	67	23	12	8	7	5
9	4	4	7	15	47	135	58	18	10	8	7	4
10	4	5	7	16	37	143	56	17	9	8	5	4
11	4	4	6	19	47	205	50	17	9	8	4	4
12	4	5	9	17	71	197	43	17	9	8	5	4
13	4	5	7	19	98	197	43	14	9	9	5	4
14	4	5	8	26	100	166	43	14	9	8	5	4
15	4	6	7	27	91	174	40	14	10	9	5	4
16	4	5	7	29	97	197	39	14	10	8	5	4
17	3	5	8	29	115	205	35	14	9	8	4	4
18	3	5	7	30	112	197	33	13	9	8	5	4
19	4	5	7	32	92	213	31	13	9	7	5	4
20	4	5	7	38	82	213	30	13	9	7	5	4
21	4	5	7	35	71	213	27	13	9	7	4	4
22	4	5	7	29	68	205	26	13	9	8	4	4
23	4	5	8	28	88	190	25	13	8	8	4	4
24	3	5	8	27	97	182	25	13	9	8	4	4
25	3	5	8	14	112	174	25	13	11	8	4	4
26	3	7	9	14	127	166	25	12	10	10	4	4
27	3	5	10	29	102	151	25	11	9	9	4	4
28	3	7	10	33	104	135	25	10	10	8	4	4
29	3	.....	9	38	102	126	25	10	10	7	4	4
30	3	.....	9	53	120	118	23	10	9	7	4	4
31	4	.....	9	.....	134	.....	21	10	.....	7	.....	4
Total..	116	135	229	702	2434	4816	1472	459	284	249	149	128
Mean.....	3.74	4.82	7.39	23.4	78.5	161	47.5	14.8	9.47	8.03	4.97	4.13
Max.....	5	7	10	53	134	213	110	23	12	10	7	5
Min.....	3	4	5	10	30	92	21	10	8	7	4	4
Acre-ft..	230	268	454	1390	4830	9580	2920	910	564	494	296	254

Discharge of Turkey Creek at Red Cliff for 1916.
Drainage Area, 27 Square Miles. Altitude 8,598 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	4	4	4	7	38	182	94	16	11	9	.....	.....
2	4	4	4	6	29	182	88	16	13	9	.....	.....
3	4	4	4	7	25	166	82	16	13	9	.....	.....
4	4	4	4	7	26	182	76	17	11	9	.....	.....
5	4	4	6	7	25	198	70	16	10	9	.....	.....
6	4	4	4	6	50	270	64	15	12	9	.....	.....
7	5	4	4	7	75	240	58	14	11	9	.....	.....
8	4	4	4	7	100	222	45	13	11	9	.....	.....
9	4	4	4	7	111	159	38	13	12	9	.....	.....
10	4	4	5	9	174	238	40	13	13	9	.....	.....
11	4	4	4	15	152	270	39	13	14	9	.....	.....
12	4	4	5	11	144	302	34	13	11	.....	.....	.....
13	4	5	7	11	108	238	35	13	12	.....	.....	.....
14	4	5	7	11	130	238	30	13	12	.....	.....	.....
15	4	5	6	12	111	222	27	13	10	.....	.....	.....
16	4	5	6	11	82	222	24	13	10	.....	.....	.....
17	4	5	7	11	78	222	22	13	13	.....	.....	.....
18	4	4	7	14	75	222	23	13	16	.....	.....	.....
19	4	4	4	20	70	222	22	11	10	.....	.....	11
20	4	4	8	18	64	206	22	11	10	.....	.....	.....
21	4	4	9	15	60	206	18	11	10	.....	.....	.....
22	4	4	8	18	58	190	18	11	10	.....	.....	.....
23	4	4	8	21	52	174	18	10	10	.....	.....	.....
24	4	5	8	27	47	160	18	10	10	.....	.....	.....
25	4	5	7	28	75	148	16	11	10	.....	.....	.....
26	4	5	6	29	93	134	20	11	9	.....	.....	.....
27	4	4	5	38	110	120	24	10	9	.....	.....	.....
28	4	4	7	43	140	114	27	10	9	.....	.....	.....
29	4	4	7	62	129	110	30	11	9	.....	.....	.....
30	4	.....	7	36	140	98	24	12	10	.....	.....	.....
31	4	.....	7	.....	165	.....	17	11	.....	.....	.....	.....
Total..	123	124	183	521	2736	5857	1163	393	330	99	.....	.....
Mean.....	4.03	4.28	5.90	17.4	88.3	195	37.5	12.7	11.0	.....	.....	.....
Max.....	5	5	9	62	174	302	94	17	16	.....	.....	.....
Min.....	4	4	4	6	25	98	16	10	9	.....	.....	.....
Acre-ft..	248	246	363	1040	5430	11600	2310	781	655	.....	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

ROARING FORK AT ASPEN.

Location.—At the bridge near the old power plant at Aspen, above Castle, Maroon and Hunter Creeks.

Records Available.—January 1, 1911, to December 31, 1916.

Drainage Area.—109 square miles.

Gage.—Vertical staff.

Channel.—Practically permanent.

Discharge Measurements.—Made by wading, except during high water, when bridge is used.

Winter Flow.—Ice causes backwater during the winter; discharge measurements are made to determine the winter flow.

Diversions.—The Salvation ditch, which has a decree for 58 second-feet, diverts water above the station usually from the middle of May to the middle of September.

Accuracy.—Results are reliable.

Co-operation.—Records furnished by the United States Geological Survey.

ROARING FORK BELOW ASPEN.

Location.—In sec. 1, T. 10 S., R. 85 W., two miles below Aspen at the first highway bridge. Nearest tributary above is Castle Creek, and below, Maroon Creek.

Records Available.—October 18, 1913, to December 28, 1916.

Drainage Area.—223 square miles.

Gage.—Vertical staff.

Control.—Shifts slightly at high water.

Discharge Measurements.—Made from two-span bridge.

Winter Flow.—Ice causes little or no backwater during the winter months, as shown by discharge measurements.

Diversions.—Between the station at Aspen and this one there are a number of small diversions, some of which return the water to the river above this station. The Roaring Fork Light and Power Company diverts water from Maroon Creek into Castle Creek, and thence into Roaring Fork above the station.

Accuracy.—Results considered reliable.

Co-operation.—Records furnished by the United States Geological Survey.

Discharge of Roaring Fork at Aspen for 1915.
Drainage Area, 109 Square Miles. Altitude, 7,931 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	32	30	118	575	655	109	50	65	35	39
2	.....	.....	.....	32	33	120	485	600	107	55	64	30	40
3	.....	.....	22	32	36	112	400	530	92	61	63	31	40
4	.....	.....	.....	32	40	92	339	508	92	55	62	31	41
5	.....	.....	.....	32	40	77	311	575	70	59	61	32	42
6	.....	.....	23	32	41	112	297	575	84	59	60	32	43
7	.....	.....	.....	28	41	104	283	432	195	53	58	33	44
8	.....	.....	.....	23	40	65	290	498	152	51	55	34	45
9	.....	.....	.....	23	40	104	376	472	112	43	53	36	45
10	.....	.....	.....	23	39	95	615	432	107	48	54	39	45
11	.....	.....	.....	25	39	131	805	557	105	43	55	37	45
12	.....	.....	.....	27	43	175	1010	562	100	61	54	36	45
13	.....	.....	19	39	45	325	665	392	84	55	53	35	45
14	.....	.....	.....	36	50	368	530	530	80	53	53	36	44
15	.....	.....	.....	32	59	360	650	332	84	62	55	36	43
16	.....	23	.....	32	50	350	775	325	84	55	57	37	41
17	.....	.....	.....	32	32	428	875	353	80	49	57	37	43
18	.....	.....	.....	32	32	512	875	325	76	55	56	38	45
19	.....	.....	.....	33	65	311	875	252	65	55	56	39	43
20	.....	.....	22	33	59	262	1040	294	62	55	55	39	41
21	.....	.....	.....	33	67	200	795	262	61	55	55	38	39
22	.....	.....	.....	34	65	225	1140	240	62	49	55	38	39
23	.....	.....	.....	34	63	220	1180	210	67	43	53	38	34
24	.....	.....	30	34	70	255	996	276	72	41	51	37	32
25	.....	.....	30	35	59	440	1250	212	70	53	50	37	32
26	.....	.....	30	36	63	350	996	166	67	65	49	37	32
27	.....	.....	32	34	74	283	886	161	61	67	48	37	32
28	.....	.....	32	34	92	249	840	148	53	61	46	38	32
29	.....	.....	.....	33	112	318	800	142	57	55	44	38	32
30	.....	.....	.....	32	146	294	655	127	57	74	43	39	32
31	.....	.....	.....	32	.....	360	.....	102	55	.....	39	.....	32
Total	.....	.....	.....	981	1665	7415	21609	11245	2622	1640	1679	1080	1227
Mean	.....	.....	.....	31.6	55.5	239	720	363	84.6	54.7	54.2	36.0	39.6
Max	.....	.....	.....	39	146	512	1250	655	195	74	65	39	45
Min	.....	.....	.....	23	30	65	283	102	53	41	39	30	32
Acre-ft.	.....	.....	.....	1940	3300	14700	42800	22300	5200	3250	3330	2140	2430

Discharge of Roaring Fork at Aspen for 1916.
Drainage Area, 109 Square Miles. Altitude, 7,931 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	32	32	27	40	164	675	875	308	76	76	77	83
2	.....	32	32	26	51	137	675	725	325	72	90	79	55
3	.....	32	32	28	62	123	725	675	255	72	95	80	62
4	.....	32	32	30	54	112	725	638	225	66	90	77	61
5	.....	32	32	30	49	200	875	600	225	63	80	68	57
6	.....	32	34	30	50	248	725	575	212	63	125	80	53
7	.....	31	36	31	49	296	625	625	200	60	139	97	44
8	.....	31	34	31	45	342	725	575	200	55	127	56	43
9	.....	30	32	32	48	462	930	600	225	55	133	66	41
10	.....	28	34	32	53	478	1150	530	212	142	120	55	54
11	.....	30	33	41	65	492	1100	485	175	152	112	48	55
12	.....	31	32	45	67	508	1150	462	152	144	114	70	54
13	.....	32	32	49	71	508	1320	462	225	123	120	60	50
14	.....	33	32	44	65	420	1150	400	272	120	123	56	49
15	.....	34	32	38	66	308	1040	400	225	112	137	45	47
16	.....	31	33	32	67	272	1040	420	200	105	105	50	48
17	.....	28	33	40	68	240	1150	360	175	105	105	60	50
18	.....	30	34	48	82	200	1040	342	164	86	127	67	48
19	.....	32	35	50	79	200	1040	325	144	82	112	74	53
20	.....	34	37	53	70	240	1040	290	144	79	98	65	56
21	.....	36	39	60	67	225	930	272	133	76	95	51	50
22	.....	39	34	60	76	200	930	272	116	76	123	49	50
23	.....	37	30	53	94	188	985	240	104	72	120	48	53
24	.....	36	28	48	102	200	825	225	107	86	105	51	49
25	.....	34	27	43	105	240	825	225	100	82	109	43	43
26	.....	32	53	46	109	290	825	225	92	79	92	70	41
27	.....	30	36	49	137	272	875	200	86	68	83	66	40
28	.....	29	33	55	164	325	875	240	83	72	86	77	39
29	.....	28	30	45	212	380	825	225	80	71	90	50	39
30	.....	30	.....	40	188	462	875	255	77	67	83	57	39
31	.....	32	.....	40	.....	575	.....	308	75	.....	82	.....	39
Total	.....	990	973	1276	2455	9307	27670	13051	5316	2581	3296	1892	1545
Mean	.....	31.9	33.6	41.2	81.8	300	922	421	171	86.0	106	63.1	49.8
Max	.....	39	53	60	212	575	1320	875	325	152	139	97	83
Min	.....	28	27	26	40	112	625	200	75	55	76	43	39
Acre-ft.	.....	1960	1930	2530	4870	18400	54900	25900	10500	5120	6520	3750	3060

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Roaring Fork below Aspen for 1915.
Drainage Area, 223 Square Miles. Altitude, 7,900 Feet Above Sea Level.

Day.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	99	98	98	92	315	905	1060	254	142	185	138	141
2	98	97	97	94	284	817	950	259	144	184	135	142
3	97	96	96	96	252	730	840	232	140	183	140	143
4	96	96	95	97	220	642	850	206	137	182	147	143
5	96	96	94	98	212	555	860	180	140	181	156	144
6	95	96	92	99	202	588	880	180	134	180	165	144
7	95	96	90	100	192	620	836	170	128	174	165	144
8	94	96	88	100	181	683	792	200	122	168	162	144
9	94	100	88	105	181	685	777	400	117	161	160	138
10	95	98	88	110	181	1020	762	330	117	169	158	131
11	95	97	90	115	250	1355	830	259	117	177	153	131
12	96	96	92	120	318	1690	898	239	150	175	148	128
13	98	94	112	125	420	1548	965	219	140	173	141	126
14	100	95	104	130	520	1405	700	199	140	175	134	126
15	100	96	96	140	620	1262	600	192	159	181	132	124
16	100	98	94	150	735	1120	500	185	150	188	130	123
17	100	100	92	160	830	1690	490	178	140	158	131	120
18	100	96	92	170	838	1630	490	172	130	158	133	118
19	102	92	92	181	685	1570	490	166	135	157	135	117
20	105	92	92	181	532	1460	480	159	129	156	141	116
21	102	93	92	181	380	1350	470	152	123	155	144	114
22	100	94	92	181	465	1460	460	144	120	154	143	115
23	101	95	92	181	550	1580	1060	150	117	154	142	116
24	102	96	92	181	635	1690	533	160	114	155	141	114
25	103	96	93	190	720	2070	450	170	110	156	140	112
26	104	100	94	210	647	1880	367	180	250	157	140	111
27	105	100	92	230	574	1700	315	158	169	158	140	111
28	100	99	91	252	564	1520	299	137	150	153	140	111
29	100	.....	90	325	555	1340	283	138	200	149	140	111
30	100	.....	89	320	671	1160	266	139	169	144	141	108
31	100	.....	88	.....	788	.....	250	140	.....	141	.....	104
Total	3072	2698	2887	4714	14517	37690	19803	6047	4233	5141	4315	3870
Mean	99.1	96.4	93.1	157	468	1260	639	195	141	166	144	125
Max	105	100	112	325	838	2070	1060	400	250	188	165	144
Min	94	92	88	92	181	555	250	137	110	141	130	104
Acre-ft.	6090	5350	5720	9340	28800	75000	3930	12000	8390	10200	8570	7690

Discharge of Roaring Fork below Aspen for 1916.
Drainage Area, 223 Square Miles. Altitude, 7,900 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	104	92	94	114	362	985	1350	620	255	.....	.....	.....
2	104	92	90	129	307	985	1280	685	242	.....	.....	161
3	104	92	87	165	285	1120	1280	620	234	260	242	.....
4	104	94	101	137	260	1120	1080	560	225	.....	.....	154
5	104	96	101	128	480	1250	1100	555	234	.....	.....	.....
6	104	100	101	127	560	1110	1060	525	242	278	225	.....
7	103	109	99	122	650	1030	1070	500	228	.....	.....	.....
8	102	106	98	118	720	1070	1160	485	214	.....	.....	135
9	102	104	98	120	940	1400	1090	505	200	.....	.....	.....
10	103	104	102	128	970	2080	1030	468	325	278	.....	.....
11	104	104	104	150	995	2000	995	430	327	.....	208	.....
12	100	104	104	161	1020	2070	950	387	318	282	.....	.....
13	97	104	104	188	1020	2200	905	387	300	.....	.....	154
14	107	104	106	170	792	2070	830	387	298	.....	.....	148
15	118	104	108	169	620	1940	830	400	297	256	.....	.....
16	108	104	109	175	588	1940	845	414	287	.....	177	.....
17	99	106	114	175	495	2070	755	380	278	.....	.....	.....
18	105	108	118	190	495	1980	730	337	270	287	225	.....
19	111	110	132	169	468	1950	710	337	251	.....	.....	161
20	108	112	148	165	555	1960	685	340	260	.....	.....	.....
21	105	114	161	162	500	1690	650	327	258	242	.....	.....
22	101	106	161	177	480	1690	620	320	250	.....	.....	.....
23	105	97	155	230	460	1820	620	305	248	.....	177	154
24	109	99	145	260	495	1460	620	298	265	.....	.....	.....
25	108	101	128	302	550	1240	620	297	250	.....	200	141
26	107	104	139	280	620	1240	620	287	240	.....	.....	.....
27	106	101	151	320	620	1250	600	287	235	242	.....	.....
28	105	98	135	390	720	1250	580	287	234	234	.....	128
29	104	97	128	468	755	1280	555	284	230	.....	177	.....
30	106	.....	122	420	790	1350	555	272	225	225	.....	.....
31	97	.....	116	.....	888	.....	588	260	.....	.....	.....	.....
Total	3244	2966	3659	6009	19460	46600	26363	12546	7720	.....	.....	.....
Mean	105	102	118	200	628	1550	850	405	257	.....	.....	.....
Max	118	114	161	468	1020	2200	1350	685	327	.....	.....	.....
Min	97	92	87	114	260	985	555	260	200	.....	.....	.....
Acre-ft.	6460	5870	7260	11900	38600	92200	52300	24900	15300	.....	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

ROARING FORK AT GLENWOOD SPRINGS.

Location.—On bridge 500 feet above the mouth of the river in Glenwood Springs. Nearest important tributary enters about 3 miles above the station.

Records Available.—April 6, 1906, to September 30, 1909; September 21, 1910, to December 31, 1916.

Drainage Area.—1,450 square miles.

Gage.—November 20, 1915, a new slope gage established 800 feet above bridge.

Channel.—Practically permanent, but rough. Extremely high water in Grand River may cause backwater at the gage. Measurements made at stages as high as 5.7 feet on Roaring Fork, and 9.2 feet on Grand River have shown no backwater effect.

Discharge Measurements.—Made from highway bridge.

Winter Flow.—Surface ice rarely forms entirely across the river, but slush and anchor ice frequently occur. Discharge measurements sometimes show backwater from ice.

Diversions.—There are court decrees for diversions of 196 second-feet from Roaring Fork above the station, and 795 second-feet from the various tributaries.

Accuracy.—Conditions are favorable for accurate results; estimates should be reliable.

Co-operation.—Records furnished by the United States Geological Survey.

CASTLE CREEK NEAR ASPEN.

Location.—In sec. 35, T. 10 S., R. 85 W., in the Sopris National Forest, on the highway bridge 4 miles above Aspen. No tributary between the station and the mouth of the creek except small gulches that carry spring run-off. Nearest tributary above, Conundrum Creek, enters one mile upstream.

Records Available.—February 16, 1911, to December 8, 1916.

Drainage Area.—72 square miles.

Gage.—Automatic gage.

Channel.—Slightly shifting.

Discharge Measurements.—Made from car and cable during high water and by wading at low stages.

Winter Flow.—Affected by ice and discharge measurements are made to determine the flow.

Diversions.—No water is diverted above the station. The Roaring Fork Light & Power Co. and the Newman mine divert water from Castle Creek below the station.

Accuracy.—Results considered excellent except for latter part of 1916.

Co-operation.—Records furnished by the United States Geological Survey.

Discharge of Roaring Fork at Glenwood Springs for 1915.
Drainage Area, 1,450 Square Miles. Altitude 5,747 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	370	400	350	370	1370	3100	3290	768	455	615	455	485
2	360	405	350	388	835	4910	3290	705	455	615	480	414
3	370	360	350	430	800	3880	3110	675	480	588	430	485
4	370	370	350	405	768	2910	3000	705	480	588	455	485
5	405	360	360	430	705	2550	2910	675	455	532	480	462
6	360	350	350	455	645	2380	3290	615	455	505	455	452
7	405	388	350	505	588	2380	2730	768	405	505	480	420
8	.....	350	350	480	560	2210	2380	1370	455	505	480	420
9	.....	370	360	430	560	2910	2380	1140	505	532	480	408
10	.....	370	360	455	560	3880	2380	835	455	480	588	452
11	370	360	360	480	615	4280	3680	800	532	480	480	420
12	405	360	370	505	1040	6530	2730	735	532	455	430	436
13	.....	360	360	532	1620	3880	2730	705	532	455	455	452
14	.....	355	360	615	2550	3290	2550	675	532	480	430	420
15	.....	350	374	615	2050	3480	2380	660	560	480	405	420
16	.....	360	388	735	2300	4080	2210	645	588	532	480	452
17	370	388	370	615	2550	4910	2050	615	532	518	455	366
18	.....	388	388	645	2380	4910	1840	560	560	505	455	378
19	.....	370	370	768	1900	4910	1620	560	532	505	455	369
20	.....	388	370	835	1490	5580	1370	615	532	532	505	360
21	.....	377	360	910	1250	5350	1370	615	480	455	520	420
22	.....	368	370	870	1250	4910	1250	602	480	505	485	452
23	360	360	350	800	1440	5810	1140	588	480	455	485	452
24	.....	350	370	705	1620	5350	1250	645	480	455	520	420
25	.....	360	405	735	1620	6530	1250	615	532	455	470	420
26	.....	370	388	705	1490	6050	1090	645	735	480	420	420
27	.....	370	430	835	1250	6050	995	588	645	480	485	360
28	.....	388	418	800	1370	4280	995	532	645	455	452	360
29	.....	.....	405	1090	1620	4280	950	455	645	430	390	420
30	.....	.....	388	1490	2050	3780	870	505	615	430	520	452
31	.....	.....	.....	388	.....	2380	.....	835	455	.....	455	.....	436
Total.	.....	10345	11512	19633	43226	129350	63905	21071	15769	15462	14080	13174
Mean	.....	369	371	654	1390	4310	2060	680	526	499	469	425
Max.	.....	405	430	1490	2550	6530	3680	1370	735	615	588	485
Min.	.....	350	350	370	560	2210	835	455	405	430	390	360
Acre-ft.	.....	20500	22800	38900	85500	256000	127000	41800	31300	30700	27900	26100

Discharge of Roaring Fork at Glenwood Springs for 1916.
Drainage Area, 1,450 Square Miles. Altitude, 5,747 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	420	342	390	670	1820	5050	5990	2690	998	1260	832	555
2	420	350	360	670	1580	4830	5750	3030	986	1260	832	592
3	452	388	300	670	1470	5050	5510	3030	976	1010	832	572
4	485	388	420	710	1580	5640	5280	3030	965	965	790	555
5	420	388	452	670	1820	6230	5050	2690	875	920	790	555
6	420	388	485	630	2690	5510	4830	2460	875	965	790	555
7	360	388	452	592	3440	5280	4390	2220	875	1260	790	520
8	420	388	452	592	4180	5050	5050	2080	875	1240	710	485
9	420	370	420	631	4830	6280	4830	2220	875	1210	710	485
10	420	370	485	670	5280	7470	4610	2080	875	1160	710	485
11	390	370	485	832	5050	7730	4180	2220	1470	1310	710	485
12	390	370	520	920	4830	7990	3770	2080	1360	1260	635	485
13	485	350	555	965	4610	8520	3680	2470	1360	1160	560	555
14	420	330	555	920	3910	8520	3580	2860	1260	1160	485	485
15	420	370	485	965	3210	7990	3580	2220	1260	1160	550	485
16	420	370	520	1010	2530	7990	3480	1950	1060	1160	610	485
17	420	370	555	1060	2220	7990	3390	1700	1080	1210	670	520
18	420	360	555	1210	2080	8250	3390	1580	1110	1160	670	555
19	420	350	672	1210	2080	8520	3030	1580	1030	1160	650	555
20	360	355	790	1090	2530	8520	2860	1470	950	1060	630	555
21	420	360	1260	965	2450	7730	2690	1360	875	1010	616	555
22	360	390	965	1060	2370	6970	2690	1260	875	1040	602	555
23	370	390	875	1260	2080	5990	2460	1260	875	1060	592	538
24	380	360	832	1470	2370	6470	2220	1110	898	1010	592	520
25	390	360	790	1700	2690	6110	2370	1160	920	965	555	503
26	390	360	750	1820	3030	5750	2530	1110	875	965	555	485
27	405	375	710	2080	2860	6470	2370	1040	832	965	555	485
28	390	390	670	2370	3320	6230	3030	965	790	965	555	420
29	360	360	790	3030	3770	6230	3030	875	790	920	555	485
30	348	.....	710	2420	4180	6110	3030	1060	832	875	555	485
31	335	.....	630	.....	4610	.....	3030	1010	.....	875	.....	485
Total.	12530	10700	18890	24862	95470	202420	115680	57870	29677	33700	19688	16040
Mean	404	369	609	1160	3080	6750	3730	1870	989	1090	656	517
Max.	485	390	1260	3030	5280	8520	5990	3030	1470	1310	832	592
Min.	335	330	300	592	1470	4830	2220	875	790	875	485	420
Acre-ft.	24800	21200	37400	69000	189000	402000	229000	115000	58800	67000	39000	31800

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Castle Creek near Aspen for 1915.
Drainage Area, 72 Square Miles. Altitude, 7,931 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	26	35	31	30	38	129	310	111	60	53	37	36
2	26	34	31	31	36	121	294	99	62	52	37	35
3	26	34	30	31	35	95	274	95	67	53	37	35
4	26	33	31	32	35	79	270	95	65	52	37	35
5	26	32	32	34	35	72	290	89	65	51	37	34
6	26	31	32	34	35	69	267	89	60	50	37	34
7	26	30	32	33	34	66	249	111	58	48	38	34
8	26	31	32	33	33	67	246	184	58	48	37	34
9	26	32	31	32	34	99	260	139	56	48	37	34
10	26	33	31	31	35	160	277	113	55	48	37	34
11	26	33	31	32	38	217	294	107	57	46	34	34
12	26	34	30	30	50	219	284	103	67	45	32	34
13	26	36	30	29	76	154	280	89	63	43	31	34
14	26	36	31	30	87	135	274	87	59	43	34	34
15	26	35	32	30	67	169	256	89	57	43	37	33
16	27	35	32	30	82	214	212	89	57	43	41	33
17	27	34	31	29	105	246	195	85	55	43	40	33
18	27	33	31	29	93	239	212	82	54	43	40	31
19	27	33	30	30	72	280	203	78	54	42	40	31
20	27	32	30	30	63	292	203	71	52	42	38	31
21	27	32	30	31	56	297	192	69	52	42	37	31
22	27	33	30	30	54	332	184	69	50	42	36	31
23	27	34	30	30	53	352	169	72	50	42	36	31
24	27	34	30	30	60	374	164	78	50	42	36	31
25	27	33	30	30	82	372	171	75	69	40	34	31
26	28	32	31	30	75	374	154	71	71	40	34	32
27	29	32	31	31	64	360	148	67	60	38	35	32
28	30	32	30	32	59	350	137	65	57	37	34	32
29	32	.....	30	35	66	342	133	64	57	37	35	33
30	35	.....	30	40	69	330	123	64	57	37	36	34
31	35	.....	30	.....	85	.....	115	62	.....	37	.....	34
Total	849	928	953	939	1806	6605	6840	2761	1754	1370	1091	1025
Mean	27.4	33.1	30.7	31.3	58.3	220	221	89.1	58.5	44.2	36.4	33.1
Max	35	36	32	40	105	374	310	184	71	53	41	36
Min	26	30	30	29	33	66	115	62	50	37	31	31
Acre-ft.	1680	1840	1890	1860	3580	13100	13600	5480	3480	2720	2170	2040

Discharge of Castle Creek near Aspen for 1916.
Drainage Area, 72 Square Miles. Altitude, 7,931 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	34	31	33	33	77	206	494	280	105	70	59	46
2	34	34	32	34	74	206	452	290	103	74	58	46
3	34	34	33	34	68	219	502	249	97	70	56	45
4	34	32	33	34	70	253	458	244	95	67	53	45
5	34	32	33	34	81	270	473	237	95	64	52	45
6	34	32	33	34	105	246	445	230	99	90	52	45
7	34	32	32	34	139	249	432	206	92	88	53	40
8	33	32	32	34	156	270	455	199	86	81	52	34
9	33	32	32	35	181	322	370	223	141	74	52	.....
10	31	32	33	36	186	382	372	219	150	71	52	.....
11	29	32	34	38	184	412	330	195	133	74	51	.....
12	32	32	33	39	184	434	324	188	113	72	51	.....
13	34	32	34	40	181	455	337	221	107	70	42	.....
14	34	34	32	37	169	463	334	244	101	77	41	.....
15	34	34	32	37	141	468	334	203	95	78	48	.....
16	33	34	32	38	125	478	350	190	81	75	52	.....
17	33	34	33	41	117	484	347	173	85	74	56	.....
18	32	36	34	42	111	504	352	181	81	75	53	.....
19	33	34	34	42	119	510	322	158	78	72	52	.....
20	32	33	35	40	129	481	317	154	75	70	51	.....
21	31	32	37	40	121	455	310	143	74	67	51	.....
22	30	32	35	42	113	422	297	135	72	67	47	.....
23	30	33	36	46	105	394	290	129	74	70	49	.....
24	30	32	35	49	103	430	280	129	75	68	48	.....
25	30	32	34	51	109	438	314	129	72	67	44	.....
26	30	32	35	56	115	448	310	123	70	67	47	.....
27	30	34	34	63	115	457	284	117	67	65	48	.....
28	30	33	35	72	129	466	260	111	67	64	47	.....
29	32	32	34	92	148	475	255	111	64	63	46	.....
30	32	.....	34	86	175	484	250	115	64	62	47	.....
31	31	.....	34	.....	199	.....	244	109	.....	62	.....	.....
Total	997	950	1042	1333	4029	11781	10894	5635	2711	2208	1510	346
Mean	32.2	32.8	33.6	44.4	130	393	351	182	90.4	71.2	50.3	.....
Max	34	36	37	92	199	510	502	290	150	90	59	.....
Min	29	31	32	33	68	206	244	190	64	62	41	.....
Acre-ft.	1980	1890	2070	2640	7990	23400	21600	11200	5380	4380	2990	.....

Unless otherwise noted, all discharges are in cubic feet per second.

MAROON CREEK NEAR ASPEN.

Location.—In sec. 22, T. 10 S., R. 85 W., in the Sopris National Forest, just above the headgate of the Roaring Fork Light & Power Co., 5 miles above Aspen, Colo. Nearest tributary, Willow Creek, enters just below the station.

Records Available.—January 1, 1911, to September 30, 1916.

Drainage Area.—42 square miles.

Gage.—Vertical staff.

Channel.—Practically permanent.

Discharge Measurements.—Made by wading, except during high water, when they are made from a footbridge.

Winter Flow.—Discharge measurements indicate that ice does not cause backwater at this station.

Diversions.—One or two small diversions above the station; the Roaring Fork Light & Power Co. diverts water just below.

Accuracy.—Estimates made are reliable.

Co-operation.—Records furnished by the United States Geological Survey.

MAROON CREEK NEAR ASPEN (LOWER STATION).

Location.—In sec. 15, T. 10 S., R. 85 W., at highway bridge, 2½ miles southwest of Aspen.

Records Available.—February 13, 1914, to November 30, 1915.

Drainage Area.—54 square miles.

Gage.—Vertical staff.

Discharge Measurements.—Made from single span bridge during high water and by wading at low stages.

Channel.—Slightly shifting.

Winter Flow.—Discharge not seriously affected by ice.

Discharge of Maroon Creek near Aspen for 1915.
Drainage Area, 42 Square Miles. Altitude, 8,300 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	34	25	24	23	31	122	241	102	46	38	31	28
2	28	24	24	23	28	129	226	95	46	37	31	28
3	28	25	24	23	28	119	226	90	47	37	31	28
4	28	24	24	23	28	112	211	90	45	37	30	28
5	28	24	24	24	28	109	211	86	45	37	30	28
6	36	24	24	24	28	114	211	81	44	36	29	28
7	27	24	24	24	28	109	196	81	44	36	29	28
8	28	25	24	24	27	109	196	97	43	36	28	27
9	28	26	23	23	28	114	196	86	43	35	28	28
10	28	24	23	24	28	139	196	81	42	34	28	27
11	28	24	23	24	28	168	196	79	43	34	28	28
12	27	24	24	24	34	182	211	77	46	34	28	27
13	27	24	23	25	41	155	196	73	43	34	28	27
14	26	24	23	25	56	155	211	72	43	34	29	26
15	26	25	23	25	50	171	211	70	42	36	30	27
16	28	26	23	24	50	182	196	66	41	36	29	26
17	37	24	23	24	66	196	182	64	39	34	28	26
18	31	24	23	25	70	211	182	66	38	34	28	26
19	26	24	23	25	66	211	171	62	37	34	29	27
20	26	24	24	25	70	226	166	62	38	33	29	28
21	26	24	23	26	72	241	155	59	37	33	29	28
22	29	24	23	26	73	241	152	59	37	33	29	27
23	28	24	23	26	77	241	145	59	37	33	29	27
24	39	24	23	26	81	256	139	59	36	33	29	26
25	27	24	23	26	90	256	139	56	43	31	28	26
26	34	24	23	26	88	241	134	54	47	31	28	26
27	28	24	23	26	86	241	126	53	41	30	28	26
28	33	24	23	28	79	241	119	50	41	30	28	30
29	25	.....	23	30	86	241	119	48	39	30	30	26
30	25	.....	22	31	81	241	109	47	41	31	29	26
31	25	.....	22	.....	90	.....	106	47	.....	31	.....	26
Total..	894	680	721	752	1716	5473	5475	2171	1254	1052	868	840
Mean.....	28.8	24.3	23.3	25.1	55.4	182	177	70.0	41.8	33.9	28.9	27.1
Max.....	39	26	24	31	90	256	241	102	47	38	31	30
Min.....	25	24	22	23	27	109	106	47	36	30	28	26
Acre-ft.	1770	1350	1430	1490	3410	10800	10900	4300	2490	2080	1720	1670

Discharge of Maroon Creek near Aspen for 1916.
Drainage Area, 42 Square Miles. Altitude, 8,300 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	26	24	22	23	40	155	334	272	129	.....	.....	.....
2	25	25	22	23	40	163	334	288	117	.....	.....	.....
3	24	27	22	23	39	171	350	272	110	.....	.....	.....
4	24	25	22	23	42	182	365	272	103	.....	.....	.....
5	24	24	22	23	44	199	350	266	103	.....	.....	.....
6	24	24	23	23	53	196	350	260	98	.....	.....	.....
7	24	24	24	23	68	196	350	253	96	.....	.....	.....
8	25	24	23	24	83	205	350	247	92	.....	.....	.....
9	26	24	22	24	96	220	350	241	96	.....	.....	.....
10	26	24	23	24	110	235	334	241	117	.....	.....	.....
11	26	23	23	25	115	256	334	229	115	.....	.....	.....
12	24	23	22	26	117	272	334	226	105	.....	.....	.....
13	25	23	22	25	119	272	318	235	103	.....	.....	41
14	25	23	23	25	115	288	318	247	96	.....	.....	.....
15	25	23	22	25	110	288	303	229	92	.....	.....	.....
16	25	23	22	26	107	303	303	226	90	73	.....	.....
17	25	23	22	27	105	303	303	217	90	.....	.....	.....
18	26	23	23	28	105	318	303	214	83	.....	.....	.....
19	28	23	25	27	105	334	303	208	83	.....	.....	.....
20	30	23	24	28	77	334	303	205	79	.....	.....	.....
21	27	22	28	28	112	318	288	196	79	.....	.....	.....
22	27	22	25	28	110	318	288	194	75	.....	.....	.....
23	24	22	25	29	105	303	288	191	75	.....	.....	.....
24	24	22	24	30	101	303	272	182	72	.....	.....	.....
25	24	22	24	34	103	303	288	179	72	.....	.....	.....
26	24	22	24	36	105	303	272	174	66	.....	.....	.....
27	24	22	24	39	110	318	272	168	64	.....	.....	.....
28	27	22	24	41	115	318	272	160	64	.....	.....	.....
29	24	22	24	45	122	334	272	155	61	.....	.....	.....
30	24	.....	23	42	129	334	272	155	61	.....	.....	.....
31	24	.....	23	.....	145	.....	272	145	.....	.....	.....	.....
Total..	780	673	721	847	2947	8042	9645	6747	2686	.....	.....	.....
Mean.....	25.2	23.2	23.3	28.2	95.1	268	311	218	89.5	.....	.....	.....
Max.....	30	27	28	45	145	334	365	288	129	.....	.....	.....
Min.....	24	22	22	23	39	155	272	145	61	.....	.....	.....
Acre-ft..	1550	1330	1430	1680	5850	15900	19100	13400	5330	.....	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Maroon Creek near Aspen (Lower Station) for 1915.
Drainage Area, 54 Square Miles. Altitude, 8,300 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	13	12	12	11	17	93	290	96	46	.....	.....	.....
2	13	12	12	11	14	98	250	115	44	.....	7	.....
3	13	12	12	11	13	103	245	88	42	.....	.....	.....
4	12	12	12	11	12	100	230	61	61	54	.....	.....
5	12	12	12	11	12	97	230	58	40	13	7	.....
6	12	11	12	12	13	94	230	54	35	.....	7	.....
7	12	10	11	12	14	97	555	54	30	.....	.....	.....
8	13	10	11	12	15	100	220	68	25	.....	.....	.....
9	12	12	11	12	15	103	210	60	22	.....	.....	.....
10	11	12	11	12	16	138	200	56	22	.....	7	.....
11	10	12	12	12	16	165	220	54	22	46	.....	.....
12	11	13	12	12	26	180	240	54	25	46	5	.....
13	12	13	12	12	36	150	260	54	28	.....	.....	.....
14	12	12	12	12	46	150	200	54	23	.....	.....	.....
15	12	12	11	12	57	170	185	54	22	.....	7	.....
16	12	12	11	12	57	190	170	54	21	.....	.....	.....
17	12	12	11	12	60	210	170	54	20	.....	6	.....
18	12	12	11	12	65	230	170	54	54	13	.....	.....
19	12	12	11	12	62	245	170	54	18	.....	.....	.....
20	12	12	11	12	60	245	157	46	16	.....	.....	.....
21	12	12	11	12	57	245	144	47	15	.....	8	.....
22	11	12	11	12	58	265	132	48	15	9	.....	.....
23	11	12	11	13	70	290	125	49	15	.....	.....	.....
24	11	12	11	14	83	290	118	49	15	.....	.....	.....
25	11	12	11	13	85	290	111	47	15	.....	.....	.....
26	11	12	11	12	83	290	104	45	20	13	5	.....
27	12	12	11	13	80	290	97	260	18	.....	.....	.....
28	12	12	11	14	77	290	92	45	18	.....	.....	.....
29	12	.....	11	16	74	290	87	43	16	.....	8	.....
30	12	.....	11	17	70	290	82	42	18	13	7	.....
31	12	.....	11	.....	80	.....	78	42	.....	.....	.....	.....
Total	367	333	351	371	1443	5788	5772	1959	776	.....	.....	.....
Mean	11.8	11.9	11.3	12.4	46.5	193	186	63.2	25.9	.....	.....	.....
Max	13	13	12	17	85	290	555	260	61	.....	.....	.....
Min	10	10	11	11	12	93	78	42	15	.....	.....	.....
Acre-ft.	726	661	695	738	2860	11500	11400	3890	1540	.....	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

NORTH FORK OF FRYING PAN CREEK NEAR NORRIE.

Location.—On a highway bridge in sec. 21, T. 8 S., R. 83 W., in the Sopris National Forest, about 1 mile from Norrie. No tributaries between the station and the mouth of the creek.

Records Available.—February 18, 1911, to November 9, 1916.

Drainage Area.—42 square miles.

Gage.—Vertical staff.

Channel.—Practically permanent, but rough.

Discharge Measurements.—Made from the bridge during high water and by wading at ordinary stages.

Winter Flow.—Affected by ice.

Diversions.—No water is diverted above the station, so the records represent the natural run-off.

Accuracy.—Owing to the scattering gage heights and the probable error in mean daily stage as determined from one reading, the estimates cannot be considered better than fair.

Co-operation.—Station maintained by the United States Geological Survey in co-operation with the United States Forest Service. Records furnished by the United States Geological Survey.

FRYING PAN CREEK AT NORRIE.

Location.—At the highway bridge in Norrie, in sec. 28, T. 8 S., R. 83 W., in the Sopris National Forest, 1 mile above the entrance of the North Fork.

Records Available.—February 18, 1911, to November 12, 1916.

Drainage Area.—92 square miles.

Gage.—Vertical staff.

Channel.—Slightly shifting after high water.

Discharge Measurements.—Made from the bridge.

Winter Flow.—Ice probably causes backwater during the winter months.

Diversions.—No water is diverted from this creek either above or below the station.

Accuracy.—Records reliable.

Co-operation.—Records furnished by the United States Geological Survey.

Discharge of North Fork Frying Pan Creek near Norris for 1915.
Drainage Area, 42 Square Miles. Altitude, 8,431 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	6	6	6	80	300	200	22	10	17	8	13
2	.....	6	6	6	75	280	185	20	10	16	8	13
3	.....	6	6	6	69	240	185	18	10	14	8	13
4	.....	6	6	6	66	200	170	16	10	13	8	12
5	.....	6	6	7	63	163	165	14	10	13	8	12
6	.....	6	6	7	60	140	141	13	10	12	8	12
7	.....	6	6	8	56	120	135	45	10	10	9	12
8	.....	6	6	10	60	150	130	100	10	10	9	11
9	.....	6	6	14	64	185	125	69	10	10	10	10
10	.....	6	6	18	69	250	120	45	10	10	10	10
11	.....	6	6	22	101	300	120	32	10	10	10	10
12	 4	6	6	26	120	280	120	26	10	10	9	11
13	.....	6	6	26	300	200	120	22	10	11	9	11
14	.....	6	6	36	203	180	110	18	10	12	9	12
15	.....	6	6	45	120	210	101	18	10	12	8	11
16	.....	6	6	58	208	255	78	18	10	12	8	11
17	.....	6	6	60	250	305	56	16	10	11	8	10
18	.....	7	6	75	210	305	62	16	10	10	10	10
19	.....	7	6	70	170	305	56	15	10	14	12	10
20	.....	7	6	76	130	300	50	15	10	12	14	10
21	.....	7	6	84	101	270	50	15	9	12	14	10
22	.....	7	6	84	84	255	45	14	9	12	14	9
23	.....	6	6	84	84	425	45	14	8	11	14	9
24	.....	6	6	84	110	375	40	13	10	11	14	9
25	.....	6	6	84	150	325	40	13	26	11	14	8
26	.....	6	6	76	185	280	35	12	40	10	14	8
27	.....	6	6	69	150	305	35	12	35	10	14	8
28	.....	6	6	69	120	280	32	12	22	9	14	7
29	 6	.....	7	69	159	250	30	11	18	9	13	7
30	 6	.....	7	80	170	220	30	10	18	8	13	7
31	 6	.....	7	.....	185	.....	26	10	.....	8	.....	7
Total	.....	173	189	1365	3972	7653	2837	694	395	350	321	313
Mean	.....	6.18	6.1	45.5	128	255	91.5	22.4	13.2	11.3	10.7	10.1
Max	.....	7	7	84	300	425	200	100	40	17	14	13
Min	.....	6	6	6	56	120	26	10	8	8	8	7
Acre-ft.	.....	343	375	2710	7870	15200	5630	1380	786	695	637	621

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of North Fork Frying Pan Creek near Norrie for 1916.
Drainage Area, 42 Square Miles. Altitude, 8,431 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	6	6	9	35	105	248	198	77	25	28	19	.....
2	6	6	9	38	82	255	186	84	19	24	16	.....
3	6	6	9	41	58	262	174	84	18	25	12	.....
4	6	6	9	36	110	262	162	84	16	25	12	.....
5	6	6	8	32	120	262	152	74	16	24	13	.....
6	6	7	8	32	152	262	141	52	16	24	14	.....
7	6	7	8	28	222	222	141	52	16	25	18	.....
8	6	7	8	25	235	263	141	52	16	25	22	.....
9	6	7	8	29	319	304	141	52	16	22	25	.....
10	6	7	9	33	304	366	141	42	34	24	.....	.....
11	6	7	10	56	262	383	152	32	52	25	.....	.....
12	6	7	11	58	255	400	114	42	41	25	.....	.....
13	6	7	12	60	248	383	101	42	41	25	.....	.....
14	6	7	14	58	200	400	92	120	41	25	.....	.....
15	6	7	15	58	152	366	92	120	33	26	.....	.....
16	6	7	16	58	141	319	92	46	25	26	.....	.....
17	6	8	18	58	130	334	92	44	25	46	.....	.....
18	7	8	24	77	120	350	92	41	25	50	.....	.....
19	7	8	31	64	110	350	92	38	23	48	.....	.....
20	7	8	36	52	110	366	64	36	22	48	.....	.....
21	7	8	101	58	110	335	64	34	19	46	.....	.....
22	7	8	58	64	115	304	64	32	18	52	.....	.....
23	7	8	41	82	120	283	62	28	18	46	.....	.....
24	7	8	58	101	152	262	60	25	18	41	.....	.....
25	7	8	31	106	163	242	58	26	19	36	.....	.....
26	7	9	41	110	174	222	55	26	19	32	.....	.....
27	6	9	41	130	152	216	52	28	18	30	.....	.....
28	6	9	36	152	169	210	64	22	16	28	.....	.....
29	6	9	36	174	186	216	64	22	16	22	.....	.....
30	6	.....	32	130	204	222	82	22	16	16	.....	.....
31	6	.....	32	.....	222	.....	101	24	.....	22	.....	.....
Total	195	215	779	2035	5202	8869	3286	1503	697	961	151	.....
Mean	6.29	7.41	25.1	67.8	168	296	106	48.5	23.2	31.0	.....	.....
Max.	7	9	101	174	319	400	198	120	52	52	.....	.....
Min.	.6	6	8	25	58	210	52	22	16	16	.....	.....
Acre-ft.	387	426	1540	4030	10300	17600	6520	2980	1380	1910	.....	.....

Discharge of Frying Pan Creek at Norrie for 1915.
Drainage Area, 92 Square Miles. Altitude, 8,431 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	22	93	400	325	74	51	45	26	24
2	.....	.....	.....	23	93	400	325	70	52	50	25	22
3	.....	.....	.....	25	93	355	278	67	54	50	23	26
4	.....	.....	.....	28	93	300	278	61	56	44	22	26
5	.....	.....	.....	30	93	278	265	61	56	37	22	26
6	.....	.....	.....	32	86	260	250	56	55	37	23	26
7	.....	.....	.....	35	80	235	240	100	55	37	24	26
8	.....	.....	.....	40	95	305	235	167	54	37	26	26
9	.....	.....	.....	60	120	455	211	131	53	37	22	26
10	.....	.....	.....	80	150	690	195	100	51	44	26	28
11	.....	.....	.....	86	178	700	178	86	46	55	32	26
12	.....	.....	.....	93	200	635	175	84	55	37	31	25
13	.....	.....	.....	80	542	498	180	82	51	38	29	26
14	.....	.....	.....	80	378	455	185	80	51	40	26	26
15	.....	.....	.....	80	325	470	188	78	51	38	21	26
16	.....	.....	.....	93	400	610	178	76	51	37	18	26
17	.....	.....	.....	95	455	800	160	73	51	44	17	26
18	.....	.....	.....	105	430	810	140	61	49	40	19	26
19	.....	.....	.....	80	400	810	123	61	47	37	19	26
20	.....	.....	.....	86	200	810	116	61	46	37	21	26
21	.....	.....	.....	93	158	810	108	61	46	38	24	26
22	.....	.....	.....	93	158	810	100	61	46	37	26	25
23	.....	.....	.....	93	180	910	100	61	46	40	26	23
24	.....	.....	.....	93	235	910	108	61	48	40	30	22
25	.....	.....	.....	93	342	810	104	61	56	36	25	22
26	.....	.....	.....	93	290	810	100	61	75	32	28	23
27	.....	.....	.....	80	260	500	95	59	70	30	30	24
28	.....	.....	.....	80	270	498	90	53	65	27	26	24
29	.....	.....	.....	86	308	415	85	54	59	26	24	24
30	.....	.....	.....	93	285	305	80	56	57	26	24	24
31	.....	.....	.....	.....	278	.....	77	54	.....	26	.....	24
Total	.....	.....	.....	2150	7268	17054	5272	2271	1603	1179	735	776
Mean	.....	.....	.....	71.7	234	568	170	73.3	53.4	38.0	24.5	25.0
Max.	.....	.....	.....	105	542	910	325	167	75	55	32	28
Min.	.....	.....	.....	34	80	235	77	53	46	26	17	22
Acre-ft.	.....	.....	.....	4270	14400	33800	10500	4510	3180	2340	1460	1540

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Frying Pan Creek at Norrie for 1916.
Drainage Area, 92 Square Miles. Altitude, 8,431 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	24	25	32	60	180	605	515	298	83	68	65	.....
2	24	26	32	40	130	620	650	262	79	87	65	.....
3	24	25	32	47	103	650	580	250	72	83	32	.....
4	24	24	33	47	166	640	480	228	65	67	37	.....
5	24	24	34	45	220	620	435	195	58	65	44	.....
6	24	25	35	40	280	605	375	190	74	65	50	.....
7	24	26	37	37	495	605	395	185	70	65	50	.....
8	24	25	40	37	455	605	420	180	65	65	50	.....
9	24	25	42	46	628	740	440	210	96	69	44	.....
10	23	24	44	56	560	930	455	210	126	69	37	.....
11	23	25	47	76	605	1040	395	166	114	74	37	.....
12	22	26	48	78	605	930	380	166	103	78	44	.....
13	22	26	50	69	538	785	355	190	108	67	.....	.....
14	23	26	52	69	500	760	315	245	96	65	.....	.....
15	23	25	54	69	375	740	298	220	83	62	.....	.....
16	24	25	57	60	315	740	280	180	78	58	.....	.....
17	24	26	60	65	315	785	260	180	76	83	.....	.....
18	22	27	65	95	280	840	245	147	74	83	.....	.....
19	22	27	70	90	228	740	262	139	65	83	.....	.....
20	22	28	103	80	195	695	240	134	65	83	.....	.....
21	23	28	139	89	210	680	210	126	62	83	.....	.....
22	24	29	85	103	245	645	200	117	58	83	.....	.....
23	25	29	62	108	195	620	180	110	62	83	.....	.....
24	26	30	79	120	375	605	180	103	66	74	.....	.....
25	25	30	53	126	460	605	180	114	69	74	.....	.....
26	24	31	65	152	375	605	180	114	62	74	.....	.....
27	24	31	65	186	335	605	195	106	58	71	.....	.....
28	24	32	65	287	380	605	228	99	54	68	.....	.....
29	24	32	58	262	435	605	228	93	50	65	.....	.....
30	24	.....	50	210	495	550	260	93	50	65	.....	.....
31	24	.....	69	.....	560	.....	315	90	.....	65	.....	.....
Total	733	782	1757	2849	11238	20800	10131	5140	2241	2244	555	.....
Mean	23.6	27.0	56.7	95	363	693	327	166	74.7	72.4	.....	.....
Max	26	32	139	287	628	1040	650	298	126	87	.....	.....
Min	22	24	32	37	130	550	180	90	50	58	.....	.....
Acre-ft.	1450	1550	3490	5650	22300	41200	20100	10200	4440	4450	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

FRYING PAN CREEK AT THOMASVILLE.

Location.—At a private bridge in sec. 7, T. 8 S., R. 83 W., 1,000 feet S. W. of railroad station. Nearest tributary, Deadman Gulch, enters ¼ mile below.

Records Available.—January 2, 1911, to November 30, 1916.

Drainage Area.—175 square miles.

Gage.—Vertical staff.

Channel.—Practically permanent, but rough.

Discharge Measurements.—Made from the bridge during high water and by wading at ordinary stages.

Winter Flow.—Ice causes backwater during the winter months, and discharge measurements are made to determine the flow.

Diversions.—As there are no court decrees for diversion of water above the station, it is probable that the records represent the natural run-off from the drainage basin.

Accuracy.—Conditions favorable for fairly accurate determination of discharge; results should be reliable.

Co-operation.—Records furnished by the United States Geological Survey.

CRYSTAL RIVER AT MARBLE.

Location.—Near the electric railway bridge of the Colorado Yule Marble Co., in sec. 26, T. 11 S., R. 88 W., at Marble. Nearest tributary, Carbonate Creek, enters above Marble.

Records Available.—November 1, 1910, to November 30, 1915.

Drainage Area.—77 square miles.

Gage.—A vertical hook gage graduated to hundredths of a foot.

Channel.—Shifts slightly at long intervals.

Discharge Measurements.—Measurements made from car and cable and by wading.

Winter Flow.—Gage heights at this station little, if any, affected by ice.

Diversions.—There are no court decrees for diversions above the station, but for 114 second-feet below Marble.

Accuracy.—Conditions are favorable for fairly accurate results and the estimates are considered reliable.

Co-operation.—The field data are furnished through the courtesy of the Colorado-Yule Marble Co. to the United States Geological Survey, from whom records were obtained.

Discharge of Frying Pan Creek at Thomasville for 1915.
Drainage Area, 175 Square Miles. Altitude, 7,968 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	21	22	25	30	375	885	600	139	78	72	46	46
2	21	22	25	31	310	940	600	133	74	76	43	43
3	21	22	26	38	245	650	550	109	70	76	44	50
4	20	23	28	40	181	525	550	98	69	72	44	46
5	20	23	27	43	160	502	502	94	70	69	44	43
6	20	22	27	45	151	480	435	92	68	68	41	44
7	21	22	26	48	155	435	395	285	66	70	44	42
8	21	22	26	51	158	480	435	355	68	84	46	44
9	21	23	26	64	162	575	415	355	66	75	48	44
10	21	24	26	70	165	1160	415	252	66	69	57	43
11	21	24	26	105	236	1400	395	192	59	87	56	45
12	22	24	26	109	358	1220	395	170	76	86	55	40
13	22	25	25	110	480	725	415	146	62	72	51	41
14	22	26	25	115	625	750	395	130	68	68	46	42
15	22	28	25	125	480	725	375	130	66	64	46	40
16	22	28	26	140	540	830	355	130	74	66	45	40
17	21	28	26	190	600	1340	338	116	72	75	42	38
18	21	28	26	285	562	1160	285	110	70	70	46	39
19	22	27	28	192	525	1280	285	105	66	66	46	38
20	23	27	31	210	450	1400	252	105	65	69	49	37
21	22	26	28	236	376	1160	221	98	56	70	49	39
22	21	26	26	236	302	1220	206	87	59	68	45	40
23	21	26	25	236	368	1050	206	98	57	64	46	39
24	22	26	26	205	435	1050	221	94	59	57	56	38
25	22	26	26	190	550	1050	206	86	70	56	46	37
26	22	26	27	146	504	995	206	84	105	51	52	36
27	22	25	28	192	458	700	187	81	92	51	55	35
28	21	25	28	200	458	725	187	82	91	49	46	34
29	21	.....	29	225	458	650	176	81	86	49	46	33
30	22	.....	29	435	502	550	160	78	81	49	46	35
31	22	.....	30	.....	502	.....	146	78	.....	51	.....	37
Total..	663	696	828	4342	11831	26612	10509	4193	2129	2069	1426	1248
Mean.....	21.4	24.9	26.7	145	382	887	339	135	71.0	66.7	47.5	40.3
Max.....	23	28	31	435	625	1400	600	355	105	87	57	50
Min.....	20	22	25	30	151	435	146	78	56	49	41	33
Acre-ft.	1320	1380	1640	8630	23500	52800	20800	8300	4220	4100	2830	2480

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Frying Pan Creek at Thomasville for 1916.
Drainage Area, 175 Square Miles. Altitude, 7,968 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	40	40	81	130	285	675	575	480	87	120	87	.....
2	39	41	85	120	320	625	575	355	87	111	77	.....
3	40	42	85	102	480	675	550	355	87	111	81	.....
4	38	43	94	106	575	675	550	395	94	106	75	.....
5	40	44	90	102	575	725	525	355	102	99	75	.....
6	38	45	102	116	625	775	525	320	87	99	70	.....
7	37	46	90	116	575	775	525	320	87	102	70	.....
8	38	47	102	111	525	940	525	338	90	102	70	.....
9	38	48	102	102	435	1100	525	320	221	106	70	.....
10	37	49	102	116	480	1100	525	302	221	111	66	.....
11	38	48	102	111	480	1160	502	285	221	111	70	.....
12	36	48	111	141	480	1160	502	302	215	111	68	.....
13	37	48	106	135	480	1160	480	302	206	111	66	.....
14	40	48	106	135	435	1220	435	302	192	116	64	.....
15	38	48	120	153	435	1280	395	320	165	120	64	75
16	42	49	116	192	502	1280	355	320	130	111	64	.....
17	40	51	120	165	525	1400	338	252	124	111	64	.....
18	37	54	124	160	550	1460	320	221	120	116	64	.....
19	38	56	130	178	550	1400	320	192	116	120	64	.....
20	40	58	153	178	550	1520	320	187	111	111	64	.....
21	39	60	192	170	502	1460	320	165	111	111	64	.....
22	39	62	170	187	525	1400	320	170	111	120	64	.....
23	42	64	153	192	525	1100	285	170	102	120	64	.....
24	42	66	160	206	575	995	320	165	99	137	64	.....
25	44	68	178	178	600	940	302	170	87	130	64	.....
26	44	71	141	187	600	885	285	160	85	111	64	.....
27	43	73	137	187	600	725	285	120	85	111	65	.....
28	44	75	124	221	600	625	320	106	81	102	64	.....
29	42	77	124	187	575	675	320	124	85	90	66	.....
30	41	.....	124	192	625	625	355	130	81	87	64	.....
31	40	.....	137	.....	625	.....	502	111	.....	87	.....	.....
Total	1231	1569	3761	4576	16214	30535	12981	7814	3690	3411	2036	.....
Mean	39.7	54.1	121	153	523	1020	419	252	123	110	67.9	.....
Max	44	77	192	206	685	1520	575	480	221	137	87	.....
Min	36	40	81	102	285	625	285	106	81	87	64	.....
Acre-ft.	2440	3110	7440	9100	32200	60700	25800	15500	7320	6760	4040	.....

Discharge of Crystal River at Marble for 1915.
Drainage Area, 77 Square Miles. Altitude, 7,800 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	49	25	22	24	213	685	1040	305	70	.....	.....	.....
2	49	24	22	25	186	658	1100	270	73	.....	.....	.....
3	49	23	22	25	130	658	915	226	83	.....	.....	.....
4	49	25	22	28	120	452	795	186	83	.....	.....	.....
5	47	27	22	31	111	385	975	162	76	.....	.....	.....
6	44	28	22	36	102	345	975	162	80	.....	.....	.....
7	47	25	22	35	60	325	975	174	65	.....	.....	.....
8	47	28	22	33	111	288	975	226	78	.....	.....	.....
9	47	25	22	44	130	365	975	200	72	.....	.....	.....
10	44	25	22	35	130	550	1040	186	68	.....	.....	.....
11	41	24	22	35	151	795	975	186	66	.....	.....	.....
12	38	24	22	45	200	1040	1040	174	111	.....	.....	.....
13	36	24	22	42	385	630	1000	174	83	.....	.....	.....
14	34	24	22	44	525	795	960	174	72	.....	.....	.....
15	32	22	22	56	365	975	920	162	70	.....	.....	.....
16	30	23	22	51	430	1100	880	151	60	.....	.....	.....
17	28	24	22	53	525	1160	840	151	62	.....	.....	.....
18	30	24	22	60	475	1100	800	140	62	.....	.....	.....
19	31	23	22	86	452	1100	760	130	60	.....	.....	.....
20	34	23	22	70	305	1280	725	120	58	.....	.....	.....
21	30	23	22	102	240	1220	690	111	60	.....	.....	.....
22	27	22	22	111	213	1280	655	111	58	.....	.....	.....
23	25	23	22	111	213	1340	620	111	60	.....	.....	.....
24	26	22	22	96	270	1280	585	111	60	.....	.....	.....
25	27	22	22	111	345	1340	550	111	200	.....	.....	.....
26	27	22	22	111	305	1280	515	91	130	.....	.....	.....
27	24	22	22	120	270	1220	480	86	92	.....	.....	.....
28	24	18	22	186	255	1160	445	80	86	.....	.....	.....
29	24	.....	23	226	270	1100	410	78	86	.....	.....	.....
30	24	.....	24	345	325	1040	375	80	92	.....	.....	.....
31	24	.....	24	.....	408	.....	340	83	.....	.....	.....	.....
Total	1088	664	687	2377	8220	26946	24330	4712	2376	.....	.....	.....
Mean	35.1	23.7	22.2	79.2	265	898	785	152	79.2	.....	.....	.....
Max	49	28	24	345	525	1340	1100	305	200	.....	.....	.....
Min	24	18	22	24	60	288	340	78	58	.....	.....	.....
Acre-ft.	2160	1320	1360	4710	16300	53400	48300	9350	4710	.....	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second

EAST ELK CREEK NEAR NEW CASTLE.

Location.—At the highway bridge on line between secs. 24 and 25, T. 5 S., R. 91 W., 2½ miles northwest of New Castle, Colo. No tributaries between the station and the mouth.

Records Available.—January 19, 1911, to July 12, 1915.

Drainage Area.—60 square miles.

Gage.—Vertical staff.

Channel.—Permanent prior to high water of 1912, when it shifted.

Discharge Measurements.—Made from the bridge during high water and by wading during ordinary stages.

Winter Flow.—Little backwater from ice at this station during the winter, except for short periods.

Diversions.—There are court decrees for diversions of 43 second-feet from East Elk Creek, chiefly above the station.

Accuracy.—Owing to the very meager gage heights, estimates have not been made other than for the days having gage heights.

Co-operation.—Records furnished by the United States Geological Survey.

EAST RIVER AT ALMONT.

Location.—At highway bridge at Almont, 100 feet above the junction of East and Taylor Rivers.

Records Available.—July 27, 1910, to November 30, 1913; March 7, 1916, to December 2, 1916. A station was maintained at this point from April 15 to October 8, 1905, but the gage was referred to a different datum.

Drainage Area.—295 square miles.

Gage.—Vertical staff.

Channel.—Shifting.

Discharge Measurements.—Made from bridge.

Winter Flow.—Ice causes backwater in varying amounts, but no measurements have been made to determine this.

Diversions.—There are court decrees for diversion of 78 second-feet from East River, above the station, and 52 second-feet from tributaries.

Accuracy.—Results for 1916 good.

Co-operation.—Records furnished by the United States Geological Survey.

Discharge of East Elk Creek at New Castle for 1915.
Drainage Area 60 Square Miles. Altitude, 5,552 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	9	10	77	.....	.....	.....	.....	.....	.....	.....
2	.....	.....	.....	13	11	.....	.....	64	.....	.....	.....	.....	.....
3	.....	.....	.....	.....	10	.....	145	.....	.....	.....	.....	.....	.....
4	.....	.....	.....	9	.....	.....	145	.....	.....	.....	.....	.....	.....
5	.....	12	11	.....	.....	31	.....	.....	.....	.....	.....	.....	.....
6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
7	.....	.....	.....	.....	13	.....	124	.....	.....	.....	.....	.....	.....
8	.....	.....	.....	10	15	23	.....	.....	.....	.....	.....	.....	.....
9	.....	12	.....	.....	.....	.....	145	.....	.....	.....	.....	.....	.....
10	.....	.....	10	.....	15	.....	192	.....	.....	.....	.....	.....	.....
11	.....	.....	.....	8	.....	23	.....	.....	.....	.....	.....	.....	.....
12	.....	.....	.....	.....	19	25	.....	20	.....	.....	.....	.....	.....
13	.....	.....	9	10	.....	.....	.....	.....	.....	.....	.....	.....	.....
14	.....	12	.....	8	27	.....	230	.....	.....	.....	.....	.....	.....
15	.....	.....	.....	.....	.....	77	250	.....	.....	.....	.....	.....	.....
16	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
17	.....	.....	.....	.....	.....	132	.....	.....	.....	.....	.....	.....	.....
18	.....	.....	.....	9	.....	.....	312	.....	.....	.....	.....	.....	.....
19	.....	.....	10	8	40	.....	.....	.....	.....	.....	.....	.....	.....
20	.....	.....	11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
21	.....	.....	.....	9	55	.....	290	.....	.....	.....	.....	.....	.....
22	.....	.....	.....	.....	.....	48	.....	.....	.....	.....	.....	.....	.....
23	.....	.....	.....	.....	.....	64	.....	.....	.....	.....	.....	.....	.....
24	.....	.....	.....	.....	42	.....	.....	.....	.....	.....	.....	.....	.....
25	.....	.....	9	.....	.....	73	175	.....	.....	.....	.....	.....	.....
26	.....	.....	10	10	.....	.....	.....	.....	.....	.....	.....	.....	.....
27	.....	9	.....	.....	42	73	.....	.....	.....	.....	.....	.....	.....
28	.....	12	.....	.....	.....	.....	145	.....	.....	.....	.....	.....	.....
29	.....	.....	.....	10	84	.....	119	.....	.....	.....	.....	.....	.....
30	.....	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
31	.....	.....	.....	.....	.....	160	.....	.....	.....	.....	.....	.....	.....

Discharge of East River at Almont for 1916.
Drainage Area, 295 Square Miles. Altitude, 8,031 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	178	1020	1530	1260	850	228	178	178	95
2	.....	.....	.....	.....	178	905	1820	1200	745	228	178	155	95
3	.....	.....	.....	.....	178	850	1890	1200	605	228	178	155	.....
4	.....	.....	.....	.....	178	962	1890	1080	650	228	178	155	.....
5	.....	.....	.....	.....	178	1080	1890	1080	695	228	178	155	.....
6	.....	.....	.....	.....	178	1260	1740	1080	745	228	178	155	.....
7	.....	.....	.....	44	178	1600	1740	962	745	228	178	155	.....
8	.....	.....	.....	51	178	1740	1600	962	650	228	380	155	.....
9	.....	.....	.....	75	178	1960	1670	1200	650	228	228	155	.....
10	.....	.....	.....	66	200	2110	2260	1200	565	380	228	155	.....
11	.....	.....	.....	66	285	1890	2420	1080	565	348	228	138	.....
12	.....	.....	.....	66	285	1820	2420	1080	488	315	228	95	.....
13	.....	.....	.....	66	285	1740	2580	962	565	285	228	95	.....
14	.....	.....	.....	66	285	1600	2900	962	605	255	228	95	.....
15	.....	.....	.....	75	315	1600	2980	850	695	228	228	95	.....
16	.....	.....	.....	85	348	1460	2980	850	650	228	228	95	.....
17	.....	.....	.....	85	348	1330	3060	850	565	228	228	95	.....
18	.....	.....	.....	85	348	1330	2820	745	488	228	228	95	.....
19	.....	.....	.....	85	348	1260	2740	745	415	228	228	95	.....
20	.....	.....	.....	85	348	1140	2340	695	348	228	228	95	.....
21	.....	.....	.....	95	380	1080	2420	650	348	228	228	95	.....
22	.....	.....	.....	108	450	1080	2110	650	348	228	228	95	.....
23	.....	.....	.....	108	605	1080	1890	565	348	228	228	95	.....
24	.....	.....	.....	108	650	1080	1670	565	348	228	228	95	.....
25	.....	.....	.....	108	695	1080	1670	565	285	200	228	95	.....
26	.....	.....	.....	108	795	1080	1670	565	285	178	200	95	.....
27	.....	.....	.....	108	962	1080	1670	525	285	178	178	95	.....
28	.....	.....	.....	108	1080	1200	1670	605	255	178	178	95	.....
29	.....	.....	.....	108	1200	1260	1530	695	228	178	178	95	.....
30	.....	.....	.....	108	1080	1400	1400	1020	228	178	178	95	.....
31	.....	.....	.....	108	.....	1460	.....	962	228	.....	178	.....	.....
Total	.....	.....	.....	2175	12894	41537	62970	27410	15470	7005	6592	3516	.....
Mean	.....	.....	.....	87	430	1340	2100	884	499	234	213	117	.....
Max	.....	.....	.....	108	1200	2110	3060	1260	850	380	380	178	.....
Min	.....	.....	.....	44	178	850	1400	525	228	178	178	95	.....
Acre-ft.	.....	.....	.....	4320	25600	82400	125000	54400	30700	13900	13100	6960	.....

Unless otherwise noted, all discharges are in cubic feet per second.

TAYLOR RIVER AT ALMONT.

Location.—At highway bridge in Almont, in sec. 22, T. 51 N., R. 1 E., New Mexico principal meridian, 800 feet above the junction of Taylor and East Rivers.

Records Available.—July 27, 1910, to November 30, 1913; March 15, 1915, to December 2, 1916.

Drainage Area.—413 square miles.

Gage.—Vertical staff.

Channel.—Practically permanent.

Discharge Measurements.—Made from highway bridge.

Winter Flow.—Ice causes backwater.

Diversions.—There are no court decrees for diversions from Taylor River, but from Willow Creek, which enters above, there are decrees for 12 second-feet diversion.

Accuracy.—Conditions are favorable for accurate results; the estimates are considered good.

Co-operation.—Records furnished by the United States Geological Survey.

GUNNISON RIVER NEAR GUNNISON.

Location.—At highway bridge, 2 miles below Gunnison. Nearest tributary, Tomichi Creek, enters about 1 mile below.

Records Available.—November 27, 1910, to November 30, 1914; April 27, 1916, to August 14, 1916.

Drainage Area.—1,010 square miles.

Gage.—Bristol automatic gage.

Channel.—Somewhat shifting.

Discharge Measurements.—Made from bridge during high water and by wading at ordinary stages.

Winter Flow.—Ice causes backwater during the winter months.

Diversions.—There are court decrees for diversions of 250 second-feet from Gunnison River, between this station and the forks at Almont, and diversions of 270 second-feet from intervening tributaries.

Co-operation.—Station is maintained in co-operation with the United States Geological Survey.

Discharge of Taylor River at Almont for 1915.
Drainage Area, 413 Square Miles. Altitude, 8,031 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	215	305	915	868	258	215	258	178	.....
2	.....	.....	.....	.....	215	258	1020	820	258	215	258	178	.....
3	.....	.....	.....	.....	235	258	778	778	258	215	235	178	.....
4	.....	.....	.....	.....	258	258	655	695	258	215	215	178	.....
5	.....	.....	.....	.....	258	258	618	655	215	215	215	178	.....
6	.....	.....	.....	.....	258	258	545	695	215	215	178	178	.....
7	.....	.....	.....	.....	258	258	545	695	258	215	178	178	.....
8	.....	.....	.....	.....	280	258	545	618	385	195	178	178	.....
9	.....	.....	.....	.....	305	258	695	545	330	178	178	178	.....
10	.....	.....	.....	.....	358	280	868	545	305	178	178	178	.....
11	.....	.....	.....	.....	385	358	1270	545	305	215	178	178	.....
12	.....	.....	.....	.....	358	510	1410	510	305	178	178	178	.....
13	.....	.....	.....	.....	305	618	1080	510	305	178	178	178	.....
14	.....	.....	.....	.....	305	820	968	478	305	178	178	178	.....
15	.....	.....	.....	178	358	510	1020	415	305	178	195	178	.....
16	.....	.....	.....	178	358	575	1080	358	305	178	195	178	.....
17	.....	.....	.....	178	305	655	1340	330	305	178	178	178	.....
18	.....	.....	.....	178	305	545	1270	305	280	178	178	178	.....
19	.....	.....	.....	178	358	478	1270	305	258	178	178	178	.....
20	.....	.....	.....	178	415	445	1560	305	258	178	178	178	.....
21	.....	.....	.....	178	415	358	1560	305	258	178	178	178	.....
22	.....	.....	.....	178	385	415	1480	305	258	178	178	178	.....
23	.....	.....	.....	178	358	415	1410	305	258	178	178	178	.....
24	.....	.....	.....	178	305	445	1270	305	258	178	178	178	.....
25	.....	.....	.....	178	358	655	1200	305	258	178	178	178	.....
26	.....	.....	.....	178	358	618	1080	305	258	358	178	178	.....
27	.....	.....	.....	178	415	545	1020	358	258	305	178	178	.....
28	.....	.....	.....	178	415	510	968	305	258	258	178	195	.....
29	.....	.....	.....	178	478	545	868	305	215	258	178	178	.....
30	.....	.....	.....	215	415	415	820	280	215	258	178	178	.....
31	.....	.....	.....	215	.....	510	.....	258	215	.....	178	.....	.....
Total	.....	.....	.....	3100	9994	13564	31128	14311	8380	6200	5843	5357	.....
Mean	.....	.....	.....	182	333	438	1040	462	270	207	188	179	.....
Max	.....	.....	.....	215	478	820	1560	868	385	358	258	195	.....
Min	.....	.....	.....	178	215	258	545	258	215	178	178	178	.....
Acre-ft.	.....	.....	.....	6150	19800	26900	61900	28400	16600	12300	11600	10700	.....

Discharge of Taylor River at Almont for 1916.
Drainage Area, 413 Square Miles. Altitude, 8,031 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	258	478	1140	1380	780	276	232	210	132
2	.....	.....	.....	.....	258	415	1340	1310	690	276	232	210	132
3	.....	.....	.....	.....	258	385	1640	1310	650	276	232	210	.....
4	.....	.....	.....	.....	258	478	1640	1180	650	276	232	210	.....
5	.....	.....	.....	.....	258	778	1480	1180	610	276	232	210	.....
6	.....	.....	.....	.....	258	968	1340	1050	500	276	232	210	.....
7	.....	.....	.....	305	258	1200	1340	935	500	276	232	210	.....
8	.....	.....	.....	258	258	1410	1480	935	500	276	465	210	.....
9	.....	.....	.....	258	258	1640	1710	990	500	276	378	210	.....
10	.....	.....	.....	280	258	1780	1940	1050	500	405	378	210	.....
11	.....	.....	.....	280	258	1640	2240	1050	378	405	378	210	.....
12	.....	.....	.....	258	280	1340	2240	1050	435	378	378	170	.....
13	.....	.....	.....	258	280	1080	2240	990	500	325	378	170	.....
14	.....	.....	.....	258	280	1080	2380	935	435	325	378	151	.....
15	.....	.....	.....	235	280	1080	2380	830	535	325	378	151	.....
16	.....	.....	.....	215	305	968	2380	830	572	325	378	151	.....
17	.....	.....	.....	215	305	968	2740	735	500	325	378	151	.....
18	.....	.....	.....	215	305	868	2510	735	435	325	378	151	.....
19	.....	.....	.....	258	305	868	2280	650	405	325	325	132	.....
20	.....	.....	.....	258	330	778	1880	650	378	325	325	151	.....
21	.....	.....	.....	258	415	778	1980	572	378	325	325	151	.....
22	.....	.....	.....	258	415	778	1700	572	378	300	378	170	.....
23	.....	.....	.....	280	415	778	1380	500	325	276	378	170	.....
24	.....	.....	.....	305	415	778	1240	500	325	276	378	170	.....
25	.....	.....	.....	305	510	778	1380	500	325	276	325	151	.....
26	.....	.....	.....	305	545	778	1380	435	300	276	325	132	.....
27	.....	.....	.....	305	580	778	1380	435	276	276	253	132	.....
28	.....	.....	.....	258	655	778	1380	535	276	276	210	132	.....
29	.....	.....	.....	258	695	868	1380	610	276	232	253	132	.....
30	.....	.....	.....	258	618	968	1380	735	276	232	253	132	.....
31	.....	.....	.....	258	.....	1140	.....	780	276	.....	210	.....	.....
Total	.....	.....	.....	6599	10771	29402	52900	25949	13864	9017	9807	5160	.....
Mean	.....	.....	.....	264	359	948	1760	837	447	301	316	172	.....
Max	.....	.....	.....	305	695	1780	2740	1380	780	405	465	210	.....
Min	.....	.....	.....	215	258	385	1140	435	276	232	210	132	.....
Acre-ft.	.....	.....	.....	13100	21400	58300	105000	51500	27500	17900	19400	10200	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Gunnison River near Gunnison for 1916.
Drainage Area, 1,010 Square Miles. Altitude, 7,673 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	1990	3320	3160	1450	.....	.....	.....	.....
2	.....	.....	.....	.....	1990	3320	3000	1580	.....	.....	.....	.....
3	.....	.....	.....	.....	1920	3400	2920	1520	.....	.....	.....	.....
4	.....	.....	.....	.....	2130	3560	2680	1450	.....	.....	.....	.....
5	.....	.....	.....	.....	2600	3640	2600	1330	.....	.....	.....	.....
6	.....	.....	.....	.....	2680	3560	2600	1330	.....	.....	.....	.....
7	.....	.....	.....	.....	3160	3480	2440	1220	.....	.....	.....	.....
8	.....	.....	.....	.....	3400	3400	2440	1220	.....	.....	.....	.....
9	.....	.....	.....	.....	3730	3640	2520	1160	.....	.....	.....	.....
10	.....	.....	.....	.....	3990	4080	2600	1220	.....	.....	.....	.....
11	.....	.....	.....	.....	3990	4170	2280	1110	.....	.....	.....	.....
12	.....	.....	.....	.....	3820	4260	2060	950	.....	.....	.....	.....
13	.....	.....	.....	.....	3730	4530	2060	1060	.....	.....	.....	.....
14	.....	.....	.....	.....	3240	4620	1990	1220	.....	.....	.....	.....
15	.....	.....	.....	.....	2760	4530	1850	.....	.....	.....	.....	.....
16	.....	.....	.....	.....	2520	4530	1850	.....	.....	.....	.....	.....
17	.....	.....	.....	.....	2360	4620	1640	.....	.....	.....	.....	.....
18	.....	.....	.....	.....	2130	4530	1580	.....	.....	.....	.....	.....
19	.....	.....	.....	.....	2200	4530	1520	.....	.....	.....	.....	.....
20	.....	.....	.....	.....	2280	4530	1450	.....	.....	.....	.....	.....
21	.....	.....	.....	.....	2200	4170	1390	.....	.....	.....	.....	.....
22	.....	.....	.....	.....	2200	3900	1330	.....	.....	.....	.....	.....
23	.....	.....	.....	.....	2130	3560	1280	.....	.....	.....	.....	.....
24	.....	.....	.....	.....	1990	3400	1250	.....	.....	.....	.....	.....
25	.....	.....	.....	.....	2130	3240	1220	.....	.....	.....	.....	.....
26	.....	.....	.....	.....	2200	3160	1280	.....	.....	.....	.....	.....
27	.....	.....	.....	1810	2200	3160	1220	.....	.....	.....	.....	.....
28	.....	.....	.....	2240	2280	3240	1390	.....	.....	.....	.....	.....
29	.....	.....	.....	2550	2440	3240	1390	.....	.....	.....	.....	.....
30	.....	.....	.....	2160	2840	3240	1330	.....	.....	.....	.....	.....
31	.....	.....	.....	.....	3080	.....	1390	.....	.....	.....	.....	.....
Total	.....	.....	.....	8760	82310	114560	59710	30230	16050	.....	.....	.....
Mean	.....	.....	.....	2190	2660	3820	1930	975	535	.....	.....	.....
Max	.....	.....	.....	.....	3990	4620	3160	1580	.....	.....	.....	.....
Min	.....	.....	.....	.....	1920	3160	1220	.....	.....	.....	.....	.....
Acre-ft.	.....	.....	.....	17400	164000	227000	119000	60000	31800	.....	.....	.....

Aug. 15 to Aug. 31, estimated 730 sec. ft.
Sept. estimated 535 sec. ft.
Unless otherwise noted, all discharges are in cubic feet per second.

UNCOMPAHGRE RIVER AT OURAY.

Location.—Near highway bridge in sec. 31, T. 44 N., R. 7 W., New Mexico principal meridian, half a mile south of Ouray, Colo. Nearest tributary, Canon Creek, enters 150 feet below; nearest tributary above is Bear Creek.

Records Available.—January 25, 1911, to December 31, 1916; January 7 to March 17, 1908, records were kept at the power plant of the Ouray Electric Light & Power Co., 1 mile south of Ouray.

Drainage Area.—44 square miles.

Gage.—Vertical staff.

Channel.—Permanent, except at time of high water, when channel scours and fills.

Discharge Measurements.—Made from bridge during high water and by wading at ordinary stages.

Winter Flow.—Little if any backwater from ice at this station, as channel remains open during the year.

Diversions.—Water is diverted 2 miles above the station by the Ouray Light & Power Co. This amounts approximately to 8 second-feet and is returned to the river below the station.

Accuracy.—Results considered reliable.

Co-operation.—Records furnished by the United States Geological Survey.

UNCOMPAHGRE RIVER BELOW OURAY.

Location.—At left bank 700 feet above the lowest bridge in Ouray, one-third mile below the railroad station. It is below all tributaries in Ouray.

Records Available.—May 12, 1913, to December 31, 1916.

Drainage Area.—76 square miles.

Gage.—Vertical staff, moved upstream from former location. No relation established between old and new gages.

Control.—Shifting.

Discharge Measurements.—Made from bridge and by wading.

Winter Flow.—Ice causes little or no backwater as the warm springs above prevent freezing.

Diversions.—There are no diversions which are not returned to the river above the station.

Accuracy.—Owing to the high altitude of the station (7,700 feet), there are diurnal fluctuations of stage at certain seasons, due to alternate melting and freezing, and the mean daily gage height, based on morning and evening readings and the maximum stage for the 24-hour period, may be somewhat in error. For this reason, and because of the shifting character of the channel, the estimates can not be considered better than fair, or, possibly, good.

Co-operation.—Records furnished by the United States Geological Survey.

Discharge of Uncompahgre River at Ouray for 1915.
Drainage Area, 44 Square Miles. Altitude, 7,710 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	7	4	4	16	100	244	285	68	29	15	3.0	8
2	7	5	4	17	82	261	282	68	27	15	3.0	6
3	6	5	4	22	68	206	263	66	26	14	3.0	6
4	6	5	4	28	72	173	247	62	20	11	3.0	6
5	7	5	4	42	72	182	294	58	18	8	3.0	7
6	7	5	4	36	72	140	266	60	17	8	3.0	8
7	9	5	4	25	62	122	253	58	17	8	8	6
8	8	5	4	29	73	230	239	58	17	8	7	5
9	8	6	4	27	85	333	218	58	16	8	5	4.2
10	8	6	4	21	102	420	206	48	16	8	4.6	4.2
11	9	5	4	38	184	518	244	47	16	8	3.6	3
12	8	5	4	51	263	378	253	47	16	8	1.3	2.7
13	8	4	4	58	302	266	204	46	15	26	1.3	2.4
14	8	4	4	58	224	250	194	40	15	39	2.1	1.8
15	7	5	5	54	228	282	204	39	14	30	5.	1.5
16	7	5	5	46	234	323	184	37	14	11	4.2	1.5
17	5	5	5	46	208	474	180	37	14	8	3	1.3
18	7	5	5	44	199	530	154	37	14	7	4.6	1.3
19	8	4	5	58	156	570	144	37	13	7	6	1.3
20	7	5	5	75	119	570	131	37	13	6	8	1.3
21	5	5	5	85	106	530	114	36	8	6	10	1.3
22	4	5	6	79	102	550	114	36	5	6	9	1.3
23	4	5	7	67	129	550	114	36	3	5	9	1.1
24	5	5	7	65	138	510	108	33	3	5	8	1.1
25	6	5	7	68	182	458	92	33	95	5	1.8	1.1
26	7	5	8	87	156	443	92	33	21	4.2	3	1.1
27	7	5	9	180	136	439	90	33	20	4.2	4.6	1.1
28	7	5	11	192	140	382	85	32	18	3.8	7	1.3
29	7	.....	10	269	144	317	80	32	16	3.4	7	1.3
30	7	.....	9	184	148	288	80	32	15	3.0	8	1.5
31	3	.....	12	.....	164	.....	75	30	.....	3.0	.....	1.5
Total	209	138	177	2067	4450	10945	5489	1374	551	291.6	148.5	92.2
Mean	6.74	4.93	5.71	68.9	144	365	177	44.3	18.4	9.41	4.95	2.97
Max	9	6	12	269	302	570	294	68	95	30	.10	8
Min	3	4	4	16	62	122	75	30	3	3	1.3	1.1
Acre-ft.	414	274	351	4100	8850	21700	10900	2720	1090	579	295	183

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Uncompahgre River at Ouray for 1916.
Drainage Area, 44 Square Miles. Altitude, 7,710 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.8	0.5	0.9	40	85	330	182	92	58	53	36	9
2	1.8	0.7	1.1	42	74	330	160	99	58	52	36	9
3	2.1	0.9	1.1	30	64	396	160	106	58	49	36	13
4	2.1	0.9	1.1	30	88	345	160	106	58	48	36	13
5	1.3	1.3	1.1	37	119	345	160	106	58	34	36	13
6	0.7	1.1	1.1	37	138	362	160	106	48	196	36	13
7	0.7	0.9	1.3	40	194	443	150	106	48	135	36	10
8	0.9	2.4	3.0	42	196	417	150	106	48	106	36	7
9	0.9	0.9	5.0	42	263	446	150	106	48	102	30	7
10	1.1	0.9	8.2	48	294	538	140	106	58	144	30	7
11	0.9	0.9	11.0	50	297	550	131	92	58	194	30	21
12	0.7	0.9	12.0	52	285	522	131	92	58	144	30	23
13	0.7	0.9	13	48	218	498	122	92	58	84	18	23
14	6.5	0.9	13	48	194	435	122	92	58	80	20	22
15	3.8	0.9	15	46	131	432	122	92	58	61	23	23
16	0.9	0.9	15	54	131	392	122	86	58	75	30	18
17	0.9	1.1	15	58	114	388	114	86	58	73	11	12
18	0.7	1.1	40	62	122	368	106	80	58	63	30	22
19	0.7	1.1	40	66	140	365	92	80	64	75	30	23
20	0.9	1.1	40	70	140	362	92	80	68	72	30	16
21	0.9	1.5	48	74	140	358	92	75	68	72	30	10
22	0.9	1.8	56	78	131	294	86	75	62	41	18	16
23	0.9	26.0	40	68	173	236	86	64	58	41	23	18
24	0.9	15.0	40	80	199	247	86	64	56	42	23	18
25	0.9	0.9	30	100	201	231	86	58	52	28	23	18
26	0.7	0.9	29	120	216	231	80	58	48	61	23	18
27	0.7	0.9	30	140	194	206	92	58	57	49	10	18
28	0.7	0.9	30	162	221	206	80	48	58	41	23	18
29	0.7	0.9	42	126	224	206	80	48	59	41	23	18
30	0.7	.....	32	72	253	182	80	40	58	39	23	18
31	0.5	.....	30	.....	342	.....	106	48	.....	39	.....	18
Total	38.6	69.1	644.9	1962	5581	10661	3680	2547	1712	2334	819	492
Mean	1.25	2.38	20.8	65.4	180	355	119	82.2	57.1	75.3	27.3	15.9
Max	6.5	26	56	162	342	550	182	106	68	196	36	23
Min	0.5	0.5	0.9	30	64	182	80	40	48	28	10	7
Acre-ft.	76.9	137	1280	3890	11100	21100	7320	5050	3400	4630	1620	978

Discharge of Uncompahgre River below Ouray for 1915.
Drainage Area, 76 Square Miles. Altitude, 7,710 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	22	22	27	40	125	384	478	141	58	51	31	32
2	21	25	28	44	113	369	472	128	58	51	31	29
3	20	24	27	62	90	263	426	119	58	49	31	29
4	20	21	27	68	87	233	384	115	55	44	31	29
5	21	10	27	71	87	214	472	111	55	42	31	29
6	20	10	28	69	79	201	432	121	54	41	30	31
7	21	15	29	58	72	172	395	121	54	41	35	29
8	19	20	29	55	75	214	359	121	51	41	33	28
9	20	25	29	53	79	438	350	121	51	39	32	26
10	21	27	29	45	82	682	331	101	51	39	32	26
11	25	29	30	65	217	857	374	100	51	38	28	25
12	22	28	30	71	321	530	405	100	49	38	21	25
13	22	26	30	87	416	395	364	99	49	38	22	26
14	22	25	30	87	416	410	364	85	47	38	26	28
15	22	25	30	83	263	443	359	79	47	38	26	28
16	23	25	31	79	283	600	369	77	45	37	26	28
17	18	25	31	75	255	884	345	74	45	35	29	28
18	23	25	32	75	214	1110	321	71	45	33	29	28
19	22	24	32	89	189	1180	278	68	45	33	34	28
20	21	25	32	92	162	1090	259	67	43	33	34	28
21	20	26	33	109	149	1070	244	66	39	35	36	28
22	19	26	33	101	130	1130	244	65	39	35	34	28
23	17	28	33	94	178	1070	237	62	31	35	34	26
24	18	28	37	87	169	983	227	62	31	35	34	26
25	18	28	33	101	211	947	189	59	27.8	35	28	26
26	20	26	36	111	207	911	192	58	62	32	29	26
27	20	26	39	181	162	798	175	58	59	32	32	26
28	21	26	43	220	167	586	164	58	54	32	34	26
29	22	.....	41	259	172	551	159	58	54	32	34	28
30	24	.....	39	255	201	404	159	58	51	32	34	28
31	18	.....	41	.....	207	.....	149	58	.....	31	.....	28
Total	642	670	996	2886	5578	19119	9676	2681	1709	1165	921	856
Mean	20.7	23.9	32.1	96.2	180	637	312	86.5	57.0	37.6	30.7	27.6
Max	25	29	43	259	416	1180	478	141	278	51	36	32
Min	17	10	27	40	72	172	149	58	31	31	21	25
Acre-ft.	1270	1330	1970	5720	11100	37900	19200	5320	3390	2310	1830	1700

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Uncompahgre River below Ouray for 1916.
Drainage Area, 76 Square Miles. Altitude, 7,710 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	28	28	32	56	142	658	402	258	91	59	63	40
2	28	28	33	58	155	650	402	264	91	61	63	40
3	29	29	33	45	122	690	402	290	91	61	63	40
4	29	29	33	45	107	860	402	296	91	63	63	40
5	29	31	35	56	125	533	402	293	91	54	63	40
6	30	21	35	54	207	592	397	290	75	274	63	40
7	26	29	35	45	406	592	397	286	75	202	63	28
8	29	32	38	39	397	910	379	283	75	222	59	24
9	28	28	42	54	384	931	388	280	75	193	58	24
10	31	28	47	58	520	1010	388	220	96	160	54	24
11	29	30	53	80	514	820	384	217	91	193	54	35
12	26	30	53	80	402	1050	374	214	71	176	54	35
13	29	27	58	61	249	1070	374	212	71	156	35	38
14	31	30	63	58	249	1040	374	210	71	142	38	38
15	31	27	66	61	249	784	384	207	71	135	39	38
16	28	30	71	80	189	1040	379	204	71	135	40	37
17	28	30	69	80	142	920	379	160	71	122	42	38
18	28	33	69	95	155	766	370	160	71	110	42	39
19	19	35	69	110	217	757	304	160	71	84	40	39
20	28	32	72	125	198	706	237	160	69	96	40	34
21	28	34	75	140	198	698	170	160	69	110	40	31
22	28	36	77	156	198	457	191	160	71	107	40	32
23	28	34	65	155	217	457	170	110	71	84	39	32
24	27	32	65	156	222	457	170	110	65	84	39	33
25	27	31	46	197	252	457	191	110	59	122	39	33
26	27	31	46	238	283	457	191	96	54	110	39	34
27	28	31	43	279	290	457	195	96	56	94	39	34
28	18	31	46	321	290	457	200	96	56	94	39	34
29	23	31	58	238	397	402	204	91	54	73	39	34
30	27	.....	43	155	552	402	210	82	54	73	39	35
31	27	.....	46	.....	546	.....	252	91	.....	63	.....	35
Total..	852	878	1616	3375	8574	21080	9662	5866	2188	3712	1428	1078
Mean.....	27.5	30.3	52.1	112	277	703	312	189	72.9	120	47.6	34.8
Max.....	31	36	77	321	552	1070	402	296	96	274	63	40
Min.....	18	21	32	39	107	402	170	82	54	54	35	24
Acre-ft.	1690	1740	3200	6660	17000	41800	19200	11600	4340	7380	2830	2140

Unless otherwise noted, all discharges are in cubic feet per second.

UNCOMPAHGRE RIVER AT MONTROSE.

Location.—At highway bridge, one-fourth mile west of Montrose. Nearest important tributary, Happy Canyon Creek, enters about 2 miles below.

Records Available.—April 22, 1903, to December 16, 1913; March 8, 1915, to October 31, 1916.

Drainage Area.—565 square miles.

Gage.—Vertical staff; location and datum unchanged.

Channel.—Extremely shifting.

Discharge Measurements.—Made from the bridge.

Winter Flow.—Although ice forms along the edges of the river during the winter months, the river does not freeze over. Observations of gage heights are, however, discontinued during November, December, January, February, and March.

Diversions.—Uncompahgre River is so over-appropriated that the United States Reclamation Service is constructing a tunnel and canal to divert 1,300 second-feet from Gunnison River into the Uncompahgre above Uncompahgre.

Accuracy.—Although the channel is extremely shifting, sufficient discharge measurements were made to afford data for estimates by the indirect method, and these estimates may be considered reliable.

Co-operation.—Records furnished by the United States Geological Survey.

UNCOMPAHGRE RIVER NEAR DELTA.

Location.—At highway bridge on township line between Tps. 95 and 96, 2 miles south of Delta; no tributaries between the station and the mouth and no important tributaries for several miles upstream.

Records Available.—April 29, 1903, to December 18, 1913; March 8, 1915, to October 31, 1916.

Drainage Area.—1,130 square miles.

Gage.—Vertical staff.

Channel.—Extremely shifting.

Discharge Measurements.—Made from the bridge.

Winter Flow.—The flow is probably not materially affected by ice, although ice forms along the edges and slush ice frequently occurs. Observations are discontinued during the winter months.

Diversions.—The normal flow is diverted during the irrigation season by ditches above the station, so that the records represent largely return seepage water.

Accuracy.—Estimates only fair, or, for certain periods, possibly good, measurements being insufficient to permit use of indirect method for shifting channels to fullest extent.

Co-operation.—Records furnished by the United States Geological Survey.

Discharge of Uncompahgre River at Montrose for 1915.
Drainage Area, 565 Square Miles. Altitude, 5,820 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	57	400	196	422	168	84	124	8	70
2	.....	.....	.....	.....	27	247	364	258	111	111	124	8	78
3	.....	.....	.....	.....	35	168	210	196	106	117	367	9	78
4	.....	.....	.....	.....	42	155	168	196	84	47	232	13	85
5	.....	.....	.....	.....	49	196	190	240	102	21	208	13	114
6	.....	.....	.....	.....	57	210	378	400	102	84	169	13	85
7	.....	.....	.....	.....	125	193	176	181	144	92	94	13	85
8	.....	.....	.....	57	35	176	258	275	275	42	73	13	82
9	.....	.....	.....	71	20	210	204	240	155	27	74	13	78
10	.....	.....	.....	35	20	210	355	295	150	75	78	13	85
11	.....	.....	.....	31	14	240	860	323	163	72	64	13	78
12	.....	.....	.....	27	9	335	778	391	139	68	52	13	70
13	.....	.....	.....	35	38	445	445	315	117	92	46	12	70
14	.....	.....	.....	35	92	490	225	295	75	96	29	13	57
15	.....	.....	.....	35	84	275	295	258	92	92	78	13	57
16	.....	.....	.....	35	92	335	225	155	84	42	50	42	.....
17	.....	.....	.....	57	71	400	540	102	84	25	46	42	.....
18	.....	.....	.....	71	132	347	590	92	75	84	40	46	.....
19	.....	.....	.....	71	303	176	832	68	87	105	188	52	.....
20	.....	.....	.....	87	210	210	950	54	87	92	33	49	.....
21	.....	.....	.....	87	347	128	750	54	39	84	32	57	.....
22	.....	.....	.....	87	219	128	832	144	115	102	22	57	.....
23	.....	.....	.....	87	196	160	1020	150	87	98	29	57	.....
24	.....	.....	.....	105	146	155	750	155	102	102	29	57	.....
25	.....	.....	.....	87	137	155	640	258	102	98	29	57	.....
26	.....	.....	.....	87	89	144	750	258	60	219	20	37	.....
27	.....	.....	.....	105	141	111	668	315	111	105	12	57	.....
28	.....	.....	.....	88	343	68	590	258	92	89	42	57	.....
29	.....	.....	.....	71	327	96	445	176	92	132	13	46	.....
30	.....	.....	.....	71	778	115	445	225	84	126	8	57	.....
31	.....	.....	.....	57	.....	115	.....	144	84	.....	8	.....	.....
Total	.....	.....	.....	1579	4235	6793	15129	6893	3368	2623	2413	950	1172
Mean	.....	.....	.....	65.8	141	219	504	222	109	87.4	77.8	31.7	78.1
Max	.....	.....	.....	105	778	490	1020	422	275	219	367	57	.....
Min	.....	.....	.....	27	9	68	168	54	39	21	8	8	.....
Acre-ft.	.....	.....	.....	3130	8390	13500	30000	13600	6700	5200	4780	1890	2320

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Uncompahgre River at Montrose for 1916.
Drainage Area, 565 Square Miles. Altitude, 5,820 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	188	264	320	196	232	52	.....	.....
2	.....	.....	.....	.....	.....	136	355	351	481	202	94	.....	.....
3	.....	.....	.....	.....	.....	114	463	328	375	248	114	.....	.....
4	.....	.....	.....	.....	.....	114	392	355	703	217	124	.....	.....
5	.....	.....	.....	.....	54	202	405	324	500	238	124	.....	.....
6	.....	.....	.....	.....	.....	271	486	254	703	153	202	.....	.....
7	.....	.....	.....	.....	.....	316	477	523	832	124	281	.....	.....
8	.....	.....	.....	.....	.....	264	547	328	532	124	355	.....	.....
9	.....	.....	.....	.....	.....	367	575	211	454	180	258	.....	.....
10	.....	.....	.....	.....	.....	396	518	245	396	343	258	.....	.....
11	.....	.....	.....	.....	.....	335	248	458	248	107	396	.....	.....
12	.....	.....	.....	.....	.....	258	388	504	281	202	305	.....	.....
13	.....	.....	.....	.....	.....	238	728	295	316	174	202	.....	.....
14	.....	.....	.....	.....	.....	238	594	264	1200	180	202	.....	.....
15	.....	.....	.....	.....	.....	238	384	267	463	148	248	.....	.....
16	.....	.....	.....	.....	136	281	401	405	509	136	208	.....	.....
17	.....	.....	.....	.....	148	298	379	347	509	114	264	.....	.....
18	.....	.....	.....	.....	136	298	422	331	355	114	238	.....	.....
19	.....	.....	.....	.....	94	375	427	281	281	114	238	.....	.....
20	.....	.....	.....	.....	52	396	427	284	217	107	129	.....	.....
21	.....	.....	.....	.....	217	375	384	254	174	124	85	.....	.....
22	.....	.....	.....	.....	226	418	316	258	136	114	94	.....	.....
23	.....	.....	.....	.....	238	335	339	261	217	114	89	.....	.....
24	.....	.....	.....	.....	305	264	409	375	202	114	94	.....	.....
25	.....	.....	.....	.....	248	328	371	369	238	99	94	.....	.....
26	.....	.....	.....	.....	238	298	401	542	217	94	94	.....	.....
27	.....	.....	.....	.....	169	298	445	547	161	114	89	.....	.....
28	.....	.....	.....	.....	217	343	396	392	169	94	94	.....	.....
29	.....	.....	.....	.....	375	335	703	316	217	70	78	.....	.....
30	.....	.....	.....	.....	202	375	355	585	248	57	64	.....	.....
31	.....	.....	.....	.....	.....	440	.....	405	217	.....	64	.....	.....
Total	.....	.....	.....	.....	3001	9132	12999	10969	11747	4451	5231	.....	.....
Mean	.....	.....	.....	.....	200	295	433	354	379	148	169	.....	.....
Max	.....	.....	.....	.....	.....	440	728	585	1200	343	396	.....	.....
Min	.....	.....	.....	.....	.....	114	248	211	136	57	52	.....	.....
Acre-ft.	.....	.....	.....	.....	5950	18100	25800	21800	23300	8810	10400	.....	.....

Discharge of Uncompahgre River at Delta for 1915.
Drainage Area, 1,130 Square Miles. Altitude, 4,970 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	64	750	118	152	108	50	191	98	206
2	.....	.....	.....	57	325	191	129	98	50	220	152	206
3	.....	.....	.....	57	164	164	98	89	64	345	140	206
4	.....	.....	.....	68	118	152	89	89	64	365	129	206
5	.....	.....	.....	80	103	152	118	89	64	285	140	206
6	.....	.....	.....	98	140	435	140	80	64	268	140	206
7	.....	.....	.....	98	98	325	118	98	72	220	152	206
8	.....	.....	.....	152	164	89	235	98	191	72	220	178	191
9	.....	.....	.....	140	98	80	235	108	152	80	285	164	178
10	.....	.....	.....	140	89	98	191	98	140	64	164	191	152
11	.....	.....	.....	129	84	89	410	89	118	64	164	191	191
12	.....	.....	.....	118	80	129	570	140	108	64	191	152	191
13	.....	.....	.....	129	77	250	515	118	98	64	206	164	191
14	.....	.....	.....	114	118	450	250	108	98	64	206	164	191
15	.....	.....	.....	98	89	305	191	98	98	72	152	191	191
16	.....	.....	.....	118	98	365	191	108	108	80	250	191	.....
17	.....	.....	.....	129	80	388	250	89	140	80	220	220	.....
18	.....	.....	.....	164	89	317	250	57	118	80	191	220	.....
19	.....	.....	.....	152	178	235	410	80	118	89	164	220	.....
20	.....	.....	.....	164	140	191	630	98	80	98	140	220	.....
21	.....	.....	.....	146	191	268	600	80	64	98	129	220	.....
22	.....	.....	.....	129	152	220	630	64	64	98	140	220	.....
23	.....	.....	.....	118	108	164	810	64	64	98	140	191	.....
24	.....	.....	.....	140	80	178	630	64	72	98	140	164	.....
25	.....	.....	.....	118	108	191	542	108	64	285	118	178	.....
26	.....	.....	.....	129	89	164	410	129	72	410	98	191	.....
27	.....	.....	.....	118	89	164	542	129	64	178	108	191	.....
28	.....	.....	.....	118	129	129	410	129	64	140	118	191	.....
29	.....	.....	.....	118	220	118	365	140	64	164	118	164	.....
30	.....	.....	.....	98	750	108	345	108	57	220	118	178	.....
31	.....	.....	.....	57	.....	80	.....	98	57	.....	118	.....	.....
Total	.....	.....	.....	3036	3822	6473	11149	3246	2924	3188	5792	5305	2918
Mean	.....	.....	.....	126	127	209	372	105	94.3	106	187	177	156
Max	.....	.....	.....	164	750	750	810	152	191	410	365	220	206
Min	.....	.....	.....	57	57	80	118	57	57	50	98	98	152
Acre-ft.	.....	.....	.....	6000	7560	12900	22100	6460	5800	6310	11500	10500	5800

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Uncompahgre River at Delta for 1916.
Drainage Area 1,130 Square Miles... Altitude 4,970 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	338	73	92	227	148	102	.....	.....
2	.....	.....	.....	.....	.....	124	136	64	457	136	141	.....	.....
3	.....	.....	.....	.....	.....	92	124	69	367	148	166	.....	.....
4	.....	.....	.....	.....	.....	82	188	56	457	148	174	.....	.....
5	.....	.....	.....	.....	.....	82	161	82	506	136	166	.....	.....
6	.....	.....	.....	.....	.....	202	182	40	642	161	174	.....	.....
7	.....	.....	.....	.....	.....	330	224	40	730	113	359	.....	.....
8	.....	.....	.....	.....	.....	397	188	82	506	113	532	.....	.....
9	.....	.....	.....	.....	.....	424	117	88	506	136	346	.....	.....
10	.....	.....	.....	.....	.....	452	233	326	354	402	388	.....	.....
11	.....	.....	.....	.....	.....	420	161	218	227	346	700	.....	.....
12	.....	.....	.....	.....	.....	310	141	88	202	141	548	.....	.....
13	.....	.....	.....	.....	.....	302	166	213	202	218	402	.....	.....
14	.....	.....	.....	.....	.....	250	410	77	1210	202	375	.....	.....
15	.....	.....	.....	.....	.....	180	166	82	410	188	532	.....	.....
16	.....	.....	.....	.....	48	146	211	113	559	161	433	.....	.....
17	.....	.....	.....	.....	82	141	96	124	481	136	467	.....	.....
18	.....	.....	.....	.....	161	146	102	82	402	124	481	.....	.....
19	.....	.....	.....	.....	124	153	174	82	326	136	506	.....	.....
20	.....	.....	.....	.....	64	188	224	77	244	136	420	.....	.....
21	.....	.....	.....	.....	73	338	166	64	161	131	367	.....	.....
22	.....	.....	.....	.....	113	334	166	64	131	136	359	.....	.....
23	.....	.....	.....	.....	188	268	102	73	136	136	326	.....	.....
24	.....	.....	.....	.....	306	244	174	73	148	174	420	.....	.....
25	.....	.....	.....	.....	287	371	161	73	136	136	367	.....	.....
26	.....	.....	.....	.....	306	233	174	367	113	156	334	.....	.....
27	.....	.....	.....	.....	196	161	174	306	102	141	326	.....	.....
28	.....	.....	.....	.....	218	188	148	306	92	156	295	.....	.....
29	.....	.....	.....	.....	148	188	136	218	109	136	.....	.....	.....
30	.....	.....	.....	.....	367	188	148	346	174	92	.....	.....	.....
31	.....	.....	.....	.....	.....	148	.....	410	218	.....	.....	.....	.....
Total	.....	.....	.....	.....	2681	7420	5026	4395	10535	4823	10206	.....	.....
Mean	.....	.....	.....	.....	179	239	168	142	340	161	364	.....	.....
Max	.....	.....	.....	.....	367	452	410	410	1210	402	.....	.....	.....
Min	.....	.....	.....	.....	48	82	.73	40	92	92	.....	.....	.....
Acre-ft.	.....	.....	.....	.....	5330	14700	10000	8730	20900	9580	20200	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

CANON CREEK AT OURAY.

Location.—At Ouray, Colo., in sec. 31, T. 44 N., R. 7 W., New Mexico principal meridian, in the Uncompahgre Forest, 200 feet above the mouth of the creek. Nearest tributary, a small stream, enters from the east some distance above.

Records Available.—January 25, 1911, to November 30, 1915; discontinued November 30, 1915.

Drainage Area.—26 square miles.

Gage.—Vertical staff.

Channel.—Extremely shifting.

Discharge Measurements.—Made from near-by foot-bridge during high water and by wading at ordinary stages.

Winter Flow.—Ice causes practically no backwater at this station.

Diversions.—No water is diverted above the station, so the records represent the natural run-off.

Accuracy.—Results considered fair.

Co-operation.—Records furnished by the United States Geological Survey.

Discharge of Canon Creek at Ouray for 1915.
Drainage Area, 26 Square Miles. Altitude, 7,710 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	8	7	8	20	49	151	291	79	22	16	8	.....
2	8	8	8	25	36	143	285	64	22	16	8	.....
3	8	2	8	39	29	113	264	59	22	16	8	.....
4	8	11	8	35	29	94	258	57	19	14	8	.....
5	9	8	8	43	29	98	310	54	19	13	8	.....
6	9	8	8	37	24	93	314	62	19	13	8	.....
7	9	8	8	31	21	84	301	64	19	12	9	.....
8	9	9	8	29	22	96	267	66	19	12	6	.....
9	9	11	8	29	25	170	244	64	12	10	6	.....
10	9	11	8	23	32	222	227	52	12	9	6	.....
11	9	9	8	21	76	258	294	48	15	9	5	.....
12	9	9	8	28	116	225	273	44	15	8	4	.....
13	9	8	8	27	145	190	267	41	15	7	4	.....
14	9	8	8	42	145	170	264	39	15	7	5	.....
15	10	8	8	44	118	209	264	35	15	6	5	.....
16	11	9	9	34	143	252	261	33	14	6	9	.....
17	3	9	9	30	121	359	244	32	14	6	8	.....
18	8	8	11	36	105	401	217	32	14	6	9	.....
19	8	8	11	42	76	426	192	31	12	6	9	.....
20	8	9	11	46	62	452	170	31	12	5	12	.....
21	8	9	12	50	53	469	161	30	12	8	12	.....
22	8	8	12	43	44	469	159	30	12	8	12	.....
23	7	8	12	41	65	438	153	29	11	8	10	.....
24	7	8	17	37	58	409	145	27	11	8	10	.....
25	8	9	15	45	70	374	123	25	111	8	9	.....
26	8	9	17	50	71	366	113	25	15	8	9	.....
27	8	8	18	90	54	366	98	25	12	8	9	.....
28	7	8	21	119	62	352	98	24	12	8	6	.....
29	7	.....	20	141	69	330	94	24	17	8	8	.....
30	7	.....	18	143	74	317	94	24	15	8	8	.....
31	6	.....	21	.....	82	.....	83	24	.....	8	.....	.....
Total..	245	235	354	1432	2105	8096	6528	1274	554	285	238	.....
Mean.....	7.90	8.39	11.4	47.7	67.9	270	211	41.1	18.5	9.19	7.93	.....
Max.....	11	11	21	143	145	469	314	79	111	16	12	.....
Min.....	3	2	8	20	21	84	83	24	11	5	4	.....
Acre-ft.	486	466	701	2840	4180	16100	13000	2530	1100	565	472	.....

Unless otherwise noted, all discharges are in cubic feet per second.

RIO GRANDE DRAINAGE

RIO GRANDE AT THIRTY-MILE BRIDGE, NEAR CREEDE, COLO.

Location.—In the Rio Grande National Forest, about 30 miles southwest of Creede, in sec. 13, T. 40 N., R. 4 W.; a short distance above mouth of Squaw Creek.

Records Available.—June 18, 1909, to November 30, 1916.

Drainage Area.—163 square miles.

Gage.—Staff gage.

Channel.—Section is gradually filling in.

Discharge Measurements.—Made from car and cable except during low stages, when they are made by wading.

Winter Flow.—Ice causes backwater during the winter months and records are discontinued.

Diversions.—So far as known, no water is diverted above the station.

Artificial Control.—A short distance above the station the San Luis Valley Irrigation District has constructed the large Rio Grande reservoir which materially modifies the flow of the river; also Lost Lake Reservoir.

Accuracy.—Results considered good.

Co-operation.—Station maintained in co-operation with San Luis Valley Irrigation District.

RIO GRANDE NEAR CREEDE.

Location.—In the Rio Grande National Forest, at a highway bridge in about sec. 8, T. 41 N., R. 1 E., a quarter of a mile from Wason siding and 3 miles southeast of Creede. Nearest tributary, Willow or Goblin Creek, enters a short distance upstream.

Records Available.—April 24, 1907, to November 30, 1916.

Drainage Area.—689 square miles.

Gage.—An automatic recording gage.

Channel.—Practically permanent.

Discharge Measurements.—Made from bridge.

Winter Flow.—River frozen over during winter months; ice causes backwater at gage.

Reservoirs.—Daily, monthly and annual discharges modified by storage in the Rio Grande and Santa Maria Reservoirs, 30 miles above.

Diversions.—There are no court decrees for diversions from the Rio Grande above this station, but for diversions of 39 second-feet from tributaries.

Accuracy.—Good.

Co-operation.—Maintained by the State engineer in co-operation with the United States Forest Service.

Discharge of Rio Grande at Thirty-Mile Bridge for 1915.
Drainage Area, 163 Square Miles. Altitude, 9,380 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	14	14	14	14	17	695	1020	551	295	4	261	72
2	14	14	14	14	18	820	918	478	295	4	72	57
3	14	14	14	14	20	852	885	432	44	4	38	60
4	14	14	14	14	18	757	885	432	313	4	38	64
5	14	14	14	14	18	635	820	432	64	4	38	60
6	14	14	14	14	18	501	885	432	28	4	50	57
7	14	14	14	14	18	455	757	411	28	4	57	64
8	14	14	14	14	18	432	726	478	28	33	64	72
9	14	14	14	14	18	478	665	432	28	64	44	20
10	14	14	14	14	18	578	665	411	24	188	4	2
11	14	14	14	14	20	885	695	411	28	188	2	2
12	14	14	14	14	20	987	820	411	28	175	2	2
13	14	14	14	14	20	918	885	411	28	175	2	2
14	14	14	14	14	20	852	788	411	28	175	2	2
15	14	14	14	14	89	885	757	411	28	175	2	2
16	14	14	14	14	188	885	1060	390	28	188	3	2
17	14	14	14	20	313	1020	1020	390	33	215	33	2
18	14	14	14	14	411	1170	987	390	28	261	44	2
19	14	14	14	14	432	1420	987	390	33	188	44	2
20	14	14	14	14	390	1500	885	390	28	118	44	2
21	14	14	14	14	350	1420	820	390	50	455	50	2
22	14	14	14	14	331	1540	820	370	33	455	50	3
23	14	14	14	14	313	1640	820	370	33	432	3	3
24	14	14	14	16	331	1680	665	370	7	432	2	3
25	14	14	14	16	411	1540	665	350	4	411	2	3
26	14	14	14	16	432	1460	665	350	4	411	2	3
27	14	14	14	16	411	1370	757	350	4	411	140	3
28	14	14	14	16	432	1290	788	278	4	390	98	3
29	14	.....	14	16	455	1210	788	278	4	390	129	3
30	14	.....	14	17	455	1170	726	331	4	370	38	3
31	14	.....	14	.....	525	.....	606	331	.....	350	.....	3
Total	434	392	434	441	6530	31045	25230	12262	1584	6678	1358	580
Mean	14	14	14	14.7	211	1030	814	396	52.8	215	45.3	18.7
Max	14	14	14	20	525	1680	1060	551	313	455	261	72
Min	14	14	14	14	17	432	606	278	4	4	2	2
Acre-ft.	861	778	861	875	13000	61300	50000	24300	3140	13200	2700	1150

Discharge of Rio Grande at Thirty-Mile Bridge for 1916.
Drainage Area, 163 Square Miles. Altitude, 9,380 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2	2	50	98	295	788	578	501	118	64	606	.....
2	2	2	50	80	261	852	695	578	118	64	578	.....
3	2	2	50	80	245	918	695	695	118	64	525	.....
4	2	2	50	64	245	390	695	726	118	64	411	.....
5	2	2	60	80	295	3	635	757	108	80	350	.....
6	2	2	60	80	370	3	551	757	108	89	350	.....
7	2	2	75	72	432	3	551	757	108	188	331	.....
8	2	2	75	57	501	16	695	757	98	350	331	.....
9	2	2	75	72	635	20	757	757	98	390	331	.....
10	2	2	75	72	665	16	852	635	98	455	313	.....
11	2	2	85	80	726	20	820	331	98	665	313	.....
12	2	2	85	50	695	24	788	606	98	885	313	.....
13	2	2	85	80	695	28	757	757	98	885	295	.....
14	2	2	89	108	665	28	726	551	98	885	295	.....
15	2	2	108	98	606	175	726	432	98	852	278	.....
16	2	2	108	98	525	635	726	432	98	852	278	.....
17	2	320	108	108	478	852	726	370	98	852	278	.....
18	2	310	98	118	455	885	726	350	89	852	261	.....
19	2	304	108	129	432	885	726	278	80	820	230	.....
20	2	50	108	118	432	885	726	215	80	820	188	.....
21	2	13	89	98	432	885	726	175	80	820	175	.....
22	310	45	129	98	432	525	695	175	80	788	175	.....
23	300	45	129	129	390	390	695	98	80	757	163	.....
24	280	45	108	163	390	390	695	20	80	757	163	.....
25	260	60	108	201	411	390	551	89	80	726	151	.....
26	260	50	108	215	432	411	525	118	80	726	151	.....
27	50	40	98	295	432	411	501	118	80	726	140	.....
28	50	45	108	331	501	432	501	108	80	695	140	.....
29	50	45	98	350	578	432	501	118	72	695	140	.....
30	2	.....	80	331	635	478	501	118	64	665	140	.....
31	2	.....	89	.....	726	.....	501	108	.....	665	.....	.....
Total	1606	1404	2746	3953	15012	12170	20543	12478	2801	18196	8393	.....
Mean	51.8	48.4	88.6	132	484	406	663	403	93.4	587	280	.....
Max	310	320	129	350	726	918	852	757	118	885	606	.....
Min	2	2	50	50	245	3	501	20	64	64	140	.....
Acre-ft.	3180	2780	5450	7860	29800	24200	40800	24800	5560	36100	16700	.....

Unless otherwise noted, all discharges are in cubic feet per second.
Discharge estimated January 1st to March 14th; November 26-30, inclusive.

Discharge of Rio Grande at Wason for 1915.
Drainage Area, 700 Square Miles. Altitude, 8,591 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	88	104	104	133	605	2020	1970	1300	635	300	545	160
2	89	107	107	144	485	2380	1800	1260	635	260	485	140
3	91	99	105	156	400	2200	1700	1130	635	240	300	150
4	97	100	100	210	350	1860	1600	1010	485	225	210	140
5	97	92	110	240	300	1600	1600	970	740	225	181	145
6	99	92	100	210	325	1350	1700	1050	635	225	181	145
7	92	96	100	181	280	1210	1550	1130	635	225	195	140
8	87	98	105	210	260	1260	1450	970	635	210	195	145
9	94	101	105	195	260	1550	1350	930	635	225	195	150
10	98	115	110	181	280	2020	1300	930	635	350	195	125
11	91	114	105	225	375	2640	1350	930	635	375	117	95
12	93	105	110	280	740	2840	1400	890	635	350	117	90
13	96	109	112	280	1090	2510	1500	930	635	350	127	90
14	91	102	115	300	1450	2260	1450	930	635	350	127	85
15	94	104	110	300	1350	2320	1350	930	705	350	138	85
16	92	103	115	225	1500	2440	1400	890	635	350	138	85
17	89	106	105	240	1800	2770	1450	850	575	400	138	85
18	91	106	100	240	1700	2840	1450	850	515	400	185	85
19	93	102	105	280	1400	3320	1450	775	455	455	200	85
20	96	102	115	300	1170	3320	1450	740	425	400	200	85
21	96	102	120	325	1050	3320	1300	740	400	575	195	90
22	94	97	115	325	970	3320	1300	740	400	670	200	90
23	81	99	115	300	1010	3120	1300	740	350	670	200	90
24	80	95	120	280	1300	2900	1260	740	300	670	155	90
25	84	100	115	260	1550	2770	1260	740	455	670	137	90
26	90	105	125	300	1350	2700	1550	740	775	705	127	90
27	90	100	125	400	1260	2580	1920	705	515	670	117	90
28	96	100	125	485	1260	2440	1650	670	455	670	127	90
29	97	.....	125	575	1550	2320	1550	605	375	635	195	90
30	101	.....	133	740	1400	2080	1500	605	325	605	175	90
31	107	.....	133	.....	1800	.....	1450	635	.....	575	.....	90
Total	2874	2855	3489	8520	30620	72260	46310	27055	16505	13380	5797	3300
Mean.....	92.7	102	113	284	988	2410	1490	873	550	432	193	106
Max.....	107	115	133	740	1800	3320	1970	1300	775	705	545	160
Min.....	80	92	100	133	260	1210	1260	605	300	210	117	85
Acre-ft.	5700	5660	6950	16900	60800	143000	91600	53700	32700	26600	11500	6520

Disc. est. Jan. 1st.-Mch. 31st., inc.; Nov. 11 to Dec. 31.

Discharge of Rio Grande at Wason for 1916.
Drainage Area, 700 Square Miles. Altitude, 8,591 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	95	115	145	285	915	2180	1500	1740	465	260	1120	.....
2	95	115	145	305	835	2230	1600	1800	435	330	1080	.....
3	95	115	150	355	725	2340	1600	1900	435	330	1040	.....
4	95	120	160	330	725	2580	1540	1700	435	305	955	.....
5	95	120	160	330	835	1540	1440	1640	435	285	835	.....
6	95	120	170	305	1170	1500	1260	1700	465	620	795	.....
7	100	125	170	285	1500	1500	1220	1700	435	1040	795	.....
8	100	125	190	260	1850	1500	1350	1700	380	1260	760	.....
9	100	125	200	305	2180	1640	1540	1640	435	1260	725	.....
10	100	130	200	355	2520	1850	1800	1640	525	1640	655	.....
11	100	130	200	435	2580	1960	1700	1220	525	1960	585	.....
12	100	130	225	405	2460	1850	1600	1170	525	1900	525	.....
13	100	130	200	330	2340	1850	1540	1400	465	1740	495	.....
14	105	135	215	355	2120	1800	1440	1540	435	1700	555	.....
15	105	135	240	355	1800	1700	1400	1260	405	1640	555	.....
16	105	135	275	355	1600	2120	1600	1170	405	1540	555	.....
17	105	135	300	435	1500	2280	1400	1080	380	1500	555	.....
18	105	450	400	465	1400	2280	1400	995	380	1500	555	.....
19	105	440	580	465	1350	2340	1400	915	355	1440	525	.....
20	105	435	630	405	1500	2280	1350	835	330	1400	465	.....
21	105	145	500	405	1400	2280	1350	760	305	1350	435	.....
22	105	150	400	435	1350	2060	1300	690	305	1350	405	.....
23	405	120	285	495	1260	1640	1300	655	330	1350	405	.....
24	390	135	260	555	1300	1600	1300	555	330	1300	405	.....
25	375	135	320	655	1440	1500	1260	495	330	1260	380	.....
26	360	149	330	725	1500	1540	1300	525	330	1260	355	.....
27	345	140	330	795	1600	1500	1220	525	285	1260	355	.....
28	155	130	380	915	1740	1400	1170	525	260	1220	355	.....
29	155	135	405	1040	1850	1350	1170	495	260	1220	330	.....
30	155	.....	355	1040	2060	1440	1170	525	260	1170	330	.....
31	110	.....	305	.....	2230	.....	1540	495	.....	1170	.....	.....
Total.	4665	4704	8825	14180	49635	55630	43760	34990	11645	37560	17885	.....
Mean.....	150	162	285	473	1600	1850	1410	1130	388	1210	596	.....
Max.....	405	450	630	1040	2580	2580	1800	1900	525	1960	1120	.....
Min.....	95	115	145	260	725	1350	1170	495	260	260	330	.....
Acre-ft.	9220	9320	17500	28100	98400	110000	86700	69500	23100	74400	35500	.....

Unless otherwise noted, all discharges are in cubic feet per second.
Disc. estimated January 1st-March 27th.

RIO GRANDE NEAR DEL NORTE.

Location.—At highway bridge in about sec. 30, T. 40 N., R. 5 E., 6 miles west of Del Norte, a short distance below the mouth of Wolf Creek. From October 11, 1889, to November 30, 1906, a station was maintained about 4 miles below the present station and just above Los Pinos Creek. The flow at the two points is comparable, if a few small ditches are disregarded.

Records Available.—May 16, 1908, to November 30, 1916.

Drainage Area.—1,400 square miles.

Gage.—Automatic recording gage. The gage is referred to the same datum as was the chain gage installed May 16, 1908.

Channel.—Slightly shifting at sides from silt deposition at low water.

Discharge Measurements.—Made from bridge.

Winter Flow.—River is frozen over during the winter months.

Reservoirs.—Daily, monthly and annual discharges modified by storage in Beaver Park, Santa Maria and Rio Grande Reservoirs.

Diversions.—There are court decrees for diversions of 101 second-feet from the Rio Grande between the Creede station and Del Norte, and for diversions of 162 second-feet from intervening tributaries.

RIO GRANDE AT ALAMOSA.

Location.—At Concrete road bridge in Alamosa, one-third of a mile above D. & R. G. Railroad bridge, where station was originally established in 1894, discontinued in 1895, and re-established in 1912. The flow at the two points is comparable, except for one small ditch diversion. Records initiated by State of Colorado April 19, 1914.

Records Available.—Discharge measurements and gage heights September 24, 1894, to December 31, 1895. Miscellaneous measurements, 1903 and 1910. Daily discharges May 15, 1912, to November 30, 1916.

Drainage Area.—Not measured.

Gage.—An automatic recording gage.

Channel.—Shifting sand.

Discharge Measurements.—From Concrete road bridge at high water and by wading at low water.

Winter Flow.—Ice cover forms during winter months.

Diversions.—Below all but one of the large diversions from the Rio Grande.

Discharge of Rio Grande near Del Norte for 1915.
Drainage Area, 1,400 Square Miles. Altitude, 7,868 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	155	235	235	285	1330	3220	2640	1480	755	520	595	300
2	160	250	250	330	1030	3830	2350	1330	755	485	520	280
3	170	210	235	390	890	3650	2210	1230	755	450	450	245
4	200	215	205	450	845	2880	2080	1130	675	420	310	245
5	200	170	210	520	800	2490	2080	1030	755	390	265	225
6	210	170	220	450	715	2210	2210	1030	755	360	285	225
7	175	195	225	390	715	1950	2020	1130	715	360	330	220
8	150	205	245	420	635	2080	1880	1180	715	330	310	220
9	185	220	245	390	635	2490	1760	1130	715	330	310	225
10	205	260	255	390	635	3130	1650	980	715	390	330	225
11	170	260	235	450	890	3920	1700	1030	675	485	245	200
12	180	240	245	520	1480	4300	1760	1080	675	485	200	185
13	195	260	265	555	2020	3830	1820	1030	715	485	200	185
14	170	225	275	635	2720	3380	1820	1030	715	485	210	185
15	185	235	295	715	2490	3380	1700	1080	715	520	225	170
16	175	230	260	555	2800	3470	1650	1080	755	520	245	170
17	160	245	260	520	2640	3920	1700	1030	675	520	245	170
18	170	245	260	555	2420	4020	1650	1030	595	520	245	173
19	180	225	230	675	2210	4400	1650	980	555	520	245	175
20	195	225	240	715	2020	4500	1650	935	520	520	290	180
21	195	225	285	800	1820	4400	1600	890	485	450	305	180
22	185	200	290	755	1650	4400	1540	890	450	675	310	185
23	145	210	280	715	1700	4300	1480	935	420	715	310	185
24	145	195	280	635	2140	4120	1480	935	360	715	310	190
25	145	220	290	595	2640	3830	1430	935	485	715	310	190
26	165	240	295	675	2350	3560	1880	935	1180	755	255	195
27	165	225	285	845	2080	3380	3040	845	755	755	245	195
28	195	210	285	1130	2020	3220	2420	800	635	715	230	195
29	200	.....	285	1180	2490	3040	2020	755	555	715	225	200
30	215	.....	285	1540	2280	2880	1820	755	555	675	245	200
31	250	.....	285	.....	2640	.....	1650	800	.....	675	.....	200
Total	5595	6245	8035	18780	53730	104180	58340	31430	19785	16655	8800	6318
Mean	180	223	259	626	1730	3470	1880	1010	660	537	293	204
Max.	250	260	295	1540	2800	4500	3040	1480	1180	755	595	300
Min.	145	170	205	285	635	1950	1430	755	360	330	200	170
Acre-ft.	11100	12400	15900	37200	106000	206000	116000	62100	39300	33000	17400	12500

Note.—Discharge estimated, Jan. 1 to March 31, inclusive; Dec. 1 to Dec. 31.

Discharge of Rio Grande near Del Norte for 1916.
Drainage Area, 1,400 Square Miles. Altitude, 7,868 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	200	245	270	525	1920	3580	2420	2340	680	460	1400	.....
2	205	245	270	560	1720	3580	2420	2560	640	600	1340	.....
3	205	245	270	600	1460	3680	2420	2640	600	640	1280	.....
4	210	245	270	600	1460	4160	2260	2420	640	560	1180	.....
5	210	245	270	560	1720	3300	2260	2200	600	560	1020	.....
6	215	250	290	560	2260	3040	2120	2340	770	770	915	.....
7	215	250	265	490	2880	3040	1980	2640	680	1340	915	.....
8	220	250	290	490	3480	3040	1980	2340	600	1780	915	.....
9	220	250	315	525	4060	3220	2340	2200	640	1780	865	.....
10	220	250	400	600	4690	3480	2490	2200	1120	1850	865	.....
11	220	255	490	865	4690	3680	2340	1850	915	2640	865	.....
12	220	255	490	865	4470	3580	2200	1590	1020	2880	815	.....
13	215	255	525	770	4160	3580	2200	1780	815	2340	770	.....
14	215	255	600	640	3770	3580	2060	2200	770	2340	640	.....
15	215	255	525	640	3220	3770	1980	1720	680	2260	725	.....
16	220	260	560	640	2800	3860	2260	1780	680	2060	725	.....
17	225	260	600	815	2720	3860	2060	1660	640	2060	815	.....
18	235	260	640	1020	2490	3770	2060	1340	600	2060	815	.....
19	240	560	725	965	2490	3860	2060	1280	600	1920	770	.....
20	240	550	815	815	2720	3860	1920	1180	560	1850	725	.....
21	240	545	1020	815	2490	3580	1780	1180	525	1780	680	.....
22	240	300	1060	915	2490	3400	1720	1020	525	1780	600	.....
23	245	280	965	1120	2420	2960	1660	1020	490	1720	640	.....
24	530	268	815	1280	2420	2720	1590	915	525	1720	640	.....
25	530	268	600	1460	2720	2560	1590	770	525	1590	560	.....
26	515	268	560	1590	2880	2560	1780	815	525	1590	560	.....
27	515	285	640	1660	2960	2490	1590	770	490	1590	600	.....
28	500	275	680	1850	3220	2420	1590	770	460	1520	525	.....
29	290	265	725	2120	3220	2340	1590	725	460	1460	460	.....
30	290	.....	680	2120	3480	2420	1660	770	430	1460	490	.....
31	290	.....	560	.....	3770	.....	2060	770	.....	1460	.....	.....
Total	8550	8394	17185	28475	91250	98970	62440	49785	19205	50420	24115	.....
Mean	276	289	554	949	2940	3300	2010	1610	640	1630	804	.....
Max.	530	560	1060	2120	4690	4160	2490	2640	1120	2880	1400	.....
Min.	200	245	265	490	1460	2340	1590	725	430	460	460	.....
Acre-ft.	17000	16600	34100	56500	181000	196000	124000	99000	38100	100000	47800	.....

Unless otherwise noted, all discharges are in cubic feet per second.
Note.—Discharge estimated, Jan. 1 to March 5.

Discharge of Rio Grande at Alamosa for 1915.
Drainage Area, ... Square Miles. Altitude, 7,536 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	165	190	215	310	647	620	574	1080	67	295	203	260
2	165	195	220	280	647	790	424	880	60	325	193	320
3	170	180	220	265	435	1440	320	703	75	295	183	310
4	180	185	220	280	310	1520	245	523	69	265	165	275
5	180	170	225	310	203	1110	201	355	91	237	148	260
6	185	170	230	280	156	731	173	237	114	225	130	260
7	170	180	235	265	135	500	147	187	175	193	130	260
8	165	180	240	250	125	310	123	155	171	183	148	260
9	175	185	245	225	120	220	101	165	168	148	174	255
10	180	195	250	250	115	235	91	180	176	141	174	245
11	170	195	255	237	110	574	82	175	195	156	174	240
12	175	195	260	225	115	1280	101	140	216	183	193	240
13	180	195	265	250	280	1690	91	150	225	203	193	230
14	170	195	270	280	731	1540	91	145	250	203	174	215
15	175	195	275	250	1330	1130	82	140	265	203	215	200
16	170	200	280	280	1330	992	82	125	295	193	255	200
17	170	200	280	280	1520	1170	82	125	325	193	300	200
18	170	200	280	250	1590	1310	82	130	325	183	340	200
19	175	200	280	250	1550	1380	74	95	310	183	385	200
20	180	200	295	295	1140	1690	74	65	280	165	395	205
21	180	205	280	325	731	1890	67	66	250	148	405	205
22	175	205	265	310	477	1850	60	60	193	135	415	205
23	155	205	280	310	325	1730	60	60	165	165	375	205
24	155	210	280	280	477	1690	60	53	141	193	340	205
25	160	210	295	237	760	1540	60	47	135	193	325	205
26	170	210	310	203	647	1280	67	53	141	193	325	210
27	170	215	310	183	546	1130	415	47	435	193	310	210
28	180	215	310	165	455	1020	1670	60	415	214	280	210
29	180	.....	310	237	280	862	1710	60	325	214	280	210
30	185	.....	310	355	340	741	1440	67	325	203	235	210
31	195	.....	310	.....	500	.....	1250	53	.....	193	.....	210
Total	5375	5480	8300	7917	18127	33965	10099	6381	6377	6216	7562	7120
Mean....	173	196	268	264	585	1130	326	206	213	201	252	230
Max.....	195	215	310	355	1590	1890	1710	1080	435	325	415	320
Min.....	155	170	215	165	110	220	60	47	60	141	130	200
Acre-ft.	10600	10900	16500	15700	36000	67200	20000	12700	12700	12400	15000	14100

Note—Discharge estimated Jan. 1st-March 21.

Discharge of Rio Grande at Alamosa for 1916.
Drainage Area, ... Square Miles. Altitude, 7,536 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	215	320	250	535	762	459	212	485	190	95	1200	.....
2	215	320	230	462	660	392	195	900	190	95	1170	.....
3	215	280	195	395	510	371	195	1210	152	110	1170	.....
4	215	280	212	350	350	436	195	1420	135	125	1170	.....
5	215	280	212	395	212	555	160	1420	135	110	1110	.....
6	220	290	250	395	270	506	95	1420	118	110	1040	.....
7	220	290	230	310	585	288	54	1560	118	142	985	.....
8	220	295	230	270	1140	268	42	1800	118	635	985	.....
9	220	300	230	230	1560	268	42	1720	103	1050	955	.....
10	220	300	250	230	1920	371	67	1600	103	1210	985	.....
11	225	300	330	212	2120	610	290	1520	255	1350	1040	.....
12	225	300	418	178	2420	745	418	1320	320	1760	1040	.....
13	225	305	462	230	2280	750	270	1100	350	2120	986	.....
14	225	305	535	195	2040	725	212	1200	295	2080	925	.....
15	225	305	585	178	1720	755	212	1360	260	1960	896	.....
16	225	305	555	178	1350	895	212	1200	250	1860	896	.....
17	225	305	555	110	1020	990	330	1220	255	1700	925	.....
18	235	310	585	95	790	1120	290	1110	245	1700	925	.....
19	245	310	660	160	600	1160	250	905	235	1700	955	.....
20	255	600	735	178	455	1700	195	795	225	1670	955	.....
21	260	590	790	125	475	1400	160	740	230	1590	867	.....
22	260	580	900	110	382	1270	125	690	212	1590	756	.....
23	260	344	900	81	312	1120	110	615	178	1590	783	.....
24	260	350	845	95	232	845	125	565	160	1560	730	.....
25	270	290	735	160	178	685	125	490	178	1520	680	.....
26	550	270	635	250	155	535	142	395	178	1410	655	.....
27	550	270	610	310	170	395	142	350	178	1410	630	.....
28	530	250	610	330	165	330	160	330	160	1340	630	.....
29	530	230	610	440	215	290	125	290	142	1300	605	.....
30	520	.....	610	610	250	230	125	230	125	1270	580	.....
31	320	.....	585	.....	308	.....	125	190	.....	1270	.....	.....
Total	8795	9474	15539	7797	25606	20464	5400	30150	5793	37432	27228	.....
Mean....	284	327	501	260	826	682	174	973	193	1210	908	.....
Max.....	550	600	900	610	2420	1700	418	1800	350	2120	1200	.....
Min.....	215	230	195	81	155	230	42	190	103	95	580	.....
Acre.-ft.	17500	18800	30800	15500	50800	40600	10700	59800	11500	74400	54000	.....

Unless otherwise noted, all discharges are in cubic feet per second.
January 1st-February 24th, discharge estimated.

RIO GRANDE NEAR LOBATOS.

Location.—At highway bridge in sec. 22, T. 33 N., R. 11 E., 10 miles east of Lobatos and a few miles above the Colorado-New Mexico line; 17 miles below mouth of Conejos River.

Records Available.—June 28, 1899, to November 30, 1916.

Drainage Area.—7,700 square miles.

Gage.—Automatic recording gage. This gage is referred to the datum of the original gage.

Channel.—A gash cut in lava rock; shifting blanket of sand.

Discharge Measurements.—Made from bridge.

Winter Flow.—Ice causes backwater varying in amount during the three winter months.

Diversions.—There are court decrees for diversions from the Rio Grande of 5,134 second-feet between the Del Norte station and this one. There are also decrees for diversions from the following tributaries: Minor tributaries above Alamosa, 464 second-feet; Alamosa and tributaries, 2,116 second-feet; Conejos and tributaries, 3,464 second-feet; Culebra and tributaries, 177 second-feet.

SOUTH FORK OF RIO GRANDE AT SOUTH FORK.

Location.—At highway bridge half a mile west of South Fork station, in sec. 34, T. 40 N., R. 3 E. No tributaries between the station and the mouth and none for several miles above.

Records Available.—August 9, 1910, to November 9, 1916. Also a number of discharge measurements made in 1909 by the United States Geological Survey.

Drainage Area.—216 square miles.

Gage.—Chain gage established May 12, 1912, at the site of the original staff gage, but referred to a different datum. The original gage was washed out by flood October 5, 1911, and was replaced by an inclined staff gage at the railroad bridge at different datum, October 16, 1911. This gage was read until May 12, 1912.

Channel.—Apparently permanent at the present location.

Discharge Measurements.—Made from bridge.

Winter Flow.—Ice causes backwater during the winter months.

Reservoirs.—Daily and monthly discharges modified by storage in Beaver Park Reservoir.

Diversions.—There are court decrees for diversions of 11 second-feet from South Fork above the station; none below.

Discharge of Rio Grande near Lobatos for 1915.

Drainage Area, 7,700 Square Miles. Altitude, 7,440 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	305	280	325	435	2120	1400	1080	1680	225	400	265	325
2	305	270	325	435	1920	1860	980	1340	205	400	290	295
3	315	270	325	400	1620	2720	795	1130	205	370	265	320
4	315	265	325	370	1290	2920	705	885	205	340	265	360
5	300	270	330	400	1030	2500	705	705	205	315	245	350
6	300	260	340	470	840	1980	585	545	205	290	225	320
7	300	275	330	470	705	1620	585	435	225	265	205	305
8	295	285	350	470	625	1400	545	370	265	245	190	310
9	295	275	345	470	545	1180	505	370	290	225	205	310
10	295	270	350	470	505	1130	435	400	290	190	245	315
11	300	275	350	545	505	1290	340	400	265	175	270	310
12	300	280	340	585	705	1920	315	370	290	175	270	300
13	295	280	340	545	1240	2640	315	315	315	175	270	305
14	290	285	340	585	1920	2780	290	290	290	205	290	300
15	290	285	340	585	2640	2380	265	290	315	205	310	295
16	290	290	400	625	3280	1860	245	290	340	225	335	285
17	290	290	470	705	3350	1680	245	290	370	225	360	290
18	290	295	470	885	3790	1800	225	290	370	245	385	290
19	295	295	470	840	3790	2180	190	265	370	245	410	295
20	295	300	470	1030	3140	2720	175	265	340	245	435	295
21	285	300	400	1130	2310	3060	175	245	340	225	435	300
22	285	300	370	1130	1740	3140	190	225	315	225	435	300
23	285	310	400	1290	1340	2920	245	205	245	205	475	300
24	285	300	470	1290	1240	2720	175	205	205	205	470	305
25	280	315	505	1240	1240	2580	175	190	175	245	440	305
26	275	315	470	1180	1460	2240	225	175	175	245	400	305
27	275	315	470	1180	1680	1860	315	175	165	265	385	305
28	275	300	470	1400	1400	1680	1740	175	340	265	385	310
29	285	.....	505	1620	1180	1510	2780	190	470	265	325	310
30	285	.....	505	1920	1130	1290	2500	205	400	290	325	310
31	275	.....	470	.....	1290	.....	1980	225	.....	290	.....	310
Total	9050	8050	12370	24700	51570	62960	20025	13140	8415	7885	9810	9535
Mean	292	288	399	823	1660	2100	646	424	280	254	327	308
Max.	315	315	505	1920	3790	3140	2780	1680	470	400	475	360
Min.	275	260	325	370	505	1130	175	175	165	175	190	285
Acre-ft.	18000	16000	24500	49000	102000	125000	39700	26100	16700	15600	19500	18900

Note.—Discharge estimated, Jan. 1 to March 14; Nov. 11 to Dec. 31.

Discharge of Rio Grande near Lobatos for 1916.

Drainage Area, 7,700 Square Miles. Altitude, 7,440 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	315	610	505	810	2500	1380	765	320	465	250	1540	.....
2	315	400	545	858	2310	1380	765	810	465	220	1480	.....
3	315	400	505	765	1940	1270	720	1480	465	190	1480	.....
4	315	400	505	720	1600	1270	675	1940	428	190	1480	.....
5	315	370	505	675	1480	1600	630	2120	390	190	1480	.....
6	315	370	505	720	1770	1880	630	2060	390	190	1380	.....
7	320	370	505	630	2380	1710	505	2000	390	190	1320	.....
8	320	385	465	505	3250	1600	390	2120	390	160	1220	.....
9	320	385	465	505	4120	1600	320	2310	390	675	1220	.....
10	320	390	465	465	4820	1770	250	2060	390	858	1160	.....
11	320	395	505	428	5480	2190	355	1880	390	1710	1160	.....
12	320	395	545	465	5910	2560	675	1770	630	2190	1220	.....
13	325	395	588	505	5480	2760	905	1540	720	2630	1160	.....
14	325	395	675	588	5160	2700	905	1480	675	2900	1110	.....
15	325	400	720	545	4740	2630	905	1660	630	2830	1060	.....
16	325	400	765	630	3740	2500	955	1770	545	2700	955	.....
17	330	400	720	675	2830	2500	955	1660	465	2380	905	.....
18	330	400	765	675	2380	2560	1060	1660	465	2250	905	.....
19	330	400	810	720	2120	2700	1000	1480	428	2190	955	.....
20	330	405	905	905	2000	2760	765	1320	428	2190	1000	.....
21	340	405	1000	858	2060	2700	630	1220	428	2060	1000	.....
22	344	710	1160	765	1770	2500	630	1110	390	2060	1000	.....
23	350	700	1320	675	1600	2250	545	1000	390	2000	955	.....
24	350	690	1270	810	1480	1940	505	905	355	1940	858	.....
25	350	545	1220	1060	1380	1600	428	810	320	1940	858	.....
26	350	545	1220	1380	1430	1380	390	765	320	1880	858	.....
27	360	505	1160	1710	1430	1160	390	630	320	1770	858	.....
28	640	545	1060	1710	1320	1060	355	588	285	1770	810	.....
29	640	505	1060	2000	1270	955	355	545	250	1710	810	.....
30	620	.....	858	2190	1320	858	320	545	250	1660	810	.....
31	620	.....	810	.....	1320	.....	320	465	.....	1540	.....	.....
Total	11394	13215	24106	25947	82390	57723	18998	42023	12847	47413	33007	.....
Mean	368	456	778	865	2660	1920	613	1360	428	1530	1100	.....
Max.	640	710	1320	2190	5910	2760	1060	2310	720	2900	1540	.....
Min.	315	370	465	428	1270	858	250	320	250	160	810	.....
Acre-ft.	22600	26200	47800	51500	164000	114000	37700	83600	25500	94100	65500	.....

Unless otherwise noted, all discharges are in cubic feet per second.
Discharge estimated, Jan. 1 to Feb. 24.

Discharge of South Fork Rio Grande at South Fork for 1915.
Drainage Area, 216 Square Miles. Altitude, 8,176 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	20	65	65	110	353	940	510	259	34	121	28	50
2	20	70	75	133	277	1090	439	226	28	110	28	50
3	25	50	65	145	242	1010	417	197	41	100	34	45
4	40	55	45	157	226	765	417	183	64	90	34	45
5	40	30	50	183	211	675	439	170	81	81	34	45
6	50	30	55	157	197	646	417	157	72	72	34	45
7	30	40	60	133	183	618	353	157	56	64	56	45
8	20	45	70	133	183	646	314	170	56	64	41	45
9	35	65	70	157	170	870	295	133	48	48	41	40
10	50	95	75	133	170	1090	277	110	48	41	48	40
11	25	95	65	183	259	1260	259	100	41	41	28	40
12	35	65	70	211	374	1210	259	100	41	48	41	40
13	40	80	80	211	535	1050	259	90	48	56	42	40
14	25	60	80	226	590	975	226	100	64	56	43	40
15	35	65	90	226	618	975	197	121	56	56	44	35
16	30	65	80	183	705	1010	170	110	72	64	45	35
17	20	70	100	183	765	1210	157	90	64	64	46	35
18	25	70	65	183	765	1260	133	81	48	56	48	35
19	30	60	60	183	590	1340	121	72	64	48	49	35
20	40	60	70	211	510	1340	133	72	48	48	51	35
21	40	60	95	226	462	1210	157	64	48	48	52	35
22	35	45	105	211	462	1090	133	72	34	48	53	35
23	20	50	90	170	485	1010	133	72	34	48	54	40
24	20	40	90	157	590	905	145	81	34	48	55	40
25	20	55	110	157	646	835	145	81	133	41	55	40
26	25	70	100	183	562	765	353	81	170	34	55	40
27	25	60	105	259	510	705	835	64	110	34	50	40
28	40	50	105	314	485	646	535	72	100	34	50	40
29	45	.....	105	395	562	590	395	56	90	34	50	40
30	55	.....	110	417	618	535	333	48	121	34	50	40
31	70	.....	110	.....	735	.....	277	34	.....	34	.....	40
Total	1030	1665	2515	5930	14040	28271	9233	3423	1948	1765	1339	1250
Mean	33.2	59.5	81.1	198	453	942	298	110	64.9	56.9	44.6	40.3
Max.	70	95	110	417	765	1340	835	259	170	121	56	50
Min.	20	30	45	110	170	535	121	34	28	34	28	35
Acre-ft.	2040	3300	4990	11800	27900	56100	18300	6760	3860	3500	2650	2480

Note.—Disch. est. Jan. 1st-Mch. 29; ....ov. 13-Dec. 31.

Discharge of South Fork Rio Grande at South Fork for 1916.
Drainage Area, 216 Square Miles. Altitude, 8,176 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	45	53	55	175	515	1080	824	326	104	94	161	.....
2	45	53	55	175	462	1080	790	326	94	148	148	.....
3	45	53	55	160	390	1080	692	306	85	136	148	.....
4	45	53	55	150	413	1290	692	306	94	114	148	.....
5	45	53	55	150	515	1120	660	287	85	104	136	.....
6	47	53	60	150	692	1240	600	268	161	218	136	.....
7	47	53	70	150	968	1240	515	306	125	347	136	.....
8	47	54	85	175	1080	1240	515	268	104	488	125	.....
9	47	54	100	200	1240	1330	600	251	234	542	125	.....
10	47	54	100	225	1380	1460	571	218	390	600	.....	.....
11	50	54	110	250	1380	1420	515	203	306	824	.....	.....
12	50	54	140	268	1240	1460	462	188	268	660	.....	.....
13	50	54	125	268	1200	1420	437	174	218	488	.....	.....
14	50	54	125	234	1000	1600	413	234	188	437	.....	.....
15	50	54	130	218	859	1920	390	234	174	390	.....	.....
16	50	55	140	218	724	1740	542	234	161	347	.....	.....
17	52	55	140	287	692	1460	413	203	148	326	.....	.....
18	52	55	140	326	660	1330	462	188	136	326	.....	.....
19	52	55	150	306	724	1420	368	161	125	306	.....	.....
20	52	55	160	251	824	1380	347	161	114	268	.....	.....
21	52	54	175	234	724	1080	306	161	114	251	.....	.....
22	52	54	200	326	724	1080	287	148	104	234	.....	.....
23	52	54	200	437	692	1080	251	161	104	218	.....	.....
24	52	54	175	515	790	968	234	161	85	218	.....	.....
25	52	52	175	542	895	931	234	148	85	203	.....	.....
26	52	52	200	571	931	895	306	148	85	188	.....	.....
27	52	50	175	571	968	859	251	136	85	203	.....	.....
28	52	50	175	600	968	859	234	114	85	188	.....	.....
29	52	50	150	692	895	859	218	114	85	188	.....	.....
30	52	.....	150	692	1080	895	218	125	85	174	.....	.....
31	52	.....	150	.....	1160	.....	306	125	.....	161	.....	.....
Total	1540	1548	3975	9516	26785	36816	13653	6383	4331	9389	.....	.....
Mean	59.7	53.4	128	317	864	1230	440	206	144	303	.....	.....
Max.	52	55	200	692	1380	1920	824	326	390	824	.....	.....
Min.	45	50	55	150	390	859	218	114	85	94	.....	.....
Acre-ft.	3060	3070	7870	18900	53100	73200	27100	12700	8570	18600	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.
Discharge estimated, Jan. 1 to April 11.

SAGUACHE CREEK NEAR SAGUACHE.

Location.—At Ward's Ranch below the dam site of the Stark-Hagadorn Irrigation Co., 9 miles above Saguache. Ford Creek, the nearest important tributary, enters some distance below.

Records Available.—August 7, 1910, to September 30, 1912; June 1 to November 30, 1916.

Drainage Area.—595 square miles.

Gage.—An automatic recording gage.

Channel.—Shifting.

Discharge Measurements.—Made from footbridge during high water, and by wading at ordinary stages.

Winter Flow.—Ice causes backwater during the winter months.

Diversions.—There are court decrees for diversions of 46 second-feet from Saguache Creek above the station, and 365 second-feet below.

ALAMOSA RIVER ABOVE TERRACE RESERVOIR.

Location.—Four miles above Terrace Dam in sec. 8, T. 36 N., R. 6 E., of New Mexico meridian.

Records Available.—April 25, 1914, to November 12, 1916. For records of flow of Alamosa River prior to April 25, 1914, see station below reservoir.

Gage.—Vertical staff bolted to cribbing support for cable. Datum has remained unchanged. Bristol recording gage installed May 7, 1915. Referred to staff gage.

Channel.—Shifts during high water.

Discharge Measurements.—Made from cable and car at high stages and by wading at low stages.

Winter Flow.—Affected by ice and station discontinued during the winter months.

Diversions.—There are no decreed diversions above this station.

Accuracy.—Although the channel shifts somewhat, enough measurements have been obtained to make the estimates of discharge reliable.

Co-operation.—Station maintained in co-operation with the Terrace Irrigation District.

Discharge of Saguache Creek near Saguache for 1915.
Drainage Area, 595 Square Miles. Altitude, 7,800 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	20	25	29	53	224	295	101	80	43	55	38	35
2	20	25	29	70	146	339	94	74	38	49	38	35
3	22	25	29	70	122	361	94	67	43	49	38	35
4	22	25	29	80	122	295	87	61	49	43	38	35
5	22	22	30	60	122	224	94	61	55	43	38	40
6	20	22	30	65	115	215	101	61	55	43	38	45
7	20	25	30	60	108	206	94	74	49	38	49	45
8	22	25	30	53	101	188	87	94	43	38	49	38
9	23	25	35	58	101	215	80	87	38	38	43	36
10	22	26	35	75	101	263	74	74	38	38	43	44
11	22	26	37	75	130	306	74	61	38	38	28	35
12	22	26	30	80	224	361	80	61	38	43	23	35
13	22	26	35	94	306	350	94	61	38	43	19	38
14	22	24	45	108	372	243	101	61	43	43	19	40
15	22	24	55	138	372	215	94	61	49	43	28	36
16	22	26	55	108	339	224	80	61	49	43	33	36
17	20	27	42	87	339	233	74	61	49	43	38	25
18	22	27	37	101	328	253	67	55	49	43	43	20
19	23	27	30	108	328	243	67	49	49	43	49	20
20	23	27	30	130	295	263	67	49	43	43	43	25
21	23	28	40	197	233	233	74	49	43	38	43	30
22	23	28	55	188	197	224	74	49	38	38	43	30
23	20	28	65	154	197	215	80	49	55	38	43	30
24	20	28	55	122	224	197	80	49	94	38	40	30
25	20	28	55	115	273	179	87	61	94	38	35	25
26	20	28	68	115	284	162	115	49	87	38	30	30
27	23	29	58	170	243	154	179	49	67	38	35	25
28	24	29	62	233	206	138	162	43	55	38	30	20
29	24	.....	58	273	233	130	130	43	49	38	25	22
30	24	.....	55	328	253	115	101	43	55	38	30	25
31	24	.....	55	.....	253	.....	87	43	.....	38	.....	28
Total..	678	731	1328	3568	6891	7039	2873	1840	1533	1277	1089	993
Mean.....	21.9	26.1	42.8	119	222	235	92.7	59.4	51.1	41.2	36.3	32
Max.....	24	29	68	328	372	361	179	94	94	55	49	45
Min.....	20	22	29	53	101	115	67	43	38	38	19	20
Acre-ft..	1350	1450	2630	7080	13600	14000	5700	3650	3040	2530	2160	1970

Note.—Disch. est., Jan. 1st to Apr. 12; Nov. 21 to Dec. 31.

Discharge of Saguache Creek near Saguache for 1916.
Drainage Area, 595 Square Miles. Altitude, 7,800 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	28	28	40	47	110	208	124	226	89	58	58	.....
2	28	30	40	42	110	199	131	235	82	58	58	.....
3	28	30	43	42	89	199	117	245	82	58	58	.....
4	28	30	43	47	82	217	110	190	82	58	58	.....
5	30	33	45	47	89	226	103	172	76	58	58	.....
6	28	33	45	42	117	199	103	190	82	58	52	.....
7	28	33	45	37	155	199	96	235	82	70	47	.....
8	28	35	45	42	190	199	96	245	76	70	47	.....
9	28	35	48	42	235	208	110	217	76	70	42	.....
10	28	35	50	47	275	226	163	208	82	70	52	.....
11	26	35	50	52	275	235	147	181	82	76	52	.....
12	26	35	50	52	275	235	117	181	89	82	52	.....
13	26	35	50	52	265	226	110	199	82	70	42	.....
14	26	35	50	52	255	226	103	208	76	70	37	.....
15	26	35	50	52	226	217	89	181	70	76	28	.....
16	25	38	50	52	199	208	96	181	70	70	32	.....
17	25	38	55	52	190	217	96	172	64	64	37	.....
18	25	38	55	58	181	217	96	155	64	64	47	.....
19	25	38	60	58	172	217	89	147	64	70	47	.....
20	25	38	60	52	199	199	89	124	58	64	47	.....
21	25	40	65	52	199	190	89	117	58	64	52	.....
22	25	40	65	52	181	181	89	110	58	70	47	.....
23	25	40	60	58	181	163	89	110	58	70	42	.....
24	25	41	55	64	172	163	82	103	58	70	42	.....
25	25	41	50	70	155	147	76	103	58	64	42	.....
26	27	41	52	76	163	147	82	96	58	64	47	.....
27	27	41	47	82	172	139	89	96	58	64	47	.....
28	27	41	52	89	181	139	89	89	58	64	47	.....
29	27	40	47	103	190	131	103	89	58	64	47	.....
30	27	.....	47	117	190	124	155	89	58	58	42	.....
31	27	.....	42	.....	199	.....	199	89	.....	58	.....	.....
Total	824	1052	1556	1730	5672	5801	3327	4983	2108	2044	1406	.....
Mean....	26.6	36.3	50.2	57.7	183	193	107	161	70.3	65.9	46.9	.....
Max.....	30	41	65	117	275	235	199	245	89	82	58	.....
Min.	25	28	40	37	82	124	76	89	58	58	28	.....
Acre-ft.	1640	2090	3090	3430	11300	11500	6580	9900	4180	4050	2790	.....

Unless otherwise noted, all discharges are in cubic feet per second.
Discharge estimated, Jan. 1 to March 25.

Discharge of Alamosa River above Terrace Reservoir for 1915.
Drainage Area, 102 Square Miles. Altitude, 8,600 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	54	153	562	370	137	44	72	.....	.....
2	.....	.....	.....	54	125	646	324	122	44	72	.....	.....
3	.....	.....	.....	54	111	507	324	108	44	62	.....	.....
4	.....	.....	.....	65	139	380	324	108	44	44	.....	.....
5	.....	.....	.....	54	153	335	347	108	53	44	.....	.....
6	.....	.....	.....	54	111	293	324	108	44	44	.....	.....
7	.....	.....	.....	54	125	314	280	137	44	36	.....	.....
8	.....	.....	.....	54	98	405	260	137	36	36	.....	.....
9	.....	.....	.....	54	111	562	240	108	36	36	.....	.....
10	.....	.....	.....	87	125	731	240	95	36	36	.....	.....
11	.....	.....	.....	54	183	853	240	83	29	29	.....	.....
12	.....	.....	.....	76	273	791	260	83	29	29	.....	.....
13	.....	.....	.....	87	380	646	240	83	36	29	.....	.....
14	.....	.....	.....	76	480	618	222	72	44	29	.....	.....
15	.....	.....	.....	87	455	646	204	83	44	29	.....	.....
16	.....	.....	.....	87	535	674	187	72	44	29	.....	.....
17	.....	.....	.....	76	562	760	153	62	36	29	.....	.....
18	.....	.....	.....	76	480	731	137	62	36	29	.....	.....
19	.....	.....	.....	87	380	853	122	53	44	22	.....	.....
20	.....	.....	.....	87	314	735	137	53	36	22	.....	.....
21	.....	.....	.....	125	273	665	122	53	36	22	.....	.....
22	.....	.....	.....	125	253	700	122	44	29	22	.....	.....
23	.....	.....	.....	125	293	700	122	44	29	22	.....	.....
24	.....	.....	.....	125	357	597	122	62	29	22	.....	.....
25	.....	.....	.....	125	380	597	108	53	53	16	.....	.....
26	.....	.....	.....	153	335	533	260	62	72	16	.....	.....
27	.....	.....	.....	168	293	502	597	62	53	16	.....	.....
28	.....	.....	.....	199	293	445	324	53	53	16	.....	.....
29	.....	.....	.....	253	335	418	240	53	53	16	.....	.....
30	.....	.....	.....	273	335	394	204	53	62	16	.....	.....
31	.....	.....	.....	.....	455	.....	170	44	.....	16	.....	.....
Total	.....	.....	.....	3048	8895	17593	7326	2457	1272	958	.....	.....
Mean	.....	.....	.....	102	287	586	236	79.3	42.4	30.9	.....	.....
Max.	.....	.....	.....	273	562	853	597	137	72	72	.....	.....
Min.	.....	.....	.....	54	98	293	108	44	29	16	.....	.....
Acre-ft.	.....	.....	.....	6070	17600	34900	14500	4880	2520	1900	.....	.....

Estimated April 1 and 2 and October 31.

Discharge of Alamosa River above Terrace Reservoir for 1916.
Drainage Area, 102 Square Miles. Altitude, 8,600 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	75	222	655	346	274	62	33	62	.....
2	.....	.....	.....	75	200	680	346	274	62	52	62	.....
3	.....	.....	.....	75	178	668	321	274	52	52	62	.....
4	.....	.....	.....	75	178	655	296	233	62	33	62	.....
5	.....	.....	.....	75	295	605	274	196	52	33	62	.....
6	.....	.....	.....	75	435	630	252	196	105	82	42	.....
7	.....	.....	.....	63	500	645	233	214	62	93	52	.....
8	.....	.....	.....	63	570	675	214	214	52	148	42	.....
9	.....	.....	.....	75	645	717	252	214	133	133	42	.....
10	.....	.....	.....	75	725	805	233	196	163	105	42	.....
11	.....	.....	.....	120	810	805	214	178	133	214	42	.....
12	.....	.....	.....	120	767	850	214	148	105	178	33	.....
13	.....	.....	.....	120	725	760	214	178	93	148	.....	.....
14	.....	.....	.....	103	607	760	214	163	82	133	.....	.....
15	.....	.....	.....	103	500	717	178	178	72	118	.....	.....
16	.....	.....	.....	103	435	675	274	178	72	105	.....	.....
17	.....	.....	.....	120	435	596	214	148	62	105	.....	.....
18	.....	.....	.....	120	405	635	233	133	62	118	.....	.....
19	.....	.....	.....	158	467	675	196	118	52	105	.....	.....
20	.....	.....	.....	120	535	635	196	105	52	93	.....	.....
21	.....	.....	.....	138	570	524	178	105	52	82	.....	.....
22	.....	.....	.....	158	645	492	163	93	42	82	.....	.....
23	.....	.....	.....	200	500	430	178	118	42	82	.....	.....
24	.....	.....	.....	222	535	400	196	93	42	82	.....	.....
25	.....	.....	.....	246	607	346	178	93	33	72	.....	.....
26	.....	.....	.....	270	607	373	196	82	33	72	.....	.....
27	.....	.....	.....	270	607	373	163	82	24	82	.....	.....
28	.....	.....	.....	295	607	373	148	72	24	72	.....	.....
29	.....	.....	.....	347	645	373	148	82	24	72	.....	.....
30	.....	.....	.....	295	718	346	163	93	24	62	.....	.....
31	.....	.....	.....	.....	710	.....	196	82	.....	62	.....	.....
Total	.....	.....	.....	4354	16385	17873	6821	4807	1930	2903	.....	.....
Mean	.....	.....	.....	145	529	596	220	155	64.3	93.6	.....	.....
Max.	.....	.....	.....	347	810	830	346	274	163	214	.....	.....
Min.	.....	.....	.....	63	178	346	148	72	24	33	.....	.....
Acre-ft.	.....	.....	.....	8630	32500	35500	13500	9530	3830	5760	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.
Discharge estimated, April 1-2, May 7-10, inclusive.

ALAMOSA RIVER BELOW TERRACE RESERVOIR.

Location.—One-fourth mile below Terrace Dam in sec. 23, T. 36 N., R. 6 E., of New Mexico meridian.

Records Available.—April 18, 1909, to December 10, 1915; May 19, 1914, to November, 1916.

Gage.—Vertical staff gage bolted to left cliff at station. Gage location has been changed several times since station was established. Bristol gage installed May 7, 1915, referred to staff gage.

Channel.—Shifts during high water.

Discharge Measurements.—Made from cable at high stages and by wading at low stages.

Winter Flow.—Ice causes backwater effect and station is discontinued during the winter months.

Diversions.—There are no decreed diversions above this station.

Accuracy.—Although channel shifts somewhat, enough measurements have been made to make the estimates of discharge reliable.

Co-operation.—Station maintained in co-operation with the Terrace Irrigation District.

LA JARA CREEK NEAR CAPULIN.

Location.—In sec. 29, T. 34 N., R. 7 E., 13 miles above Capulin.

Records Available.—April 1 to October 31, 1916.

Drainage Area.—73 square miles.

Gage.—Bristol automatic.

Channel.—Fairly permanent.

Discharge Measurements.—By wading 25 to 40 feet below gage, except at extreme high water when measurements are made from highway bridge, 1½ miles below. Two small ditches of not to exceed 6 cubic feet per second capacity divert water between gage and bridge.

Diversions.—Station is above all decreed ditches.

Regulation.—Flow is regulated to some extent by the La Jara reservoir.

Co-operation.—Station maintained in co-operation with the Terrace Irrigation District.

Discharge of Alamosa River at Weir, below Terrace Reservoir, for 1915.
Drainage Area, 120 Square Miles. Altitude, ... Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	E.15	57	489	615	92	53	53	.....	.....
2	.....	.....	.....	E.15	57	562	615	112	60	60	.....	.....
3	.....	.....	.....	15	57	598	562	112	60	60	.....	.....
4	.....	.....	.....	19	106	489	512	102	60	53	.....	.....
5	.....	.....	.....	19	106	327	512	92	60	41	.....	.....
6	.....	.....	.....	19	106	327	562	92	67	41	.....	.....
7	.....	.....	.....	23	97	365	588	112	60	41	.....	.....
8	.....	.....	.....	23	97	405	489	123	60	41	.....	.....
9	.....	.....	.....	19	97	425	467	112	53	35	.....	.....
10	.....	.....	.....	19	115	512	345	123	53	35	.....	.....
11	.....	.....	.....	19	135	797	248	145	53	35	.....	.....
12	.....	.....	.....	23	135	865	327	134	47	35	.....	.....
13	.....	.....	.....	32	146	797	345	134	67	30	.....	.....
14	.....	.....	.....	44	168	700	365	134	83	30	.....	.....
15	.....	.....	.....	44	181	615	310	134	60	30	.....	.....
16	.....	.....	.....	38	194	670	262	134	35	30	.....	.....
17	.....	.....	.....	44	293	763	202	123	41	30	.....	.....
18	.....	.....	.....	44	467	831	175	102	41	30	.....	.....
19	.....	.....	.....	E.44	512	935	146	83	41	26	.....	.....
20	.....	.....	.....	44	467	935	140	83	41	26	.....	.....
21	.....	.....	.....	57	365	831	134	67	47	26	.....	.....
22	.....	.....	.....	57	310	797	123	53	47	26	.....	.....
23	.....	.....	.....	72	310	797	145	53	60	26	.....	.....
24	.....	.....	.....	72	345	797	145	53	35	26	.....	.....
25	.....	.....	.....	64	365	763	123	53	35	26	.....	.....
26	.....	.....	.....	57	365	700	83	60	35	26	.....	.....
27	.....	.....	.....	57	365	670	47	60	35	26	.....	.....
28	.....	.....	.....	57	365	730	67	47	35	35	.....	.....
29	.....	.....	.....	57	385	730	83	47	35	53	.....	.....
30	.....	.....	.....	57	385	670	92	47	41	E.53	.....	.....
31	.....	.....	.....	.....	425	.....	92	60	.....	E.53	.....	.....
Total	.....	.....	.....	1169	7578	19882	8921	2878	1500	1138	.....	.....
Mean	.....	.....	.....	39	244	663	288	92.8	50	36.7	.....	.....
Max.	.....	.....	.....	72	512	935	615	145	83	60	.....	.....
Min.	.....	.....	.....	15	57	327	47	47	35	26	.....	.....
Acre-ft.	.....	.....	.....	2320	15000	39500	17700	5710	2980	2260	.....	.....

Note—E. discharge estimated.

Discharge of La Jara Creek near Capulin for 1916.
Drainage Area, 73 Square Miles. Altitude, 8,800 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	16	123	62	75	31	13	8	.....	.....
2	.....	.....	.....	16	96	57	75	39	13	8	.....	.....
3	.....	.....	.....	18	81	52	81	35	13	8	.....	.....
4	.....	.....	.....	18	88	52	81	27	13	8	.....	.....
5	.....	.....	.....	18	133	52	81	21	13	8	.....	.....
6	.....	.....	.....	21	180	47	81	21	13	13	.....	.....
7	.....	.....	.....	21	221	81	81	21	13	11	.....	.....
8	.....	.....	.....	21	235	88	81	21	13	13	.....	.....
9	.....	.....	.....	24	235	88	81	21	16	16	.....	.....
10	.....	.....	.....	31	207	88	81	21	16	18	.....	.....
11	.....	.....	.....	43	180	88	81	18	13	31	.....	.....
12	.....	.....	.....	39	144	88	81	21	13	24	.....	.....
13	.....	.....	.....	39	133	81	81	21	11	13	.....	.....
14	.....	.....	.....	35	114	81	52	24	8	18	.....	.....
15	.....	.....	.....	31	96	81	57	24	8	11	.....	.....
16	.....	.....	.....	35	88	81	57	24	8	8	.....	.....
17	.....	.....	.....	75	88	81	57	21	8	8	.....	.....
18	.....	.....	.....	81	75	81	57	18	8	8	.....	.....
19	.....	.....	.....	62	75	39	57	16	8	8	.....	.....
20	.....	.....	.....	52	88	27	57	16	8	8	.....	.....
21	.....	.....	.....	52	68	24	57	16	8	8	.....	.....
22	.....	.....	.....	68	68	39	57	18	8	6	.....	.....
23	.....	.....	.....	81	68	39	57	18	8	6	.....	.....
24	.....	.....	.....	105	62	39	57	18	8	11	.....	.....
25	.....	.....	.....	123	81	39	57	18	8	8	.....	.....
26	.....	.....	.....	133	88	31	57	18	8	8	.....	.....
27	.....	.....	.....	123	88	31	57	18	8	8	.....	.....
28	.....	.....	.....	144	88	24	35	18	8	8	.....	.....
29	.....	.....	.....	168	81	24	31	18	8	8	.....	.....
30	.....	.....	.....	168	75	62	31	18	8	6	.....	.....
31	.....	.....	.....	.....	68	.....	31	16	.....	6	.....	.....
Total	.....	.....	.....	1861	3515	1747	1962	655	309	331	.....	.....
Mean	.....	.....	.....	62.0	113	58.2	63.3	21.1	10.3	10.7	.....	.....
Max.	.....	.....	.....	168	235	88	81	39	16	31	.....	.....
Min.	.....	.....	.....	16	62	24	31	16	8	6	.....	.....
Acre.-ft.	.....	.....	.....	3690	6950	3460	3890	1300	613	658	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.
Discharge estimated April 1-8, October 18-20.

CONEJOS RIVER NEAR MOGOTE.

Location.—At highway bridge near Mogote. From September 1, 1899, to March 31, 1900, and from April 17, 1903, to October 31, 1905, a station was maintained about 4 miles above Mogote. From March 21, 1907, to October 5, 1911, a station was maintained at Jacobs' Ranch, 8 miles above Mogote.

Records Available.—January 1, 1912, to November 30, 1916.

Drainage Area.—282 square miles.

Gage.—An automatic recording gage.

Channel.—Apparently permanent at present location.

Discharge Measurements.—Made from bridge.

Winter Flow.—Ice causes backwater during the winter months.

Diversions.—There are court decrees for diversion of 3,476 second-feet from Conejos River, all but 66 second-feet being diverted below the present station.

Reservoirs.—No reservoirs have been constructed on the Conejos above this station.

LOS PINOS CREEK NEAR ORTIZ, COLO.

Location.—At a small semi-circular flume supported by cables, 2½ miles above Ortiz, Colorado.

Records Available.—January 1, 1914, to October 31, 1916.

Drainage Area.—167 square miles.

Gage.—Bristol automatic.

Channel.—Slightly shifting.

Discharge Measurements.—Made by wading, except during high water, when they are made from flume.

Diversions.—One small ditch diverts water above the station.

Discharge of Conejos River near Mogote for 1915.
Drainage Area, 282 Square Miles. Altitude, 8,300 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	35	50	50	90	610	1480	1220	390	115	115	62	50
2	35	55	50	106	466	1820	945	345	115	106	56	50
3	37	50	50	147	390	1540	1040	325	106	106	56	50
4	37	50	45	160	345	1120	990	286	115	98	56	50
5	38	50	45	188	345	865	1040	251	125	90	56	50
6	36	50	45	174	305	787	990	235	136	90	56	45
7	32	50	50	160	286	787	865	251	115	90	62	45
8	36	50	50	160	268	905	787	367	98	90	62	45
9	36	55	50	147	268	1180	713	305	98	90	62	45
10	36	60	50	147	325	1420	713	268	90	90	62	45
11	33	60	50	174	492	1820	713	268	82	90	50	40
12	34	55	50	235	713	1940	713	251	82	82	45	40
13	37	55	55	268	990	1700	713	235	82	82	62	40
14	37	50	60	305	1220	1480	578	188	98	82	62	40
15	37	50	60	305	1120	1540	610	188	90	82	62	40
16	37	50	65	268	1220	1640	578	188	90	82	66	38
17	35	55	60	235	1320	1940	492	174	82	82	62	38
18	38	55	65	235	1320	2000	440	160	82	82	62	36
19	38	50	55	235	990	2430	367	147	82	82	66	36
20	40	50	55	286	750	2000	367	147	75	75	66	35
21	40	50	55	390	643	1880	345	136	75	75	66	38
22	38	45	65	390	578	1940	345	136	68	75	66	36
23	32	45	65	390	677	1940	325	125	75	68	65	40
24	32	45	68	367	865	1820	305	136	75	68	65	36
25	35	45	80	390	945	1640	325	125	90	68	60	36
26	40	50	80	466	825	1700	578	160	188	68	60	38
27	40	45	70	610	713	1420	1640	160	136	68	60	35
28	45	45	85	750	905	1380	1180	136	115	62	55	30
29	45	.....	90	787	905	1380	713	136	106	62	55	30
30	45	.....	80	750	990	1280	578	136	115	62	55	35
31	50	.....	85	.....	1120	.....	492	125	.....	62	.....	35
Total	1166	1420	1883	9315	22909	46774	21700	6480	3001	2524	1800	1247
Mean	37.6	50.7	60.7	310	739	1560	700	209	100	81.4	60	40.2
Max.	50	60	90	787	1320	2430	1640	390	188	115	66	50
Min.	32	45	45	90	268	787	305	125	68	62	45	35
Acre-ft.	2310	2820	3730	18400	45400	92800	43000	12900	5950	5000	3570	2470

Note.—Discharge estimated, Jan. 1 to March 24; Nov. 12 to Dec. 31.

Discharge of Conejos River near Mogote for 1916.
Drainage Area, 282 Square Miles. Altitude, 8,300 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	35	45	57	105	830	1700	1360	610	152	91	198	.....
2	35	45	60	110	680	1760	1260	680	152	139	198	.....
3	35	45	60	115	645	1760	1160	754	139	139	198	.....
4	35	48	60	102	645	1950	1120	645	126	114	198	.....
5	35	48	65	114	949	1880	1080	577	126	102	182	.....
6	36	48	70	102	1360	2080	949	577	152	152	167	.....
7	36	48	70	91	1820	2020	908	545	167	215	152	.....
8	36	50	70	102	1950	2300	949	515	139	458	152	.....
9	36	50	75	152	2300	2300	949	458	250	545	139	.....
10	36	50	75	198	2380	2460	949	486	515	545	152	.....
11	37	50	80	250	2300	2960	908	430	357	792	152	.....
12	37	50	90	232	1760	2700	908	380	334	717	139	.....
13	37	50	80	250	1760	2540	908	430	290	545	102	.....
14	37	50	80	167	1640	2540	869	458	250	577	102	.....
15	37	50	85	290	1410	2540	754	458	232	486	102	.....
16	38	50	85	290	1260	2380	990	430	215	430	102	.....
17	38	55	85	380	1310	2300	830	405	198	405	102	.....
18	38	55	90	430	1210	2380	792	334	182	380	102	.....
19	38	55	90	458	1360	2540	680	290	182	357	102	.....
20	38	55	90	380	1520	2540	610	270	152	312	102	.....
21	39	55	100	380	1210	2460	610	270	139	290	102	.....
22	39	55	110	380	1210	2300	610	250	126	290	100	.....
23	40	55	110	486	1260	2300	610	232	126	270	100	.....
24	40	55	110	515	1360	2020	645	215	126	270	95	.....
25	40	55	105	645	1460	1820	645	215	114	250	95	.....
26	43	55	110	680	1460	1700	610	215	114	250	90	.....
27	43	57	100	680	1520	1640	545	215	102	250	90	.....
28	43	57	100	792	1580	1700	545	198	91	250	85	.....
29	43	57	95	1080	1760	1640	486	182	91	232	85	.....
30	43	.....	95	990	1880	1520	486	182	80	215	80	.....
31	45	.....	95	.....	1820	.....	577	182	.....	198	.....	.....
Total	1188	1498	2637	10951	45609	64730	25302	12088	5419	10266	3765	.....
Mean	38.3	51.7	85.1	365	1470	2160	816	390	181	331	126	.....
Max.	45	57	110	1080	2380	2960	1360	754	515	792	198	.....
Min.	35	45	57	91	645	1520	486	182	80	91	80	.....
Acre-ft.	2360	2970	5230	21700	90400	129000	50200	24000	10800	20400	7500	.....

Unless otherwise noted, all discharges are in cubic feet per second.
Jan. 1 to April 3; Nov. 22-30, discharge estimated.

Discharge of Los Pinos Creek near Ortiz for 1915.
Drainage Area, 167 Square Miles. Altitude, 8,100 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	12	18	18	35	410	829	166	66	23	19	16	.....
2	12	20	18	45	313	888	156	60	23	19	16	.....
3	12	15	18	60	251	649	146	48	23	19	12	.....
4	14	16	18	65	215	517	156	42	27	19	12	.....
5	14	16	18	75	203	487	146	42	37	19	12	.....
6	15	12	20	71	191	487	146	48	23	19	12	.....
7	12	12	20	61	168	502	118	60	19	16	16	.....
8	10	14	20	61	168	564	100	86	16	16	19	.....
9	14	14	20	61	215	598	86	79	16	16	19	.....
10	15	14	20	61	300	632	72	60	16	16	19	.....
11	12	14	20	71	395	666	72	60	16	16	12	.....
12	12	14	20	112	700	598	72	54	16	16	10	.....
13	14	14	20	157	901	517	100	48	16	19	10	.....
14	12	14	25	203	918	444	72	42	16	19	23	.....
15	12	14	25	239	840	430	66	48	16	19	27	.....
16	12	16	25	180	865	444	54	37	19	23	27	.....
17	12	16	25	157	900	458	54	32	19	19	27	.....
18	12	16	25	145	710	487	48	27	19	19	27	.....
19	12	16	20	168	517	532	42	27	19	19	32	.....
20	14	16	20	227	416	487	42	27	19	19	27	.....
21	14	16	20	340	351	430	42	32	19	19	23	.....
22	13	16	25	381	351	416	42	27	19	19	23	.....
23	12	18	25	354	458	403	37	27	19	19	23	.....
24	12	18	25	354	632	377	37	27	19	19	23	.....
25	12	18	30	367	615	338	37	48	19	19	23	.....
26	12	18	30	470	517	312	198	66	19	19	20	.....
27	12	18	30	596	430	274	351	42	19	19	20	.....
28	14	18	35	665	487	238	186	32	19	19	20	.....
29	15	.....	35	665	598	206	127	37	19	19	20	.....
30	16	.....	30	630	632	186	93	27	19	19	20	.....
31	20	.....	35	.....	718	.....	86	23	.....	19	.....	.....
Total	406	441	735	7076	15385	14396	3148	1381	588	575	590	.....
Mean	13.1	15.8	23.7	236	496	480	102	44.5	19.6	18.5	19.7	.....
Max	20	20	35	665	918	888	351	86	37	23	32	.....
Min	10	12	18	35	168	186	37	23	16	16	10	.....
Acre-ft.	806	878	1460	14000	30500	28600	6270	2740	1170	1140	1170	.....

Discharge estimated, January 1st-April 15th; November 23-30.

Discharge of Los Pinos Creek Near Ortiz for 1916.
Drainage Area, 167 Square Miles. Altitude, 8,100 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	75	581	825	288	80	24	20	64	.....
2	.....	.....	.....	75	517	810	264	88	24	44	64	.....
3	.....	.....	.....	80	458	812	252	142	24	28	57	.....
4	.....	.....	.....	80	532	815	228	88	20	24	57	.....
5	.....	.....	.....	85	791	800	216	72	20	20	50	.....
6	.....	.....	.....	85	1130	820	205	80	28	38	50	.....
7	.....	.....	.....	80	1270	785	183	123	28	44	.....	.....
8	.....	.....	.....	85	1380	773	172	96	24	80	.....	.....
9	.....	.....	.....	95	1430	832	172	57	96	162	.....	.....
10	.....	.....	.....	110	1500	852	162	57	114	152	.....	.....
11	.....	.....	.....	110	1320	832	183	50	57	301	.....	.....
12	.....	.....	.....	120	1160	773	152	44	50	264	.....	.....
13	.....	.....	.....	120	1150	773	152	57	38	183	.....	.....
14	.....	.....	.....	125	1070	735	152	64	28	216	.....	.....
15	.....	.....	.....	136	872	698	162	80	28	183	.....	.....
16	.....	.....	.....	146	782	662	216	64	24	152	.....	.....
17	.....	.....	.....	196	805	627	152	50	24	152	.....	.....
18	.....	.....	.....	250	833	610	123	44	24	132	.....	.....
19	.....	.....	.....	250	895	576	96	38	24	114	.....	.....
20	.....	.....	.....	216	880	542	88	38	24	96	.....	.....
21	.....	.....	.....	216	753	510	105	33	20	96	.....	.....
22	.....	.....	.....	250	812	480	88	28	20	88	.....	.....
23	.....	.....	.....	325	860	450	88	28	20	88	.....	.....
24	.....	.....	.....	430	980	422	123	28	20	88	.....	.....
25	.....	.....	.....	548	1050	394	96	28	20	80	.....	.....
26	.....	.....	.....	564	970	366	80	50	18	80	.....	.....
27	.....	.....	.....	548	917	340	72	38	18	88	.....	.....
28	.....	.....	.....	666	920	327	80	33	18	80	.....	.....
29	.....	.....	.....	848	945	314	88	28	18	64	.....	.....
30	.....	.....	.....	754	930	314	96	33	18	64	.....	.....
31	.....	.....	.....	.....	878	.....	105	28	.....	64	.....	.....
Total	.....	.....	.....	7668	29371	18869	4639	1667	913	3285	.....	.....
Mean	.....	.....	.....	256	947	629	150	53.8	30.4	106	.....	.....
Max	.....	.....	.....	848	1500	852	288	142	114	301	.....	.....
Min	.....	.....	.....	75	458	314	72	28	18	20	.....	.....
Acre-ft.	.....	.....	.....	15200	58200	37400	9220	3310	1810	6520	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.
Discharge estimated, April 1-14, June 18-26, July 13-14.

SAN ANTONIO RIVER NEAR ORTIZ.

Location.—One-fourth mile above mouth of Los Pinos Creek.

Records Available.—January 1 to October 30, 1915.

Discharge Measurements.—Made by wading.

Accuracy.—Results are based on discharge measurements and estimates, so can be considered only fair.

UTE CREEK NEAR FORT GARLAND.

This station is located 1 mile northeast of Fort Garland. A 10-foot Cippoletti weir was used to obtain the discharge.

Data furnished by the Trinchera Irrigation District.

SANGRE DE CRISTO CREEK NEAR FORT GARLAND.

This station is located 1 mile east of Fort Garland and 600 feet above the headgate of the Garland canal. A Cippoletti weir was used to obtain the discharge.

Data furnished by the Trinchera Irrigation District.

Discharge of San Antonio River near Ortiz for 1915.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	2	20	80	40	5	15	6	5	.....	.....
2	.....	.....	.....	2	30	75	40	5	15	6	5	.....	.....
3	.....	.....	.....	2	40	70	40	5	10	6	5	.....	.....
4	.....	.....	.....	2	43	69	35	3	10	6	5	.....	.....
5	.....	.....	.....	2	43	65	35	3	10	7	5	.....	.....
6	.....	.....	.....	2	43	60	35	0	12	6	5	.....	.....
7	.....	.....	.....	2	43	55	35	0	12	6	4	.....	.....
8	.....	.....	.....	2	43	55	40	0	15	4	4	.....	.....
9	.....	.....	.....	2	43	60	40	0	12	4	4	.....	.....
10	.....	.....	.....	3	43	70	40	0	10	4	4	.....	.....
11	.....	.....	.....	3	50	75	45	0	10	4	4	.....	.....
12	.....	.....	.....	3	60	100	35	0	8	4	4	.....	.....
13	.....	.....	.....	3	55	150	30	0	8	4	5	.....	.....
14	.....	.....	.....	3	65	150	25	0	8	4	5	.....	.....
15	.....	.....	.....	3	75	125	25	0	8	4	5	.....	.....
16	.....	.....	1	3	60	125	25	2	8	5	6	.....	.....
17	.....	.....	1	4	60	125	20	2	8	5	5	.....	.....
18	.....	.....	1	4	55	100	20	2	8	5	5	.....	.....
19	.....	.....	1	4	65	90	20	2	8	5	5	.....	.....
20	.....	.....	1	4	74	80	20	3	8	5	5	.....	.....
21	.....	.....	1	4	100	70	20	3	8	5	5	.....	.....
22	.....	.....	1	4	125	70	20	3	8	5	5	.....	.....
23	.....	.....	1	4	110	75	15	4	7	5	5	.....	.....
24	.....	.....	1	5	110	80	15	5	7	5	5	.....	.....
25	.....	.....	1	5	115	80	15	5	7	5	5	.....	.....
26	.....	.....	1	5	130	75	10	35	10	5	5	.....	.....
27	.....	.....	1	5	140	60	10	75	8	5	5	.....	.....
28	.....	.....	1	5	150	60	10	30	7	5	5	.....	.....
29	.....	.....	.....	5	150	50	8	25	7	5	5	.....	.....
30	.....	.....	.....	5	150	50	8	20	6	5	5	.....	.....
31	.....	.....	.....	5	.....	50	.....	20	6	.....	5	.....	.....
Total	.....	13	107	2290	2499	776	257	284	150	150	.....	.....
Mean	.....	1	3.5	76.3	80.6	25.0	8.3	9.2	5	4.8	.....	.....
Max.	.....	1	5	150	150	40	75	15	6	6	.....	.....
Min.	.....	1	2	20	50	8	0	6	4	4	.....	.....
Acre-ft.	.....	26	215	4540	4960	1540	510	566	298	295	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Ute Creek near Port Garland for 1916.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	10	38	56	30	36	20	10	.....	.....
2	.....	.....	.....	.....	.....	.....	56	30	36	.....	.....	.....	.....
3	.....	.....	.....	.....	14	36	48	30	34	20	.....	.....	.....
4	.....	.....	.....	.....	15	.....	48	30	32	20	.....	.....	.....
5	.....	.....	.....	.....	14	35	56	28	30	.....	10	.....	.....
6	.....	.....	.....	.....	16	.....	48	26	28	.....	.....	.....	.....
7	.....	.....	.....	.....	.....	.....	48	26	26	.....	.....	.....	.....
8	.....	.....	.....	.....	14	72	48	26	24	20	.....	.....	.....
9	.....	.....	.....	.....	.....	.....	48	26	22	.....	10	.....	.....
10	.....	.....	.....	.....	14	94	.....	32	22	.....	.....	.....	.....
11	.....	.....	.....	.....	.....	96	.....	32	22	.....	.....	.....	.....
12	.....	.....	.....	.....	22	74	66	40	.....	.....	.....	.....	.....
13	.....	.....	.....	.....	.....	72	68	36	22	.....	.....	.....	.....
14	.....	.....	.....	.....	.....	.....	64	.....	20	15	.....	.....	.....
15	.....	.....	.....	.....	.....	62	60	.....	.....	.....	.....	.....	.....
16	.....	.....	.....	.....	.....	54	58	.....	20	.....	.....	.....	.....
17	.....	.....	.....	.....	20	50	50	36	20	.....	.....	.....	.....
18	.....	.....	.....	16	.....	.....	62	40	.....	.....	.....	.....	.....
19	.....	.....	.....	.....	22	42	52	44	20	12	.....	.....	.....
20	.....	.....	.....	14	.....	42	48	40	.....	.....	.....	.....	.....
21	.....	.....	.....	.....	22	.....	40	36	20	.....	.....	.....	.....
22	.....	.....	.....	.....	.....	46	48	36	22	.....	.....	.....	.....
23	.....	.....	.....	.....	.....	.....	.....	36	20	.....	.....	.....	.....
24	.....	.....	.....	.....	30	.....	40	32	.....	.....	.....	.....	.....
25	.....	.....	.....	.....	.....	.....	38	32	20	10	.....	.....	.....
26	.....	.....	.....	11	38	48	38	30	.....	.....	.....	.....	.....
27	.....	.....	.....	.....	.....	48	.....	30	20	.....	.....	.....	.....
28	.....	.....	.....	11	.....	.....	38	28	20	.....	.....	.....	.....
29	.....	.....	.....	11	42	.....	38	26	.....	.....	.....	.....	.....
30	.....	.....	.....	.....	.....	56	36	24	20	10	.....	.....	.....
31	.....	.....	.....	.....	.....	.....	.....	22	20	.....	.....	.....	.....

Discharge of Sangre de Cristo Creek near Port Garland for 1916.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	31	82	48	8	12	4	2	.....	.....
2	.....	.....	.....	.....	.....	82	46	6	12	4	.....	.....	.....
3	.....	.....	.....	.....	27	72	44	6	16	4	.....	.....	.....
4	.....	.....	.....	.....	19	81	40	6	16	4	.....	.....	.....
5	.....	.....	.....	.....	17	95	48	6	12	3	2	.....	.....
6	.....	.....	.....	.....	36	116	42	6	12	.....	.....	.....	.....
7	.....	.....	.....	.....	16	127	40	6	12	.....	.....	.....	.....
8	.....	.....	.....	.....	28	140	38	6	10	.....	.....	.....	.....
9	.....	.....	.....	.....	26	140	34	.....	7	.....	2	.....	.....
10	.....	.....	.....	.....	31	150	30	6	6	3	.....	.....	.....
11	.....	.....	.....	.....	40	160	.....	.....	6	.....	.....	.....	.....
12	.....	.....	.....	.....	48	140	30	22	6	.....	.....	.....	.....
13	.....	.....	.....	.....	44	122	26	16	6	.....	.....	.....	.....
14	.....	.....	.....	.....	42	114	24	.....	6	.....	.....	.....	.....
15	.....	.....	.....	21	.....	102	22	12	6	3	.....	.....	.....
16	.....	.....	.....	.....	.....	99	22	.....	6	.....	.....	.....	.....
17	.....	.....	.....	.....	40	93	22	.....	6	.....	.....	.....	.....
18	.....	.....	.....	.....	58	82	22	18	6	.....	.....	.....	.....
19	.....	.....	.....	.....	64	77	22	12	6	.....	.....	.....	.....
20	.....	.....	.....	.....	48	77	18	12	6	3	.....	.....	.....
21	.....	.....	.....	.....	54	82	18	10	6	.....	.....	.....	.....
22	.....	.....	.....	.....	58	75	15	10	7	.....	.....	.....	.....
23	.....	.....	.....	.....	.....	72	14	10	5	.....	.....	.....	.....
24	.....	.....	.....	.....	70	66	14	10	5	.....	.....	.....	.....
25	.....	.....	.....	.....	76	64	14	10	5	2	.....	.....	.....
26	.....	.....	.....	18	77	62	12	10	5	.....	.....	.....	.....
27	.....	.....	.....	24	72	58	12	10	5	.....	.....	.....	.....
28	.....	.....	.....	26	78	58	10	10	5	.....	.....	.....	.....
29	.....	.....	.....	28	82	56	8	10	5	.....	.....	.....	.....
30	.....	.....	.....	21	88	54	8	10	4	2	.....	.....	.....
31	.....	.....	.....	.....	.....	50	.....	10	4	.....	.....	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

The following data were furnished by B. F. Tipton, Manager of the Baca Grant:

NORTH CRESTONE CREEK.

April 13 to September 18, meter station ½-mile below Crestone.

August 6 to September 6, 3-ft. rectangular weir at same point.

September 6 to end of season, 3-ft. rectangular weir used one mile above Crestone.

SOUTH CRESTONE CREEK.

June 26 to September 2, meter station 1½ miles above Crestone Branch of D. & R. G. Railroad.

September 2 to November 10, weir station at same point.

WILLOW CREEK.

May 22 to August 28, meter station 1½ miles above Crestone Branch of D. & R. G. Railroad.

August 28 to November 10, weir station at same point.

SPANISH CREEK.

June 18 to August 28, meter station ½ mile below Crestone Branch of D. & R. G. Railroad.

August 28 to November 3, weir station at same point.

COTTONWOOD CREEK.

May 11 to July 28, meter station 1 mile below Crestone Branch of D. & R. G. Railroad.

July 28 to August 27, meter station 2 miles below railroad.

August 27 to 30, weir station 2 miles below railroad.

DEADMAN CREEK.

June 25 to September 8, meter station at mouth of canyon, 2 miles below east boundary of Baca Grant.

September 8 to November 3, weir station at same point.

Discharge of North Crestone Creek at Crestone for 1915.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1					17.0							
2					14.0					3.3		
3												
4					8.0							
5						28.0				2.7	2.9	
6							66.0		2.1			
7								16.0	2.2			
8											3.2	
9										2.8		
10												
11										2.8		
12					23.0	101						
13				2.8			29.0					
14					52.0			12.4				
15										2.8		
16										2.7		
17				5.0								
18				5.0						2.8		
19												
20				4.4								
21				5.5								
22				6.7	22.0							
23				6.7					4.5	3.6		
24				6.7								
25										3.3		
26										2.9		
27							211					
28										3.1		
29				14.0	10.0							
30				27.0						3.3		
31							25.0					

Discharge of South Crestone Creek near Crestone for 1915.

Drainage Area, ... Square Miles Altitude, 8,300 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1											0.6	
2								5.9				
3							10.0	6.1	1.9	1.3		
4								5.2			0.6	
5								4.3		1.2		
6							13.0	4.2			0.6	
7							13.0	4.1	2.1	1.1		
8											0.6	
9										1.2		
10								6.0	1.8		0.6	
11								6.0	1.6			
12								5.8		1.1		
13							11.0	6.0	1.6	1.2		
14							10.0	5.5	1.6	0.9		
15									1.6			
16							11.0	4.5	1.5	0.9		
17							10.0	4.5	1.5			
18								4.8	1.4	1.2		
19								4.8				
20							8.5		1.4	0.9		
21								4.8		0.8		
22							8.7		1.3	0.8		
23									1.3			
24							9.4		1.3			
25										0.8		
26						18.0				0.8		
27							114	2.3				
28										0.7		
29							30.0		1.5	0.7		
30						16.0	16.0					
31							7.9					

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Willow Creek at 1.5 Miles Above Crestone Branch D. & R. G. Railroad for 1915.

Altitude, 8,438 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	.....	26.0	.....	4.3	3.0	1.3	.....
2	.....	.....	.....	.....	.....	.....	.....	16.0	4.4	.....	.....	.....
3	.....	.....	.....	.....	.....	.....	27.0	20.0	.....	2.6	.....	.....
4	.....	.....	.....	.....	.....	.....	.....	16.0	5.2	.....	1.2	.....
5	.....	.....	.....	.....	.....	.....	.....	13.0	.....	2.5	.....	.....
6	.....	.....	.....	.....	.....	.....	37.0	12.0	.....	.....	1.2	.....
7	.....	.....	.....	.....	.....	.....	28.0	20.0	4.5	2.2	.....	.....
8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.3	.....
9	.....	.....	.....	.....	.....	.....	.....	.....	3.0	2.3	.....	.....
10	.....	.....	.....	.....	.....	.....	.....	19.0	3.3	.....	1.3	.....
11	.....	.....	.....	.....	.....	.....	.....	18.0	3.2	.....	.....	.....
12	.....	.....	.....	.....	.....	.....	.....	17.0	.....	2.1	.....	.....
13	.....	.....	.....	.....	.....	.....	28.0	20.0	3.1	2.1	.....	.....
14	.....	.....	.....	.....	.....	.....	25.0	14.0	2.9	1.9	.....	.....
15	.....	.....	.....	.....	.....	.....	.....	.....	2.8	.....	.....	.....
16	.....	.....	.....	.....	.....	.....	30.0	17.0	2.8	1.8	.....	.....
17	.....	.....	.....	.....	.....	.....	25.0	15.0	2.7	.....	.....	.....
18	.....	.....	.....	.....	.....	.....	.....	16.0	2.7	1.8	.....	.....
19	.....	.....	.....	.....	.....	.....	.....	17.0	.....	.....	.....	.....
20	.....	.....	.....	.....	.....	.....	29.0	.....	2.7	1.8	.....	.....
21	.....	.....	.....	.....	.....	.....	.....	15.0	2.7	.....	.....	.....
22	.....	.....	.....	.....	.....	2.7	23.0	.....	2.7	1.8	.....	.....
23	.....	.....	.....	.....	.....	.....	.....	15.0	2.7	.....	.....	.....
24	.....	.....	.....	.....	.....	.....	27.0	14.0	2.7	.....	.....	.....
25	.....	.....	.....	.....	.....	.....	.....	.....	2.5	1.6	.....	.....
26	.....	.....	.....	.....	.....	43.0	.....	.....	.....	1.5	.....	.....
27	.....	.....	.....	.....	.....	.....	154	8.5	3.1	.....	.....	.....
28	.....	.....	.....	.....	.....	.....	.....	4.3	3.1	1.5	.....	.....
29	.....	.....	.....	.....	.....	.....	45.0	.....	.....	.....	.....	.....
30	.....	.....	.....	.....	.....	.....	30.0	.....	.....	.....	.....	.....
31	.....	.....	.....	.....	.....	.....	25.0	.....	.....	.....	.....	.....

Discharge of Spanish Creek at 0.5 Mile Below Crestone Branch D. & R. G. Railroad for 1915.

Drainage Area, ... Square Miles. Altitude, 7,900 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	.....	.....	.....	0.6	.....	.....	.....
2	.....	.....	.....	.....	.....	.....	.....	3.4	.....	.....	.....	.....
3	.....	.....	.....	.....	.....	.....	.....	.....	0.8	.....	.....	.....
4	.....	.....	.....	.....	.....	.....	.....	.....	0.7	.....	.....	.....
5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
6	.....	.....	.....	.....	.....	.....	16.0	.....	0.8	0.6	.....	.....
7	.....	.....	.....	.....	.....	.....	.....	.....	0.9	.....	.....	.....
8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
10	.....	.....	.....	.....	.....	.....	.....	.....	0.6	.....	.....	.....
11	.....	.....	.....	.....	.....	.....	.....	3.8	.....	.....	.....	.....
12	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13	.....	.....	.....	.....	.....	.....	7.4	.....	.....	0.5	.....	.....
14	.....	.....	.....	.....	.....	.....	.....	.....	0.6	.....	.....	.....
15	.....	.....	.....	.....	.....	.....	.....	.....	0.5	.....	.....	.....
16	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
17	.....	.....	.....	.....	.....	.....	.....	3.2	.....	.....	.....	.....
18	.....	.....	.....	.....	.....	17.0	.....	.....	.....	.....	.....	.....
19	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
20	.....	.....	.....	.....	.....	.....	10.0	.....	.....	.....	.....	.....
21	.....	.....	.....	.....	.....	.....	.....	.....	0.3	.....	.....	.....
22	.....	.....	.....	.....	.....	.....	.....	.....	0.2	.....	.....	.....
23	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
24	.....	.....	.....	.....	.....	.....	.....	2.5	.....	.....	.....	.....
25	.....	.....	.....	.....	.....	26.0	.....	.....	.....	.....	.....	.....
26	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
27	.....	.....	.....	.....	.....	.....	53.0	.....	.....	0.2	.....	.....
28	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
29	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
30	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.2	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Cottonwood Creek Below Crestone Branch D. & R. G. Railroad for 1915. Altitude, 7,750 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1												
2								24.0				
3							31.0	8.0				
4						14.0		9.4				
5						10.0		7.4				
6								7.3				
7								6.0				
8												
9												
10								6.7				
11					2.5			7.2				
12								6.2				
13								6.5				
14								6.0				
15					12.4							
16												
17							26.0	6.0				
18						47.0		5.0				
19								4.0				
20												
21								3.6				
22					7.4							
23												
24												
25					9.2		9.9	3.2				
26						66.0						
27												
28												
29					9.1		36.0					
30							31.0	0.0				
31							33.0					

Discharge of Deadman Creek at 2 Miles Below East Boundary Baca Grant for 1915.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1												
2												
3											2.0	
4								15.0				
5												
6												
7										3.0		
8												
9									3.2			
10									3.5			
11									2.3			
12								12.0				
13												
14								12.0		2.7		
15												
16									3.5			
17							22.0					
18												
19								10.0				
20												
21								8.5				
22										2.5		
23									2.5			
24							19.0					
25												
26						92.0						
27												
28								8.4		2.0		
29												
30												
31							19.0					

Unless otherwise noted, all discharges are in cubic feet per second.

SAN JUAN DRAINAGE

SAN JUAN RIVER AT ARBOLES.

Location.—At Arbòles, Colo., a quarter of a mile above the mouth of Piedra River, near the center of T. 32 N., R. 5 W.

Records Available.—1895 to 1899; August 21, 1910, to November 30, 1914.

Drainage Area.—1,394 square miles.

Gage.—Chain gage.

Channel.—Probably permanent.

Discharge Measurements.—Made from car and cable and by wading.

Winter Flow.—Severe ice effect.

Diversions.—There are court decrees for the diversion of 23 second-feet between Arboles and the station at Pagosa Springs, and 61 second-feet from intervening tributaries.

Flood Discharge.—Two severe floods have occurred on the San Juan since the station has been maintained. The maximum stage of the flood, September 6, 1909, although very high, was less than that of October 1, 1911, when the river rose 17 feet, with a maximum discharge of about 40,000 second-feet.

Co-operation.—Station maintained by the State Engineer of New Mexico, by whom records were furnished.

NAVAJO RIVER AT EDITH.

Location.—Six miles northeast of Lumberton, N. Mex., at highway bridge on road from Lumberton to Edith, one-fourth mile east of Edith, short distance north of the New Mexico-Colorado State line, near southwestern corner of T. 33 N., R. 1 E., about 5 miles southwest and downstream from the confluence of Navajo and Little Navajo Rivers. A small tributary from the north enters Navajo River about one-fourth mile below the station.

Records Available.—September 21, 1912, to November 30, 1914.

Drainage Area.—Not measured.

Gage.—Verital staff.

Channel.—Permanent at low stages, but shifting during high.

Discharge Measurements.—At low stages made by wading; at high stages made from bridge.

Winter Flow.—Greatly affected by ice.

Diversions.—Considerable water is diverted above this station for irrigation.

Accuracy.—Estimates of daily discharge considered good.

Co-operation.—Station maintained by State Engineer of New Mexico, by whom the records were furnished.

Discharge of San Juan River at Arboles for 1915.
Drainage Area, 1,394 Square Miles. Altitude, 6,000 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	165	170	188	980	3670	2950	2500	1020	285	370	125	140
2	166	168	195	1370	2230	3670	1970	815	275	215	145	165
3	167	166	213	1540	1930	3600	1820	605	215	275	140	200
4	168	164	213	1700	2170	2730	2900	575	250	230	150	125
5	172	161	247	1660	1620	2290	1880	575	405	240	145	165
6	176	159	240	2500	1700	1900	2050	575	240	220	140	200
7	172	166	232	2050	1560	1770	1660	815	175	310	130	165
8	169	172	261	1500	1410	2130	1500	745	195	260	175	190
9	165	173	261	1410	1280	2720	1370	630	190	300	140	175
10	166	174	289	1570	1240	3730	1350	550	170	275	125	170
11	168	176	244	1290	1660	3970	1450	455	170	275	175	110
12	160	177	289	1560	2490	4650	1440	455	175	150	175	120
13	153	179	290	1660	3900	3450	1350	415	165	175	165	135
14	159	180	290	1320	3900	2950	1280	330	175	170	160	150
15	165	180	320	1920	3450	3150	1240	350	165	175	115	170
16	171	179	362	2110	3600	3280	1040	310	175	175	110	110
17	165	180	407	3380	3670	3770	1020	365	175	195	110	110
18	159	182	352	2720	3820	3870	875	275	190	175	125	109
19	157	183	370	2300	3460	4280	715	255	190	195	125	109
20	155	180	370	1820	3300	4350	720	175	140	175	215	109
21	152	182	352	2420	3000	3970	900	275	175	215	255	108
22	150	184	520	2000	2360	4200	760	195	140	150	240	108
23	148	189	630	1880	2350	4050	715	240	205	175	160	108
24	153	188	700	1820	2950	3750	1120	195	160	175	125	108
25	158	193	720	1770	3300	3550	1150	250	310	195	110	107
26	164	184	900	1770	2630	3020	5650	380	5200	175	110	107
27	171	202	975	1870	2990	3100	5850	250	3610	175	165	106
28	169	188	960	2110	3750	2900	2610	240	1690	165	110	106
29	167	.....	940	2420	3140	2620	1750	220	390	170	115	105
30	165	.....	850	4720	2630	2630	1450	405	425	165	125	105
31	167	.....	875	.....	2420	.....	1230	315	.....	195	.....	104
Mean	163	178	453	1970	2700	3300	1720	427	548	210	147	132
Max.	176	202	975	4720	3900	4650	5850	1020	5200	370	255	200
Min.	148	159	188	980	1240	1770	715	175	140	150	110	104
Acre-ft...	10000	9870	27900	117000	166000	196000	106000	26300	32600	12900	8740	8130

Note.—From January 1st to March 12th and December 17 to 31 discharges were estimated from current meter measurements and the observer's notes.

Discharge of Navajo River at Edith for 1915.
Altitude, 7,100 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	35	40	67	208	692	572	447	193	55	43	43	39
2	35	40	69	260	475	892	420	164	55	43	43	39
3	35	40	71	299	428	755	350	178	55	43	43	39
4	35	41	73	384	362	522	435	137	68	43	43	39
5	35	41	74	452	340	522	385	137	76	43	43	39
6	35	42	76	475	340	452	317	164	61	43	43	39
7	35	42	78	406	299	384	297	137	55	43	43	39
8	34	43	80	384	299	428	337	242	55	43	40	39
9	34	43	82	406	294	600	297	137	55	43	40	39
10	34	44	84	406	362	755	257	114	48	43	40	39
11	34	44	85	362	522	820	297	54	43	43	40	39
12	34	44	87	406	600	820	276	114	43	43	40	39
13	34	45	89	428	692	692	240	94	43	43	40	39
14	34	45	91	452	755	600	257	48	43	43	40	39
15	34	46	93	475	723	522	229	94	43	43	40	39
16	34	46	95	475	723	629	272	94	43	43	40	39
17	34	46	96	498	787	723	300	137	43	43	40	39
18	34	47	98	522	820	629	270	94	43	43	40	39
19	34	49	100	452	723	820	337	103	43	43	40	39
20	34	51	102	428	723	787	267	84	43	43	40	39
21	35	52	104	452	660	723	222	76	43	43	40	39
22	35	54	106	384	600	787	196	76	43	43	39	39
23	36	56	108	428	572	787	179	38	43	43	39	39
24	36	58	109	406	572	743	278	23	43	43	39	39
25	37	60	111	340	723	653	275	61	76	43	39	39
26	37	62	113	384	629	563	677	76	84	43	39	39
27	37	63	193	406	522	558	1050	68	55	43	39	39
28	38	65	224	428	600	554	528	26	43	43	39	39
29	38	.....	224	547	547	550	302	33	43	43	39	39
30	39	.....	260	755	600	520	241	43	43	43	39	39
31	39	.....	208	.....	498	.....	224	68	.....	43	.....	39
Mean	353	482	111	424	564	645	337	101	51.5	43	40.4	39
Max.	34	65	260	755	299	892	1050	23	84	43	43	39
Min.	39	40	67	208	820	384	179	242	48	43	39	39
Acre-ft.	2170	2680	6840	25200	34700	38400	20700	6230	3060	2640	2400	2400

Unless otherwise noted, all discharges are in cubic feet per second.

Note.—From Jan. 1 to March 26 and Nov. 11 to Dec. 31, gage heights affected by ice, and discharges for January, February, and December were estimated from current meter measurements and observers' notes.

PIEDRA RIVER AT ARBOLES.

Location.—At the railroad bridge at Arboles, Colo., in sec. 16, T. 32 N., R. 5 W., 1 mile above the junction with the San Juan River. No tributaries between station and mouth.

Records Available.—June 19, 1895, to September 30, 1899; August 21, 1910, to November 30, 1914.

Drainage Area.—650 square miles.

Gage.—Chain gage.

Channel.—Practically permanent except during high water.

Discharge Measurements.—Made from the bridge during high water and by wading at ordinary stages.

Diversions.—There are court decrees for diversions of 18 second-feet from Piedra River in Colorado and 52 second-feet from Colorado tributaries.

Co-operation.—Station maintained by the State Engineer of New Mexico.

LOS PINOS RIVER NEAR IGNACIO.

Location.—At the highway bridge near Ignacio Indian Agency, about sec. 8, T. 33 N., R. 7 W., New Mexico principal meridian, 1 mile north from Ignacio. Nearest tributary is a small stream that enters from the west 2 miles below.

Records Available.—April 22, 1899, to October 31, 1903; September 1, 1910, to November 30, 1914.

Drainage Area.—450 square miles.

Gage.—Chain gage.

Channel.—Shifting.

Discharge Measurements.—Made from the bridge during high water and by wading at ordinary stages.

Winter Flow.—No data.

Diversions.—A number of ditches divert water above the station for irrigation.

Co-operation.—Maintained by State Engineer of New Mexico, by whom the records were furnished.

Discharge of Piedra River at Arboles for 1915.
Drainage Area, 650 Square Miles. Altitude, 6,000 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	92	97	247	800	3000	1930	1280	480	135	275	100	95
2	90	99	257	970	3120	2270	1060	400	195	215	125	110
3	88	101	268	1240	1700	2170	1010	340	145	195	100	110
4	87	103	278	790	1530	1610	1040	310	125	255	135	95
5	86	105	288	1610	1390	1430	980	280	170	215	110	105
6	83	108	299	2240	1350	1530	1030	340	150	250	115	95
7	82	110	309	1660	1220	1050	920	360	125	200	120	125
8	80	112	320	1610	1110	950	875	510	150	275	115	100
9	78	114	330	1240	1010	1280	765	250	125	250	115	70
10	77	116	340	1420	1110	1620	760	188	125	235	115	70
11	75	118	351	1430	1370	2190	730	200	105	155	125	85
12	73	120	361	1310	1840	2400	740	200	100	135	95	95
13	72	122	371	1880	2190	2520	645	195	110	150	110	95
14	70	124	382	1790	2690	1710	625	180	120	145	125	80
15	68	127	392	1980	2490	2040	580	170	125	135	85	95
16	67	129	402	1930	2460	1980	450	175	135	135	125	95
17	65	131	413	2350	2630	2370	450	170	125	135	125	75
18	67	133	423	2460	2400	2140	380	165	135	125	105	85
19	69	143	434	2580	2040	2300	350	150	125	125	110	95
20	72	154	444	2840	1880	2400	325	170	110	145	120	85
21	73	164	454	2400	1610	2240	325	145	125	155	105	80
22	76	174	465	2280	1150	2080	280	135	115	135	105	75
23	78	185	475	2080	1420	2520	340	155	120	120	105	70
24	80	195	485	2080	1570	1960	360	120	100	115	120	79
25	82	206	496	1740	1780	1810	535	170	240	125	110	79
26	84	216	506	1740	1510	1540	1380	230	1790	120	90	78
27	86	226	625	1840	1570	1570	2140	210	950	125	105	78
28	88	237	540	1770	1740	1460	1160	165	420	145	120	77
29	91	.....	890	2080	1670	1470	875	145	360	135	120	76
30	93	.....	800	4140	1570	1350	710	140	385	125	65	76
31	95	.....	800	.....	1640	.....	580	160	.....	125	.....	75
Mean	79.6	142	434	1880	1800	1860	764	227	241	167	111	87.2
Max.	95	237	890	4140	3120	2520	2140	510	1790	275	135	125
Min.	65	97	249	790	1010	950	280	120	100	115	65	70
Acre-ft...	4890	7870	26700	112000	111000	111000	47000	13900	14400	10300	6590	5360

Discharge of Los Pinos River near Ignacio for 1915.
Drainage Area, 450 Square Miles. Altitude, 6,480 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	82	62	153	355	1470	1980	1480	330	15	250	34	81
2	79	64	159	420	1220	2180	1190	220	17	205	58	81
3	76	65	166	520	940	2080	1200	165	20	185	61	73
4	73	67	172	600	860	1550	1120	105	24	160	48	73
5	70	69	179	750	845	1320	1100	70	26	142	48	83
6	68	70	185	1010	840	1180	1160	60	28	125	52	74
7	65	72	192	845	770	925	1040	145	27	113	86	69
8	62	74	198	805	770	920	830	280	24	96	73	69
9	59	76	205	680	650	1290	775	150	23	77	64	69
10	56	77	211	610	720	1630	750	100	20	73	87	67
11	53	79	218	665	810	2160	760	75	21	73	67	56
12	51	80	224	745	1160	2460	765	70	19	70	63	57
13	48	82	231	835	1520	2050	740	50	19	67	61	58
14	45	84	237	930	1880	1770	715	42	19	64	65	73
15	42	86	244	1090	1860	1790	670	35	21	60	61	73
16	39	87	250	1150	1920	1920	605	35	20	59	61	76
17	37	89	257	1080	2080	2410	500	47	20	61	74	77
18	38	91	263	1160	1970	2260	425	29	20	63	60	60
19	40	92	270	1040	1690	2640	380	24	21	60	67	63
20	42	94	276	1100	1550	2520	375	23	23	74	61	67
21	43	100	283	1140	1310	2430	375	19	23	95	63	81
22	45	107	289	1220	1160	2410	315	18	21	93	77	81
23	47	114	296	1100	1140	2500	375	19	19	89	86	80
24	48	120	302	1040	1240	2430	320	17	21	81	85	80
25	50	127	309	960	1440	2320	365	17	245	59	85	79
26	52	133	316	940	1410	2180	700	18	1120	54	70	79
27	54	140	322	930	1280	2040	1200	19	560	51	89	78
28	55	146	380	1120	1350	1910	925	17	410	55	77	79
29	57	.....	440	1310	1550	1770	730	17	360	50	77	80
30	58	.....	410	1760	1400	1610	565	17	310	37	79	81
31	60	.....	.....	.....	1670	.....	420	16	.....	32	.....	82
Mean	54.6	91	259	930	1310	1950	738	72.7	117	89.4	68	73.5
Max.	82	146	440	1760	2080	2640	1480	330	1120	250	89	83
Min.	37	62	153	355	650	920	315	16	15	32	34	56
Acre-ft.	3360	5050	15900	55400	80300	116000	45400	4470	6970	5500	4040	4520

Unless otherwise noted, all discharges are in cubic feet per second.

ANIMAS RIVER AT DURANGO.

Location.—Located opposite the San Juan Water & Power Co.'s sub-station, about one-fourth mile above Lightner Creek.

Records Available.—From June 20, 1901, to December 31, 1905; January 1, 1910, to December 31, 1910; January 1, 1912, to November 30, 1914, at a point above Lightner Creek; January 1, 1911, to December 31, 1911, below Lightner Creek.

Drainage Area.—694 square miles.

Gage.—Automatic recording gage.

Channel.—Liable to shift during high water.

Discharge Measurements.—Made from car and cable.

Winter Flow.—Little if any backwater from ice during the winter months.

Diversions.—Water is diverted above the station for irrigation.

Co-operation.—Station maintained by the State Engineer of New Mexico.

Discharge of Animas River at Durango for 1915.
Drainage Area, 694 Square Miles. Altitude, 6,550 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	220	185	165	560	2380	3300	3020	910	330	560	280	240
2	200	185	165	590	1820	3790	2400	780	330	490	280	245
3	200	170	170	740	1520	3650	2330	750	315	460	280	255
4	200	165	175	850	1390	2730	2290	685	330	420	280	260
5	200	155	175	950	1320	2100	2300	620	340	395	300	280
6	200	155	170	940	1250	1810	2730	610	330	385	310	255
7	220	170	170	910	1140	1700	2260	720	320	360	350	285
8	210	170	170	885	1120	1750	2130	810	310	350	310	250
9	200	170	170	850	1170	2200	1750	750	310	330	290	250
10	185	185	175	800	1280	3000	1910	650	300	325	280	255
11	185	185	175	825	1560	3820	1880	615	280	320	280	255
12	195	190	175	970	2170	4410	2060	610	280	320	285	210
13	200	185	175	1120	2920	3820	1970	595	280	310	290	200
14	200	155	180	1220	3760	3260	1850	575	280	310	285	200
15	200	155	200	1300	3470	3400	1800	575	280	310	285	200
16	200	165	230	1220	3410	3470	1720	530	265	310	280	200
17	200	170	245	1120	3730	3900	1400	530	260	300	265	190
18	200	165	265	1100	3470	3930	1360	530	260	285	245	190
19	200	155	260	1170	2770	3990	1240	515	260	280	240	190
20	200	160	270	1330	2260	4280	1200	455	260	280	240	195
21	200	175	270	1500	1970	4130	1210	455	260	285	250	195
22	205	160	280	1460	1850	4430	1170	420	260	285	255	200
23	210	170	310	1360	1870	4430	1170	400	260	280	250	200
24	210	170	420	1240	2200	4200	1150	375	280	280	260	200
25	210	170	490	1210	2620	4050	1150	385	505	280	245	200
26	220	170	480	1240	2300	3820	1170	385	1090	280	245	200
27	180	170	570	1380	2210	3610	1630	365	800	280	225	175
28	185	160	575	1800	2470	3400	1400	360	650	280	225	150
29	190	.....	600	2220	2890	3260	1150	360	610	280	220	135
30	190	.....	570	3130	2500	3050	1020	355	575	280	220	160
31	185	.....	530	.....	2900	.....	930	330	.....	280	.....	170
Mean	200	169	290	1200	2250	3420	1700	549	374	329	268	213
Max.	220	190	600	3130	3760	4430	3020	910	1090	560	350	285
Min.	180	155	165	560	1120	1700	930	330	260	280	135	135
Acre-ft.	12300	9400	17800	71400	138000	204000	105000	33700	22200	20200	16000	13100

Unless otherwise noted, all discharges are in cubic feet per second.

NORTH AND SOUTH PLATTE DRAINAGES.

MIDDLE FORK SOUTH PLATTE RIVER AT ALMA.

Location.—At foot-bridge above the mouth of Buckskin Creek.

Records Available.—May 1, 1916, to August 15, 1916.

Gage.—Vertical staff fastened to foot-bridge.

Diversions.—Above all diversions on the stream.

Co-operation.—Station maintained by the Van Sant-Houghton Engineering Co., from whom the records were obtained.

MIDDLE FORK SOUTH PLATTE RIVER AT FAIRPLAY.

Location.—Located at highway bridge in town of Fairplay.

Records Available.—May 1, 1916, to October 31, 1916.

Drainage Area.—82.3 square miles.

Channel.—Rough, but probably permanent.

Gage.—Vertical staff gage.

Records furnished by the Van Sant-Houghton Engineering Co.

Discharge of Middle Fork South Platte River at Alma for 1916.
Drainage Area, 23.7 Square Miles. Altitude, 10,285 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	17.5	41.2	49.0	137	.....	.....	.....	.....
2	.....	.....	.....	.....	.....	17.5	49.0	35.5	58.8	.....	.....	.....	.....
3	.....	.....	.....	.....	.....	17.5	49.0	35.5	49.0	.....	.....	.....	.....
4	.....	.....	.....	.....	.....	17.5	49.0	30.5	58.8	.....	.....	.....	.....
5	.....	.....	.....	.....	.....	17.5	68.5	25.5	166	.....	.....	.....	.....
6	.....	.....	.....	.....	.....	17.5	49.0	25.5	68.5	.....	.....	.....	.....
7	.....	.....	.....	.....	.....	21.5	35.5	25.5	35.5	.....	.....	.....	.....
8	.....	.....	.....	.....	.....	17.5	35.5	25.5	30.5	.....	.....	.....	.....
9	.....	.....	.....	.....	.....	25.5	49.0	35.5	30.5	.....	.....	.....	.....
10	.....	.....	.....	.....	.....	30.5	108	30.5	30.5	.....	.....	.....	.....
11	.....	.....	.....	.....	.....	21.5	88.2	35.5	25.5	.....	.....	.....	.....
12	.....	.....	.....	.....	.....	21.5	108	49.0	25.5	.....	.....	.....	.....
13	.....	.....	.....	.....	.....	25.5	137	35.5	35.5	.....	.....	.....	.....
14	.....	.....	.....	.....	.....	30.5	108	30.5	108	.....	.....	.....	.....
15	.....	.....	.....	.....	.....	35.5	88.2	30.5	49	.....	.....	.....	.....
16	.....	.....	.....	.....	.....	30.5	108	35.5	.....	.....	.....	.....	.....
17	.....	.....	.....	.....	.....	17.5	108	42.2	.....	.....	.....	.....	.....
18	.....	.....	.....	.....	.....	17.5	108	35.5	.....	.....	.....	.....	.....
19	.....	.....	.....	.....	.....	15.2	108	35.5	.....	.....	.....	.....	.....
20	.....	.....	.....	.....	.....	17.5	108	25.5	.....	.....	.....	.....	.....
21	.....	.....	.....	.....	.....	17.5	68.5	17.5	.....	.....	.....	.....	.....
22	.....	.....	.....	.....	.....	17.5	49.0	17.5	.....	.....	.....	.....	.....
23	.....	.....	.....	.....	.....	7.2	49.0	17.5	.....	.....	.....	.....	.....
24	.....	.....	.....	.....	.....	17.5	49.0	17.5	.....	.....	.....	.....	.....
25	.....	.....	.....	.....	.....	21.5	49.0	17.5	.....	.....	.....	.....	.....
26	.....	.....	.....	.....	.....	17.5	49.0	17.5	.....	.....	.....	.....	.....
27	.....	.....	.....	.....	.....	17.5	49.0	25.5	.....	.....	.....	.....	.....
28	.....	.....	.....	.....	.....	25.5	108	25.5	.....	.....	.....	.....	.....
29	.....	.....	.....	.....	.....	25.5	58.8	25.5	.....	.....	.....	.....	.....
30	.....	.....	.....	.....	.....	35.5	58.8	88.2	.....	.....	.....	.....	.....
31	.....	.....	.....	.....	.....	49.0	.....	108	.....	.....	.....	.....	.....
Total	.....	.....	.....	.....	.....	684	2191	1051	909	.....	.....	.....	.....
Mean	.....	.....	.....	.....	.....	22.1	73	34	33.9	.....	.....	.....	.....
Max.	.....	.....	.....	.....	.....	49	137	108	.....	.....	.....	.....	.....
Min.	.....	.....	.....	.....	.....	7.2	35.5	17.5	.....	.....	.....	.....	.....
Acre-ft.	.....	.....	.....	.....	.....	1360	4340	2080	1800	.....	.....	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Middle Fork of South Platte River at Fairplay for 1916.
Drainage Area, 82.3 Square Miles. Altitude, 9,900 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	51	182	254	388	85	53	.....	.....
2	.....	.....	.....	.....	.....	51	182	224	254	77	53	.....	.....
3	.....	.....	.....	.....	.....	51	190	224	203	77	51	.....	.....
4	.....	.....	.....	.....	.....	51	285	224	216	74	51	.....	.....
5	.....	.....	.....	.....	.....	51	236	190	423	72	51	.....	.....
6	.....	.....	.....	.....	.....	55	165	182	216	72	51	.....	.....
7	.....	.....	.....	.....	.....	108	136	182	190	64	51	.....	.....
8	.....	.....	.....	.....	.....	120	165	216	190	64	51	.....	.....
9	.....	.....	.....	.....	.....	124	203	224	175	64	51	.....	.....
10	.....	.....	.....	.....	.....	148	254	216	148	77	51	.....	.....
11	.....	.....	.....	.....	.....	148	301	182	129	88	51	.....	.....
12	.....	.....	.....	.....	.....	136	423	254	148	91	51	.....	.....
13	.....	.....	.....	.....	.....	136	503	190	190	88	51	.....	.....
14	.....	.....	.....	.....	.....	124	423	190	254	81	51	.....	.....
15	.....	.....	.....	.....	.....	104	301	175	190	72	51	.....	.....
16	.....	.....	.....	.....	.....	77	365	175	175	72	53	.....	.....
17	.....	.....	.....	.....	.....	88	365	203	136	68	53	.....	.....
18	.....	.....	.....	.....	.....	88	457	190	129	64	51	.....	.....
19	.....	.....	.....	.....	.....	91	423	175	124	68	43	.....	.....
20	.....	.....	.....	.....	.....	91	423	155	114	64	35	.....	.....
21	.....	.....	.....	.....	.....	88	285	155	114	62	33	.....	.....
22	.....	.....	.....	.....	.....	96	254	175	104	62	43	.....	.....
23	.....	.....	.....	.....	.....	81	190	175	101	62	49	.....	.....
24	.....	.....	.....	.....	.....	88	190	136	101	62	46	.....	.....
25	.....	.....	.....	.....	.....	104	190	129	101	62	51	.....	.....
26	.....	.....	.....	.....	.....	108	285	129	91	60	51	.....	.....
27	.....	.....	.....	.....	.....	96	301	182	91	57	43	.....	.....
28	.....	.....	.....	.....	.....	104	301	175	88	57	46	.....	.....
29	.....	.....	.....	.....	.....	108	301	148	85	57	51	.....	.....
30	.....	.....	.....	.....	.....	136	273	457	85	57	43	.....	.....
31	.....	.....	.....	.....	.....	155	.....	388	85	.....	46	.....	.....
Total	.....	.....	.....	.....	.....	3057	8552	6274	5038	2075	1506	.....	.....
Mean	.....	.....	.....	.....	.....	98.6	285	202	163	69.2	48.6	.....	.....
Max.	.....	.....	.....	.....	.....	155	457	457	423	91	53	.....	.....
Min.	.....	.....	.....	.....	.....	51	136	129	85	57	33	.....	.....
Acre-ft.	.....	.....	.....	.....	.....	6060	17000	12400	10000	4120	2990	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

NORTH FORK OF SOUTH PLATTE RIVER AT GRANT.

Location.—At Grant postoffice, in sec. 9, T. 7 S., R. 74 W., in the Pike National Forest, 250 feet above the mouth of Geneva Creek.

Records Available.—July 18, 1910, to November 9, 1916.

Drainage Area.—51 square miles.

Gage.—Vertical staff.

Channel.—Practically permanent.

Discharge Measurements.—Made from footbridge and by wading.

Winter Flow.—Ice causes backwater during the winter months and measurements are made to determine the flow.

Diversions.—There are court decrees for diversions 5.5 second-feet from the North Fork above the station, and there are decrees for diversions of 24 second-feet from the tributaries entering above.

Accuracy.—Though the channel is somewhat shifting, sufficient measurements were obtained to make estimates reliable.

Co-operation.—Station maintained in co-operation with the United States Geological Survey.

SOUTH FORK OF SOUTH PLATTE RIVER AT LAKE GEORGE.

Location.—At highway bridge in sec. 19, T. 12 S., R. 71 W., one-fourth mile below Lake George, in the Pike National Forest, about 2 miles above the mouth of Caylor Gulch; no tributary between the outlet of the lake and the station.

Records Available.—October 22, 1910, to November 13, 1916.

Drainage Area.—1,070 square miles.

Gage.—Automatic recording gage installed in 1911, reading to the same datum as the original staff gage.

Channel.—Conditions in the channel will remain unchanged as long as the control for the station—a 2-foot timber-crib dam 50 feet below the gage—remains permanent.

Discharge Measurements.—Made from bridge during high water and by wading at ordinary stages.

Winter Flow.—Ice causes backwater during the winter months and measurements are made to determine the flow.

Regulation.—The discharge at the station is regulated to some extent by the Antero Reservoir, located about 35 miles above, and by Lake George.

Diversions.—There are court decrees for diversions of 1,076 second-feet from South Fork above this station and for diversions of 1,816 second-feet from tributaries entering above.

Accuracy.—Results are considered fair.

Co-operation.—Station maintained in co-operation with United States Forest Service and the United States Geological Survey.

Discharge of North Fork South Platte River at Grant for 1915.
Drainage Area, 49 Square Miles. Altitude, 8,566 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	7	25	99	67	26	14	20	7	.....
2	.....	.....	.....	.....	9	24	106	66	23	13	19	5	.....
3	.....	.....	.....	.....	15	21	74	66	20	14	20	7	.....
4	.....	.....	.....	.....	8	20	74	58	21	14	19	7	.....
5	.....	.....	.....	.....	16	16	68	58	20	13	16	7	.....
6	.....	.....	.....	.....	6	14	47	59	23	13	14	7	.....
7	.....	.....	.....	.....	6	19	75	53	26	12	14	7	.....
8	.....	.....	.....	.....	12	19	66	49	37	13	13	7	.....
9	.....	.....	.....	.....	14	31	62	47	33	12	11	7	.....
10	.....	.....	.....	.....	22	29	86	47	32	11	13	8	.....
11	.....	.....	.....	.....	22	32	106	47	29	10	13	.....	.....
12	.....	.....	.....	.....	20	49	113	46	24	11	7	.....	.....
13	.....	.....	.....	.....	16	68	99	43	23	10	7	.....	.....
14	.....	.....	.....	.....	21	65	70	45	28	10	12	.....	.....
15	.....	.....	.....	.....	16	54	80	43	30	11	10	.....	8
16	.....	.....	.....	.....	11	58	78	41	20	12	10	.....	.....
17	.....	.....	.....	.....	11	64	92	39	20	13	12	.....	.....
18	.....	.....	.....	.....	25	42	92	38	22	12	12	.....	.....
19	.....	.....	.....	.....	12	42	92	38	21	13	12	.....	.....
20	.....	.....	.....	.....	14	36	92	36	20	12	12	.....	.....
21	.....	.....	.....	.....	17	37	86	33	20	10	11	.....	.....
22	.....	.....	.....	.....	16	44	106	41	20	10	12	.....	.....
23	.....	.....	.....	.....	11	50	92	30	20	9	11	.....	.....
24	.....	.....	.....	.....	10	62	86	33	19	10	10	.....	.....
25	.....	.....	.....	.....	8	78	92	32	20	24	9	.....	.....
26	.....	.....	.....	.....	16	72	86	32	19	26	9	.....	.....
27	.....	.....	.....	.....	16	60	86	33	16	16	7	.....	.....
28	.....	.....	.....	.....	20	59	78	32	16	16	7	.....	.....
29	.....	.....	.....	.....	22	65	70	32	14	21	8	.....	.....
30	.....	.....	.....	.....	35	72	73	28	13	21	10	.....	.....
31	.....	.....	.....	.....	.....	86	.....	26	14	.....	8	.....	.....
Total	.....	.....	.....	.....	451	1413	2526	1338	689	406	368	69	.....
Mean	.....	.....	.....	.....	15.1	45.6	84.2	43.2	22.2	13.5	11.9	6.90	.....
Max.	.....	.....	.....	.....	35	86	113	67	37	26	20	.....	.....
Min.	.....	.....	.....	.....	6	14	47	26	13	9	7	.....	.....
Acre-ft.	.....	.....	.....	.....	898	2800	5010	2660	1360	803	732	137	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of North Fork South Platte River at Grant for 1916.
Drainage Area, 49 Square Miles. Altitude 8,566 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	16	28	74	51	33	17	9	7	.....
2	.....	.....	.....	.....	12	30	74	46	25	17	9	7	.....
3	.....	.....	.....	.....	8	27	74	43	23	16	8	7	.....
4	.....	.....	.....	.....	13	28	78	41	30	12	7	11	.....
5	.....	.....	.....	.....	11	33	80	43	29	12	7	9	.....
6	.....	.....	.....	.....	11	30	68	41	32	12	9	7	.....
7	.....	.....	.....	.....	16	47	62	41	30	12	12	7	.....
8	.....	.....	.....	.....	12	55	62	43	30	12	8	8	.....
9	.....	.....	6.3	.....	8	64	68	41	27	12	11	10	.....
10	.....	.....	.....	.....	9	66	72	41	25	14	7	.....	.....
11	.....	.....	.....	.....	14	66	69	41	22	16	7	.....	.....
12	.....	.....	.....	.....	13	68	79	41	25	16	7	.....	.....
13	.....	.....	.....	.....	13	70	79	33	49	16	7	.....	.....
14	.....	.....	.....	.....	12	66	79	33	33	16	7	.....	.....
15	.....	.....	.....	10	12	57	73	32	30	14	9	.....	9
16	.....	.....	.....	19	14	52	73	32	27	12	11	.....	.....
17	.....	.....	.....	14	16	47	73	33	25	12	12	.....	.....
18	.....	7.1	.....	13	16	47	73	27	23	12	11	.....	.....
19	.....	.....	.....	12	16	47	73	30	23	12	6	.....	.....
20	.....	.....	.....	14	17	52	70	30	23	12	7	.....	.....
21	.....	.....	.....	14	14	51	67	27	22	14	8	.....	.....
22	.....	.....	.....	12	17	49	61	27	19	9	9	.....	.....
23	.....	.....	.....	11	19	46	56	25	19	9	9	.....	.....
24	.....	.....	.....	13	23	46	56	23	22	14	9	.....	.....
25	.....	.....	.....	14	25	52	67	23	19	9	9	.....	.....
26	.....	.....	.....	14	30	52	56	23	19	9	9	.....	.....
27	.....	.....	.....	12	33	52	59	23	19	9	8	.....	.....
28	.....	.....	.....	12	41	57	53	23	19	9	8	.....	.....
29	.....	.....	.....	10	41	59	53	23	19	9	8	.....	.....
30	.....	.....	.....	12	30	66	53	41	17	9	7	.....	.....
31	.....	.....	.....	13	.....	70	.....	36	19	.....	7	.....	.....
Total	.....	.....	.....	219	532	1580	2034	1057	787	374	262	.....	.....
Mean	.....	.....	.....	12.9	17.7	51.0	67.8	34.1	25.4	12.5	8.45	.....	.....
Max.	.....	.....	.....	.....	41	70	80	51	49	17	12	.....	.....
Min.	.....	.....	.....	.....	8	27	53	23	17	9	6	.....	.....
Acre-ft.	.....	.....	.....	434	1050	3140	4030	2100	1560	744	520	.....	.....

Discharge of South Fork South Platte River at Lake George for 1915.
Drainage Area, 1070 Square Miles. Altitude, 7,963 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	.....	.....	206	130	130	340	36	.....
2	.....	.....	22	22	.....	.....	130	174	81	104	295	43	.....
3	.....	.....	.....	.....	.....	.....	.....	159	104	81	257	52	.....
4	.....	.....	.....	.....	.....	130	.....	159	104	92	276	43	.....
5	.....	.....	.....	.....	.....	.....	.....	159	159	81	240	61	.....
6	.....	.....	22	28	144	.....	.....	159	240	52	295	52	.....
7	.....	.....	.....	.....	.....	.....	223	159	295	71	276	61	.....
8	.....	.....	16	.....	.....	130	.....	130	366	61	223	61	.....
9	.....	.....	.....	.....	.....	.....	.....	117	479	43	257	52	.....
10	.....	.....	22	.....	159	130	.....	117	479	52	257	43	.....
11	.....	.....	.....	.....	.....	.....	190	92	391	52	257	.....	.....
12	.....	.....	.....	28	.....	.....	.....	92	295	28	190	.....	.....
13	.....	.....	.....	.....	159	.....	.....	92	318	43	190	.....	.....
14	.....	.....	.....	.....	.....	104	.....	81	276	36	240	.....	.....
15	.....	.....	16	.....	.....	.....	223	144	276	28	276	.....	.....
16	.....	.....	.....	.....	.....	.....	240	117	71	43	295	.....	.....
17	.....	.....	.....	.....	159	.....	223	43	257	52	257	.....	.....
18	.....	.....	.....	.....	.....	.....	174	22	240	36	240	.....	.....
19	.....	.....	22	.....	130	81	206	52	206	43	257	.....	.....
20	.....	.....	.....	.....	.....	.....	223	104	206	28	240	.....	.....
21	.....	.....	.....	.....	.....	.....	257	159	190	43	206	.....	.....
22	.....	.....	.....	.....	.....	.....	240	43	130	36	92	.....	.....
23	.....	.....	28	.....	.....	.....	174	61	144	52	28	.....	.....
24	.....	.....	.....	.....	130	.....	190	81	159	104	52	.....	.....
25	.....	.....	.....	.....	.....	.....	340	104	174	104	71	.....	.....
26	.....	.....	.....	.....	144	104	295	117	190	240	43	.....	.....
27	.....	.....	28	.....	.....	.....	240	223	174	420	28	.....	.....
28	.....	.....	.....	.....	.....	104	223	295	117	257	43	.....	.....
29	.....	.....	.....	28	.....	.....	223	257	130	276	52	.....	.....
30	.....	.....	.....	.....	144	.....	223	223	144	318	52	.....	.....
31	.....	.....	.....	.....	.....	.....	.....	190	130	.....	61	.....	.....
Total	.....	.....	.....	.....	.....	.....	4237	4131	6655	3006	5886	504	.....
Mean	.....	.....	.....	.....	.....	.....	223	133	215	100	190	50.4	.....
Max.	.....	.....	.....	.....	.....	.....	340	295	479	420	340	.....	.....
Min.	.....	.....	.....	.....	.....	.....	130	22	71	28	28	.....	.....
Acre-ft.	.....	.....	.....	.....	.....	.....	8180	8180	13200	5950	11700	1000	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of South Fork South Platte River at Lake George for 1916.
Drainage Area, 1070 Square Miles. Altitude, 7,963 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct	Nov.	Dec.
1	.....	.....	.....	.....	56	56	26	140	543	109	280	75	.....
2	.....	.....	.....	.....	56	83	26	148	456	104	272	62	.....
3	.....	21	.....	.....	56	125	30	130	293	91	272	60	.....
4	.....	.....	.....	.....	56	300	70	146	208	85	264	62	.....
5	.....	.....	.....	.....	56	223	106	168	169	79	248	56	.....
6	.....	.....	.....	.....	56	176	140	190	208	83	252	50	.....
7	.....	13	.....	.....	56	103	140	203	237	83	260	34	.....
8	.....	13	.....	.....	56	103	128	168	215	75	256	26	.....
9	.....	.....	.....	48	56	93	116	247	205	71	252	27	.....
10	.....	.....	.....	48	56	93	140	247	192	64	252	32	.....
11	.....	.....	13	64	56	83	196	.....	157	66	252	39	.....
12	.....	.....	.....	73	56	80	264	.....	145	91	252	37	.....
13	.....	13	.....	93	56	76	285	373	160	198	248	34	.....
14	.....	.....	16	103	56	72	265	304	260	240	248	.....	.....
15	.....	12	.....	132	56	68	230	264	413	252	260	.....	.....
16	.....	.....	.....	93	56	64	230	247	310	248	268	.....	.....
17	.....	.....	.....	103	60	60	230	264	268	244	260	.....	.....
18	.....	.....	21	103	64	56	197	247	237	244	260	.....	.....
19	.....	.....	.....	125	64	64	197	196	212	237	252	.....	.....
20	.....	.....	.....	125	60	64	214	196	178	233	248	.....	.....
21	.....	14	.....	137	60	137	230	182	182	222	240	.....	.....
22	.....	.....	.....	113	56	191	197	182	182	222	237	.....	.....
23	.....	.....	.....	93	56	176	140	188	224	224	240	.....	.....
24	.....	.....	.....	83	56	113	107	166	198	233	237	.....	.....
25	.....	.....	.....	56	56	83	87	138	163	230	205	.....	.....
26	.....	.....	.....	56	60	56	97	128	140	222	56	.....	.....
27	.....	.....	.....	56	64	30	117	166	140	222	16	.....	.....
28	.....	.....	.....	56	64	13	130	219	140	248	15	.....	.....
29	.....	.....	.....	56	64	36	145	205	125	264	18	.....	.....
30	.....	.....	.....	56	56	30	130	212	111	276	50	.....	.....
31	.....	.....	.....	56	.....	30	.....	531	109	.....	75	.....	.....
Total	.....	.....	23 days	1909	1736	2937	29 days	6195	6780	5260	6537	17 days	594	.....
Mean	.....	.....	.....	83.0	57.9	94.7	154	214	219	175	211	.....	45.7	.....
Max.	.....	.....	.....	.....	64	300	285	531	543	276	280	.....	.....	.....
Min.	.....	.....	.....	.....	56	13	26	128	109	64	15	.....	.....	.....
Acre-ft.	.....	.....	.....	3790	3440	5820	9160	12300	13500	10400	13000	.....	1180	.....

Unless otherwise noted, all discharges are in cubic feet per second.

NORTH FORK OF SOUTH PLATTE AT SOUTH PLATTE.

Location.—In sec. 25, T. 7 S., R. 70 W., one-third mile above South Platte. No tributary between station and mouth at South Platte.

Records Available.—January 4, 1909, to September 30, 1910; April 1, 1913, to November 8, 1916.

Drainage Area.—450 square miles.

Gage.—Inclined staff whose datum has remained unchanged.

Channel.—Somewhat shifting.

Discharge Measurements.—Made from car and cable during high and medium stages, and by wading at low stages.

Winter Flow.—Ice causes backwater and discharge measurements are made to determine the flow.

Diversions.—There are court decrees for diversions of 20 second-feet from North Fork between Grant and South Platte, and 62 second-feet from intervening tributaries, exclusive of Geneva Creek. There are also a number of small ice and fish ponds which divert small amounts of water at various times.

Accuracy.—Records considered good.

Co-operation.—Station maintained in co-operation with the United States Geological Survey.

SOUTH PLATTE RIVER AT SOUTH PLATTE.

Location.—In sec. 25, T. 7 S., R. 70 W., in the Pike National Forest, three-fourths of a mile east of South Platte; about 300 feet below junction of the North and South forks; no tributary between the forks and the station, and none for several miles below.

Records Available.—March 28, 1902, to November 7, 1916.

Drainage Area.—2,610 square miles.

Gage.—An automatic recording gage.

Channel.—Shifting.

Discharge Measurements.—Made from car and cable during high water, and by wading at low stages.

Winter Flow.—Ice causes backwater during a portion of the winter months and measurements are made to determine the flow.

Regulation.—The flow is regulated to a certain extent by the Cheesman Reservoir, which is on the South Fork about 20 miles above the forks.

Diversions.—Lake Cheesman has a storage decree for 80,000 acre-feet and the Antero Reservoir for 46,000 acre-feet on the South Fork, South Platte, besides numerous decrees for meadow irrigation.

Accuracy.—Although the channel is shifting, sufficient discharge measurements have been obtained to enable fair estimates of discharge to be made.

Co-operation.—Station maintained in co-operation with the United States Geological Survey.

Discharge of North Fork South Platte River at South Platte for 1915.
Drainage Area, 450 Square Miles. Altitude, 6,097 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	62	330	955	440	191	112	150	87	106
2	.....	.....	.....	78	246	855	440	165	112	150	87	70
3	.....	.....	.....	96	246	705	420	150	134	138	87	106
4	.....	.....	.....	96	246	655	420	138	134	138	87	70
5	.....	.....	.....	106	278	565	400	138	136	127	87	87
6	.....	.....	.....	106	312	565	365	138	125	127	87	127
7	.....	.....	.....	106	188	480	330	162	114	116	106	116
8	.....	.....	.....	116	246	565	312	231	114	116	106	106
9	.....	.....	.....	116	330	655	278	292	106	106	96	106
10	.....	.....	.....	127	330	805	243	259	96	106	70	116
11	.....	.....	.....	127	365	905	275	228	96	106	45	127
12	.....	.....	.....	127	400	980	259	228	96	106	45	106
13	.....	.....	.....	138	520	730	259	199	98	106	45	87
14	.....	.....	.....	150	400	655	275	199	98	116	70	.....
15	.....	.....	.....	188	400	610	259	158	98	127	106	.....
16	.....	.....	.....	175	542	655	225	197	141	138	127	.....
17	.....	.....	.....	175	480	805	211	225	121	138	127	.....
18	.....	.....	.....	175	400	855	183	197	121	138	127	.....
19	.....	.....	.....	175	330	805	197	183	100	127	127	.....
20	.....	.....	.....	188	246	655	225	170	100	127	127	.....
21	.....	.....	.....	188	278	632	183	193	102	116	127	.....
22	.....	.....	.....	202	330	632	180	143	93	116	106	.....
23	.....	.....	.....	216	400	610	194	168	84	116	87	.....
24	.....	.....	.....	246	480	610	222	193	75	116	87	.....
25	.....	.....	.....	262	610	588	237	168	85	116	70	.....
26	.....	.....	.....	231	565	565	264	155	214	106	70	.....
27	.....	.....	.....	312	400	565	269	143	148	106	106	.....
28	.....	.....	.....	348	330	520	234	121	116	96	45	.....
29	.....	.....	.....	400	500	500	178	121	150	96	45	.....
30	.....	.....	.....	365	655	480	178	121	150	96	70	.....
31	.....	.....	.....	.....	755	.....	178	110	.....	96	.....	.....
Total	.....	.....	.....	5397	12138	20162	8338	5484	3469	3679	2659	2331
Mean	.....	.....	.....	180	392	672	269	177	116	119	88.6	75.2
Max.	.....	.....	.....	400	755	980	440	292	214	150	127	.....
Min.	.....	.....	.....	62	188	480	178	110	75	96	45	.....
Acre-ft.	.....	.....	.....	10700	24100	40000	16500	10900	6900	7320	5270	4620

Unless otherwise noted, all discharges are in cubic feet per second
Dec. 14 to Dec. 31, inc., estimated.

Discharge of North Fork South Platte River at South Platte for 1916.
Drainage Area, 450 Square Miles. Altitude, 6,097 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	83	134	403	231	312	145	82	66	.....
2	.....	.....	.....	.....	83	183	348	231	246	129	82	66	.....
3	.....	.....	.....	.....	92	157	312	202	202	123	82	59	.....
4	.....	.....	.....	.....	75	170	348	202	231	112	82	55	.....
5	.....	.....	.....	.....	112	183	348	202	312	112	85	61	.....
6	.....	.....	.....	.....	92	202	312	188	312	112	80	56	.....
7	.....	.....	.....	.....	67	246	278	196	278	112	85	43	.....
8	.....	.....	.....	.....	46	134	246	202	231	112	70	33	.....
9	.....	.....	.....	.....	67	330	278	216	231	112	87	.....	.....
10	.....	.....	.....	.....	75	422	312	202	216	112	87	.....	.....
11	.....	.....	.....	.....	75	442	366	216	202	134	87	.....	.....
12	.....	.....	.....	.....	92	384	330	216	188	145	76	.....	.....
13	.....	.....	.....	.....	112	312	403	216	246	162	72	.....	.....
14	.....	.....	.....	.....	112	348	392	183	330	145	76	.....	.....
15	.....	.....	.....	.....	102	246	362	178	246	138	136	.....	.....
16	.....	.....	.....	.....	112	246	370	178	216	123	98	.....	50
17	.....	.....	.....	.....	112	246	377	188	188	112	123	.....	.....
18	.....	.....	.....	.....	123	231	366	188	175	112	102	.....	.....
19	.....	.....	.....	.....	123	216	366	178	162	112	100	.....	.....
20	.....	.....	.....	83	123	246	330	152	175	112	85	.....	.....
21	.....	.....	.....	102	112	278	312	157	175	112	85	.....	.....
22	.....	.....	.....	83	102	312	295	152	157	112	85	.....	.....
23	.....	.....	.....	83	112	312	312	152	145	112	98	.....	.....
24	.....	.....	.....	75	134	272	278	145	157	112	80	.....	.....
25	.....	.....	.....	46	145	298	278	134	162	102	94	.....	.....
26	.....	.....	.....	59	157	366	262	138	162	96	100	.....	.....
27	.....	.....	.....	92	170	326	262	138	157	92	100	.....	.....
28	.....	.....	.....	75	183	305	262	134	157	92	100	.....	.....
29	.....	.....	.....	75	157	319	262	134	145	92	91	.....	.....
30	.....	.....	.....	67	157	298	246	202	152	92	76	.....	.....
31	.....	.....	.....	75	.....	384	.....	295	162	.....	76	.....	.....
Total	1537	1457	1575	3307	8548	9616	5746	6430	3490	2762	439	.....	
Mean	49.6	50.2	50.8	110	276	321	185	207	116	89.1	.....	.....	
Max.	.....	.....	.....	183	442	403	295	330	162	136	.....	.....	
Min.	.....	.....	.....	46	134	246	134	145	92	70	.....	.....	
Acre-ft.	3050	2890	3120	6550	17000	19100	11400	12700	6900	5480	.....	.....	

Discharge of South Platte River at South Platte for 1915.
Drainage Area, 2,610 Square Miles. Altitude, 6,097 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	139	972	1040	950	706	370	432	252	174
2	.....	.....	.....	.....	150	860	1090	860	642	330	515	252	150
3	.....	.....	.....	.....	162	838	1200	882	557	391	452	235	139
4	.....	.....	.....	.....	150	794	1340	1040	536	664	432	235	162
5	.....	.....	.....	.....	162	816	1450	816	432	706	432	235	174
6	.....	.....	.....	.....	150	794	1340	706	432	642	452	252	150
7	.....	.....	.....	.....	174	794	1250	664	452	642	310	270	150
8	.....	.....	.....	.....	203	838	1320	642	685	599	235	270	139
9	.....	.....	.....	.....	391	928	1270	685	642	599	310	290	150
10	.....	.....	.....	.....	412	928	1290	620	578	578	432	270	150
11	.....	.....	.....	.....	432	950	1290	642	557	578	452	252	150
12	.....	.....	.....	.....	412	995	1320	578	620	536	452	162	128
13	.....	.....	.....	.....	473	1040	1180	557	620	950	452	118	128
14	.....	.....	.....	.....	557	1130	1160	473	642	950	473	96	150
15	.....	.....	.....	77	642	1130	1180	452	642	370	515	365	150
16	.....	.....	.....	64	642	1130	1160	452	578	270	515	212	128
17	.....	.....	.....	72	642	1110	1160	452	330	252	494	217	145
18	.....	.....	.....	83	664	1130	1130	391	310	235	473	161	162
19	.....	.....	.....	.....	706	995	1130	685	270	252	473	185	139
20	.....	.....	.....	.....	685	995	1200	664	290	219	412	203	139
21	.....	.....	.....	.....	728	972	1110	750	270	203	370	188	188
22	.....	.....	.....	.....	706	1020	1130	794	270	188	412	188	188
23	.....	.....	.....	83	794	950	1160	816	290	235	412	174	162
24	.....	.....	.....	146	728	928	1130	664	350	252	310	174	174
25	.....	.....	.....	104	816	972	1180	728	350	219	270	162	139
26	.....	.....	.....	64	860	1020	1110	728	330	412	290	150	174
27	.....	.....	.....	118	860	1020	1090	882	310	252	310	188	150
28	.....	.....	.....	128	838	950	1020	882	391	203	310	118	150
29	.....	.....	.....	139	882	972	1020	860	370	252	290	162	174
30	.....	.....	.....	128	1040	972	995	816	391	350	290	162	203
31	.....	.....	.....	139	.....	995	.....	794	350	.....	270	.....	174
Total.	.....	.....	3472	16200	29938	35445	21925	14193	12770	12247	6198	4833	
Mean	.....	.....	112	540	966	1180	707	458	426	395	207	156	
Max.	.....	.....	.....	1040	1130	1450	1040	706	950	515	365	203	
Min.	.....	.....	.....	139	794	995	391	270	188	235	96	128	
Acre-ft.	.....	.....	6890	32100	59400	70200	43500	28200	25300	24300	12300	9590	

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of South Platte River at South Platte for 1916.
Drainage Area, 2,610 Square Miles. Altitude, 6,097 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	74	182	252	438	408	980	347	121	69	.....
2	.....	.....	.....	32	182	278	530	471	1000	347	110	64	.....
3	.....	.....	.....	53	182	265	645	714	1080	327	110	67	.....
4	.....	.....	.....	80	171	332	834	691	1030	288	110	71	.....
5	.....	.....	.....	108	182	525	906	622	956	252	98	71	.....
6	.....	.....	.....	108	193	620	882	668	810	252	492	74	.....
7	.....	.....	.....	88	193	581	786	714	762	234	738	78	.....
8	.....	.....	.....	55	182	562	810	738	738	218	146	.....	.....
9	.....	.....	.....	55	216	562	882	762	691	218	121	.....	.....
10	.....	.....	136	76	216	581	1000	762	691	218	134	.....	.....
11	.....	.....	.....	76	216	562	956	810	668	269	121	.....	.....
12	.....	.....	.....	69	228	544	931	786	645	269	110	.....	.....
13	.....	.....	.....	76	240	525	1000	645	645	269	121	.....	.....
14	.....	.....	.....	76	252	507	1030	762	600	327	121	.....	.....
15	.....	.....	.....	62	240	472	1080	762	556	347	178	.....	.....
16	.....	.....	.....	69	228	454	1080	622	622	327	121	.....	184
17	.....	.....	.....	69	216	472	980	600	668	269	146	.....	.....
18	.....	.....	.....	76	228	438	906	556	668	252	160	.....	.....
19	.....	133	.....	62	228	421	714	578	691	234	146	.....	.....
20	.....	.....	.....	304	216	472	691	556	645	218	134	.....	.....
21	.....	.....	.....	360	216	562	668	492	645	234	134	.....	.....
22	.....	.....	.....	375	216	640	600	460	600	202	146	.....	.....
23	.....	.....	.....	332	216	740	556	429	578	202	134	.....	.....
24	.....	.....	.....	291	216	700	534	408	534	160	121	.....	.....
25	.....	.....	.....	252	228	640	513	408	556	110	60	.....	.....
26	.....	.....	.....	240	240	600	471	556	534	110	110	.....	.....
27	.....	.....	.....	228	252	544	408	534	513	98	110	.....	.....
28	.....	.....	.....	228	278	489	388	534	429	98	110	.....	.....
29	.....	.....	.....	216	278	454	408	612	388	110	103	.....	.....
30	.....	.....	.....	216	278	438	408	691	408	134	88	.....	.....
31	.....	.....	.....	204	.....	438	.....	834	368	.....	74	.....	.....
Total	.....	.....	.....	4560	6609	15670	22035	19185	20699	6940	4723	.....	.....
Mean	118	124		147	220	505	734	619	668	231	152	.....	.....
Max.	.....	.....	.....	375	278	740	1080	834	1080	347	738	.....	.....
Min.	.....	.....	.....	32	171	252	388	408	368	98	74	.....	.....
Acre-ft.	7260	7130		9040	13100	31100	43700	38100	41100	13700	9350	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

SOUTH PLATTE RIVER AT DENVER.

Location.—Between the 15th Street and 16th Street bridges in Den ver, about 500 feet below the mouth of Cherry Creek.

Records Available.—May 7, 1895, to December 31, 1916.

Drainage Area.—3,840 square miles.

Gage.—Automatic and chain gages. The chain gage was replaced by a slope gage November 9, 1916.

Channel.—Shifting.

Discharge Measurements.—Made from 15th Street or 19th Street bridges, or by wading.

Winter Flow.—The flow at this point is seldom affected by ice.

Diversions.—There are decrees for diversions of 1,922 second-feet from the South Platte between this station and South Platte and 5,988 second-feet from tributaries.

SOUTH PLATTE RIVER NEAR KERSEY.

Location.—At highway bridge in sec. 9, T. 5 N., R. 64 W., 1¾ miles north of Kersey, 2 miles below the entrance of Lone Tree Creek, an intermittent stream and 3 miles below the mouth of the Cache la Poudre River.

Records Available.—April 27, 1901, to October 31, 1903; March 1, 1905, to November 30, 1912; January 1, 1914, to December 31, 1916.

Drainage Area.—9,500 square miles.

Gage.—A chain gage, placed in the fall of 1906 in each of the two channels in which the river flows. These gages were referred to a datum slightly different from that of the original gage. During the past two years either one or the other of these gages have been stolen at various times, and a breakwater placed to protect the bridge has caused one channel to become practically dry during low and medium stages. Results have, therefore, been based largely on one gage.

Channel.—Shifting.

Discharge Measurements.—Made from bridge at high water and by wading at low water.

Winter Flow.—Ice causes slight backwater for a few days during the winter.

Diversions.—Between this station and Denver there are court decrees for diversions of 3,764 second-feet from the South Platte, and 17,000 second-feet from intervening tributaries, besides numerous flood water decrees.

Accuracy.—The channel is extremely shifting and results cannot be considered better than fair.

Discharge of South Platte River at Denver for 1915.
Drainage Area, 3,840 Square Miles. Altitude, 5,240 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	224	184	180	638	1740	577	624	218	205	445	154	240
2	.....	197	165	975	1650	760	624	214	166	590	150	210
3	238	150	190	1340	1600	900	594	210	166	585	171	222
4	.....	184	240	1290	1560	1470	594	170	290	480	215	230
5	.....	197	193	1340	1520	1830	686	158	405	430	272	240
6	.....	224	190	1290	1520	2020	480	135	405	425	308	235
7	160	254	200	1380	1380	1970	345	185	310	420	280	230
8	.....	224	185	1380	1520	1920	246	490	300	375	250	220
9	.....	184	180	1470	1600	1880	222	890	315	370	290	222
10	210	210	160	1470	1520	1590	190	360	321	320	300	224
11	.....	224	173	1420	1470	1540	153	275	360	415	305	224
12	.....	240	173	1380	1470	1580	180	270	302	480	303	172
13	.....	178	173	1340	1470	1440	175	340	462	430	305	160
14	184	200	203	1290	1470	1480	175	590	845	423	235	172
15	.....	130	203	1420	1380	1300	170	610	750	542	300	210
16	.....	140	219	1470	1210	1280	310	1480	540	570	440	224
17	140	160	219	1560	1050	1140	305	880	490	510	280	197
18	.....	185	219	1600	1050	1020	300	525	350	475	270	224
19	.....	130	236	1520	1010	980	335	312	308	500	275	238
20	184	200	252	1340	1010	1000	330	298	275	475	290	224
21	.....	197	219	1250	1010	940	325	315	300	400	260	286
22	.....	210	252	1250	975	960	320	310	290	400	234	224
23	.....	125	252	1250	938	900	360	300	282	375	238	254
24	172	175	270	1250	699	870	280	670	271	329	218	254
25	.....	190	330	1880	699	876	255	635	240	266	224	254
26	.....	193	396	2470	668	909	270	600	510	231	200	238
27	197	189	352	2270	638	812	310	445	580	215	206	269
28	184	215	287	1970	638	779	413	380	510	231	250	286
29	.....	.....	373	1970	608	812	440	375	505	231	197	254
30	.....	.....	419	1880	608	716	600	320	450	248	244	254
31	172	.....	548	.....	699	.....	325	265	.....	199	.....	210
Total	5828	5289	7651	44353	36380	36251	10936	13225	11503	12385	7664	7101
Mean	188	189	247	1480	1170	1210	353	427	383	400	255	229
Max.	238	254	548	2470	1740	2020	686	1480	845	590	440	286
Min.	140	125	160	638	608	577	153	135	166	199	150	160
Acre-ft.	11600	10500	15200	88100	71500	72000	21700	26300	22800	24600	15200	14100

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of South Platte River at Denver for 1916.
Drainage Area, 3,840 Square Miles. Altitude, 5,240 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	220	125	185	140	410	520	295	850	305	155	135	165
2	220	118	160	105	305	630	295	670	285	165	125	165
3	250	145	125	88	250	460	310	565	348	155	135	165
4	250	145	155	95	210	490	330	750	268	155	135	165
5	220	155	155	128	290	490	290	1190	268	155	135	165
6	220	165	155	128	430	410	270	600	220	155	135	155
7	250	205	135	140	410	410	270	600	190	900	155	155
8	250	268	100	152	325	345	300	500	178	500	165	135
9	250	235	130	165	325	388	320	348	178	190	155	125
10	250	190	130	140	540	460	480	370	155	178	145	145
11	220	178	130	115	570	520	475	348	190	145	165	145
12	190	165	95	115	540	670	500	348	325	125	190	155
13	165	155	95	140	515	750	500	285	325	118	145	155
14	165	155	115	165	660	750	565	710	268	135	165	145
15	165	165	125	165	660	750	600	600	305	285	178	165
16	165	165	115	165	370	885	565	445	348	305	165	178
17	145	200	115	152	295	710	500	500	285	205	205	165
18	125	215	110	140	280	435	500	530	268	220	205	155
19	118	250	110	140	265	410	395	470	235	250	178	165
20	135	205	220	128	412	520	500	395	220	178	178	145
21	145	190	318	115	780	555	445	370	190	178	178	145
22	155	175	385	115	475	555	395	370	190	190	155	155
23	165	190	435	95	630	490	325	348	190	178	165	145
24	165	200	318	95	710	460	325	268	178	155	178	155
25	165	175	410	88	590	460	305	235	165	145	178	135
26	190	140	220	95	460	405	285	250	155	145	155	125
27	165	140	220	140	345	380	250	250	155	145	165	118
28	135	185	205	220	260	320	285	205	155	135	165	125
29	135	140	165	255	245	335	250	165	155	155	165	125
30	135	.....	140	435	290	300	370	125	155	135	165	125
31	135	.....	152	.....	490	.....	800	145	.....	135	.....	135
Total	5663	5139	5628	4359	13337	15263	12295	13805	6852	6370	4863	4601
Mean	183	177	182	145	430	509	397	445	228	205	162	148
Max.	250	268	435	435	780	885	800	1190	348	900	205	178
Min.	118	118	95	88	210	300	250	125	155	118	125	118
Acre-ft.	11300	10200	11200	8630	26400	30300	24400	27400	13600	12600	9640	9100

Discharge of South Platte River near Kersey for 1915.
Drainage Area, 9,500 Square Miles. Altitude, 4,612 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	660	645	630	805	4860	1640	600	400	262	1240	1180	755
2	660	700	630	865	4860	1500	575	370	205	1120	1180	760
3	660	750	630	930	4000	2130	800	330	175	950	1120	765
4	660	750	615	898	3130	2420	900	290	175	950	1130	770
5	660	725	615	1000	3260	3700	970	250	205	950	1130	775
6	630	700	600	930	4160	4000	970	230	240	950	1180	825
7	630	725	600	1000	4860	5220	880	230	240	950	1180	870
8	630	700	600	1090	4500	6430	680	200	240	950	1150	870
9	630	700	600	1000	4160	5800	480	250	240	950	1080	875
10	630	700	600	1000	4160	5410	400	400	240	950	1040	880
11	630	700	615	1090	4160	5220	320	500	240	950	1090	880
12	630	835	630	1000	3840	5600	270	350	262	845	1050	780
13	630	700	630	1000	3550	6430	270	310	262	845	890	785
14	630	700	630	968	3260	5220	270	280	262	845	895	790
15	630	700	630	930	3400	3060	200	400	285	1240	845	795
16	630	660	660	930	3260	1980	200	500	482	1760	850	800
17	615	680	700	1180	3000	1420	200	640	515	2220	900	720
18	615	700	750	1180	2750	1100	175	590	482	1930	1000	720
19	630	725	700	1280	4680	1070	160	798	482	1760	965	750
20	630	750	680	1240	5410	925	180	665	385	1760	930	725
21	630	750	660	1180	4500	1100	200	552	385	1600	970	730
22	575	750	660	1090	4500	1250	200	515	330	1450	970	805
23	515	700	645	1280	3260	1200	200	515	330	1380	915	810
24	530	700	680	3130	3000	1070	200	450	285	1310	875	900
25	550	660	750	4160	2220	1350	200	515	308	1310	840	810
26	600	645	750	5410	2040	1300	250	665	385	1310	840	860
27	600	645	805	7840	1950	1000	325	708	708	1310	745	810
28	600	630	778	6220	2040	900	400	628	1000	1310	750	660
29	600	.....	750	4680	1870	800	420	515	1060	1060	755	660
30	615	.....	805	4160	1390	770	370	450	1180	1000	755	770
31	615	.....	805	.....	1390	.....	370	308	.....	1180	.....	730
Total	19150	19725	20833	59466	107420	81015	12635	13804	11850	38335	29200	24435
Mean	618	704	672	1980	3460	2700	408	445	395	1240	973	788
Max.	660	835	805	7840	5410	6430	970	798	1180	2220	1180	900
Min.	515	630	600	805	1390	770	160	200	175	845	745	660
Acre-ft.	38000	39100	41300	118000	213000	161000	25100	27400	23500	76200	57900	48500

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of South Platte River near Kersey for 1916.
Drainage Area, 9,500 Square Miles. Altitude, 4,612 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	600	.....	790	710	110	135	135	780	134	.....	860	875
2	672	.....	790	710	160	122	110	735	134	.....	775	875
3	672	.....	790	710	135	122	110	510	148	.....	740	925
4	635	.....	830	710	122	122	102	480	148	.....	780	875
5	672	.....	830	710	95	122	95	510	161	.....	780	825
6	750	.....	870	635	95	122	95	780	134	.....	700	825
7	750	.....	790	635	85	122	90	780	120	.....	700	825
8	635	.....	830	635	85	122	85	615	134	.....	705	825
9	672	830	750	600	85	122	90	360	134	.....	630	825
10	710	915	672	600	85	122	95	260	120	722	630	782
11	672	915	635	600	85	122	122	185	134	680	630	782
12	600	1000	672	565	85	160	160	132	134	680	635	660
13	440	1000	635	565	85	260	110	130	148	642	675	620
14	470	1000	600	565	110	260	95	165	161	680	680	660
15	532	1050	600	870	260	185	95	275	235	1040	725	660
16	565	1100	600	530	420	185	95	365	196	3030	730	660
17	532	1050	635	562	285	185	95	275	216	1750	815	660
18	500	1000	672	632	160	260	102	235	235	1440	905	660
19	532	1050	635	660	185	420	95	161	255	1280	910	660
20	565	915	635	615	390	360	95	134	275	1130	915	660
21	565	915	565	535	2150	420	95	161	275	1230	825	660
22	600	915	500	475	2470	510	95	235	235	1230	740	740
23	635	870	500	435	1580	420	95	196	235	1280	782	780
24	672	870	532	365	1160	360	90	235	235	1130	925	740
25	750	870	565	270	915	360	95	235	.....	1130	925	740
26	750	790	565	210	690	360	90	196	.....	1040	925	700
27	870	750	532	155	540	310	90	196	.....	1040	925	700
28	.....	750	500	85	450	260	90	161	.....	990	925	700
29	.....	790	532	80	450	202	95	148	.....	900	925	650
30	.....	.....	532	85	260	185	185	161	.....	855	925	650
31	.....	.....	500	.....	172	.....	690	161	.....	860	.....	650
Total	17018	19345	20084	15514	13959	7017	3781	9952	4336	24759	23742	22849
Mean	630	921	648	517	450	234	122	321	181	1130	791	737
Max.	.....	.....	870	870	2470	510	690	780	.....	.....	925	925
Min.	.....	.....	500	80	85	122	85	130	.....	.....	630	620
Acre-ft.	33700	38400	39800	30800	27700	13900	7500	19700	8600	49100	47100	45300

Unless otherwise noted, all discharges are in cubic feet per second.

SOUTH PLATTE RIVER NEAR JULESBURG.

Location.—At highway bridge one mile south of Julesburg, about sec. 33, T. 12 N., R. 44 W. No important tributaries between this station and the Colorado-Nebraska State line a few miles below. All the tributaries for 100 miles or more above the station are intermittent.

Records Available.—April 2, 1902, to November 16, 1906; May 12, 1908, to November 30, 1912; April 8, 1914, to November 30, 1916.

Drainage Area.—20,600 square miles.

Gage.—When the station was re-established in 1908 a gage was placed in each of the two main channels; both gages read practically the same as the original gage on the lower bridge 2,000 feet below the present site. On May 5, 1915, six scales with open pulleys were placed on the bridge. The zeros of these scales were arranged so as to be at the same datum. These scales are numbered one to six, beginning at the south end of the bridge. Gages numbered one, two and three are over one channel.

Channel.—Shifting.

Discharge Measurements.—Made from bridge at high water and wading at low water stages.

Winter Flow.—Ice causes backwater during the winter months.

Diversions.—Between Kersey and Julesburg there are court decrees for diversions of 5,316 second-feet from the South Platte, and diversions of 1,240 second-feet from intervening tributaries, including Lodgepole Creek in Wyoming and Nebraska and Crow Creek in Wyoming, besides numerous flood decrees. Between the state line and mouth, diversions of 206 second-feet from the South Platte have been granted in Nebraska.

Accuracy.—Sufficient measurements have been made so that results can be considered good.

Co-operation.—During 1915 this station was maintained in co-operation with the State Engineer of Nebraska. During 1916 the station was maintained by the State Engineer of Colorado. The salary of the gage reader is paid by the Great Western Sugar Company.

Note.—Results for 1915 are based on gage readings taken on scales numbered one, two and three. In 1916 each main channel has been computed separately and the totals for the entire stream published.

TARRYALL CREEK NEAR JEFFERSON.

Location.—At Robbins ranch, in sec. 6, T. 9 S., R. 74 W., about 10 miles southeast of Jefferson. Rock Creek enters half a mile below.

Records Available.—June 27, 1914, to November 11, 1916.

Drainage Area.—223 square miles.

Gage.—Vertical staff.

Channel.—Slightly shifting.

Discharge Measurements.—Made by wading and from footbridge 400 feet down stream.

Winter Flow.—Ice causes backwater during the winter months and the records are discontinued.

Diversions.—There are court decrees for diversions of 314 second-feet from Tarryall Creek above the station and for 926 second-feet from tributaries entering above. The Boreas Ditch diverts a small amount of water from the Blue River to Tarryall Creek.

Accuracy.—Results fair.

Co-operation.—Records furnished by the United States Geological Survey.

Discharge of South Platte River near Julesburg for 1915.
Altitude, 3,469 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	350	2760	3020	135	80	350	430	750	1340
2	.....	.....	.....	.....	290	2620	3150	110	80	268	505	755	1330
3	.....	.....	.....	.....	290	2760	3280	115	80	210	590	760	1140
4	.....	.....	.....	.....	268	2760	3020	142	80	172	710	645	1130
5	.....	.....	.....	.....	245	2760	2760	230	80	140	850	650	1130
6	.....	.....	.....	.....	245	2760	2760	200	80	120	1010	655	1210
7	.....	.....	.....	.....	505	2760	2760	170	100	115	850	660	1120
8	.....	.....	.....	.....	1370	2510	2760	170	105	110	850	665	1110
9	.....	.....	.....	.....	1580	2510	3020	170	115	110	710	670	1190
10	.....	.....	.....	.....	1480	2760	3820	170	120	105	710	675	1100
11	.....	.....	.....	.....	1100	3020	3960	160	120	100	710	680	1090
12	.....	.....	.....	.....	935	3550	4500	142	130	95	710	815	1080
13	.....	.....	.....	.....	935	3420	4360	128	130	90	710	820	1080
14	.....	.....	.....	.....	1010	3280	4360	115	140	90	780	825	1070
15	.....	.....	.....	.....	1010	3280	4200	105	140	90	850	900	1060
16	.....	.....	.....	.....	1010	3020	4360	90	150	90	930	985	890
17	.....	.....	.....	.....	1010	3020	4200	85	160	90	850	990	745
18	.....	.....	.....	792	1010	2760	3120	80	130	90	780	995	625
19	.....	.....	.....	792	1010	3280	1930	80	110	90	710	1080	560
20	.....	.....	.....	725	1010	3020	1540	80	100	90	710	1080	550
21	.....	.....	.....	725	935	2760	1020	80	105	85	710	1260	725
22	.....	.....	.....	725	1100	3020	1020	80	120	95	710	1260	850
23	.....	.....	.....	665	1480	3020	525	80	210	110	780	1380	1010
24	.....	.....	.....	605	1800	3280	400	80	350	140	930	1280	850
25	.....	.....	.....	605	2030	3280	300	80	505	185	930	1360	930
26	.....	.....	.....	505	2390	4090	282	80	725	185	1010	1360	850
27	.....	.....	.....	505	2510	4360	248	80	725	210	850	1350	850
28	.....	.....	.....	462	2760	4220	170	80	725	240	855	1450	850
29	.....	.....	.....	420	2760	3280	150	80	725	275	860	1350	1010
30	.....	.....	.....	420	2760	2890	160	80	725	315	810	1340	1010
31	.....	.....	.....	350	.....	2640	.....	80	505	.....	815	.....	850
Total.	.....	.....	.....	8296	37188	95450	71155	3557	7650	4455	24215	29445	30335
Mean	.....	.....	.....	593	1240	3080	2370	115	247	148	781	982	979
Max.	.....	.....	.....	.....	2760	4360	4500	230	725	350	1010	1450	1340
Min.	.....	.....	.....	.....	245	2510	150	80	80	85	430	645	550
Acre-ft.	.....	.....	.....	16500	73800	189000	141000	7070	15200	8810	48000	58400	60200

Discharge of South Platte River near Julesburg for 1916.
Altitude, 3,469 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	1060	78	56	56	36	28	48	37	176	.....
2	.....	.....	.....	1360	64	54	56	35	28	36	37	167	.....
3	.....	.....	.....	1260	56	54	56	24	28	36	37	140	.....
4	.....	.....	.....	1020	55	54	52	24	24	40	41	158	.....
5	.....	.....	.....	880	65	54	49	24	24	40	45	164	.....
6	.....	.....	.....	797	77	54	41	24	24	36	41	170	.....
7	.....	.....	.....	709	77	48	41	16	24	31	41	177	.....
8	.....	.....	.....	706	70	48	38	24	24	28	41	169	.....
9	.....	.....	.....	705	64	38	34	24	21	28	46	189	.....
10	.....	.....	.....	593	68	38	34	24	18	28	50	187	.....
11	.....	.....	.....	509	69	32	38	26	24	31	51	196	.....
12	.....	.....	.....	418	64	32	60	21	32	36	55	182	.....
13	.....	.....	.....	354	64	36	88	21	32	37	63	163	.....
14	.....	.....	.....	262	62	36	72	26	28	41	69	149	.....
15	.....	.....	.....	221	62	36	66	28	24	42	83	165	.....
16	.....	.....	.....	189	62	46	50	28	22	41	121	196	.....
17	.....	.....	.....	154	62	50	44	28	19	38	106	215	.....
18	.....	.....	.....	175	62	50	46	28	19	38	93	212	.....
19	.....	.....	.....	143	54	51	47	34	22	38	78	233	.....
20	.....	.....	.....	109	46	58	52	48	23	38	81	269	.....
21	.....	.....	.....	70	50	106	56	36	48	34	109	292	.....
22	.....	.....	.....	72	54	191	66	30	37	34	141	244	.....
23	.....	.....	.....	74	54	199	60	25	37	34	190	209	.....
24	.....	.....	1560	77	54	181	46	21	36	34	275	194	.....
25	.....	.....	1400	85	54	158	45	19	33	34	305	207	.....
26	.....	.....	1240	85	54	143	45	25	34	35	297	232	.....
27	.....	.....	1180	96	46	112	45	25	34	34	185	226	.....
28	.....	.....	976	99	54	95	44	22	34	35	184	223	.....
29	.....	.....	923	83	68	76	37	19	33	35	183	223	.....
30	.....	.....	.....	70	62	68	37	22	36	39	175	223	.....
31	.....	.....	.....	70	.....	56	.....	25	45	.....	175	.....	.....
Total	.....	.....	7279	12505	1831	2310	1501	812	895	1079	3435	5950	.....
Mean	.....	.....	.....	403	61.0	74.5	50.0	26.2	28.9	36.0	111	198	.....
Max.	.....	.....	.....	1360	78	199	88	48	48	48	305	292	.....
Min.	.....	.....	.....	70	46	32	34	16	18	28	37	132	.....
Acre-ft.	.....	.....	14400	24800	3630	4580	2980	1610	1780	2140	6820	11800	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Tarryall Creek near Jefferson for 1915.
Drainage Area, 223 Square Miles. Altitude, 9,500 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	31	54	52	24	28	49	23	20
2	.....	.....	.....	.....	.....	18	217	45	23	24	38	22	22
3	.....	.....	.....	.....	.....	20	239	54	23	28	42	23	22
4	.....	.....	.....	.....	.....	20	320	59	18	28	38	23	22
5	.....	.....	.....	.....	.....	18	175	84	22	26	32	23	23
6	.....	.....	.....	.....	.....	28	147	78	22	26	31	23	23
7	.....	.....	.....	.....	.....	28	196	42	29	23	27	29	26
8	.....	.....	.....	.....	.....	59	85	35	130	23	26	28	28
9	.....	.....	.....	.....	.....	35	52	37	72	23	27	23	28
10	.....	.....	.....	.....	.....	34	45	30	45	23	27	29	28
11	.....	.....	.....	.....	130	26	52	23	49	23	28	24	24
12	.....	.....	.....	.....	114	33	87	20	42	22	30	22	.....
13	.....	.....	.....	.....	87	45	122	28	37	19	30	16	.....
14	.....	.....	.....	.....	64	39	114	32	34	20	35	14	.....
15	.....	.....	.....	.....	52	18	71	28	36	18	33	11	.....
16	.....	.....	.....	.....	48	13	64	23	57	22	37	18	.....
17	.....	.....	.....	.....	46	17	87	23	76	23	29	18	.....
18	.....	.....	.....	.....	54	23	106	16	39	24	28	23	.....
19	.....	.....	.....	.....	52	45	98	16	35	23	26	23	.....
20	.....	.....	.....	.....	43	56	98	20	31	22	27	23	.....
21	.....	.....	.....	.....	41	76	138	22	30	22	27	24	.....
22	.....	.....	.....	.....	42	61	138	18	30	22	26	23	.....
23	.....	.....	.....	.....	35	47	147	23	34	20	24	23	.....
24	.....	.....	.....	.....	37	37	138	22	41	18	24	23	.....
25	.....	.....	.....	.....	39	35	147	28	39	32	24	23	.....
26	.....	.....	.....	.....	36	31	122	36	34	122	24	23	.....
27	.....	.....	.....	.....	35	33	98	156	34	39	23	23	.....
28	.....	.....	.....	.....	41	28	98	130	28	28	23	23	.....
29	.....	.....	.....	.....	39	23	130	59	28	51	23	23	.....
30	.....	.....	.....	.....	48	31	78	39	30	76	23	22	.....
31	.....	.....	.....	.....	.....	45	.....	29	28	.....	23	.....	.....
Total	.....	.....	.....	.....	1083	1053	3663	1307	1200	898	904	668	266
Mean	.....	.....	.....	.....	54.1	34.0	122	42.2	38.7	29.9	29.2	22.3	24.2
Max.	.....	.....	.....	.....	130	76	320	156	130	122	49	29	.....
Min.	.....	.....	.....	.....	35	13	45	16	18	18	23	11	.....
Acre-ft.	.....	.....	.....	.....	2150	2090	7260	2590	2380	1780	1800	1330	528

Discharge of Tarryall Creek near Jefferson for 1916.
Drainage Area, 223 Square Miles. Altitude, 9,500 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	19	25	21	12	312	38	15	26	.....
2	.....	.....	.....	.....	23	24	39	44	110	39	16	25	.....
3	.....	.....	.....	.....	21	26	36	36	80	37	13	24	.....
4	.....	.....	.....	.....	23	64	32	51	190	29	16	24	.....
5	.....	.....	.....	.....	21	59	71	43	120	37	12	26	.....
6	.....	.....	.....	.....	21	37	83	44	120	36	16	25	.....
7	.....	.....	.....	.....	22	32	68	36	102	44	13	25	.....
8	.....	.....	.....	.....	19	26	71	23	180	36	7	20	.....
9	.....	.....	.....	.....	21	28	68	12	88	38	13	23	.....
10	.....	.....	.....	.....	22	36	62	23	71	31	16	24	.....
11	.....	.....	.....	.....	22	25	54	39	62	44	10	25	.....
12	.....	.....	.....	.....	24	26	68	170	51	34	8	.....	.....
13	.....	.....	.....	.....	25	24	48	110	94	32	9	.....	.....
14	.....	.....	.....	.....	24	13	62	54	94	36	12	.....	.....
15	.....	.....	.....	.....	23	9	68	44	80	29	32	.....	.....
16	.....	.....	.....	.....	21	24	25	50	62	32	36	.....	.....
17	.....	.....	.....	.....	24	11	36	62	71	28	46	.....	.....
18	.....	.....	.....	.....	21	6	48	41	72	34	52	.....	.....
19	.....	.....	.....	.....	21	5	58	65	64	37	54	.....	.....
20	.....	.....	.....	.....	19	6	44	41	68	29	51	.....	.....
21	.....	.....	.....	.....	19	50	51	41	58	26	38	.....	.....
22	.....	.....	.....	68	22	92	43	37	54	36	58	.....	.....
23	.....	.....	.....	56	27	58	37	41	58	37	37	.....	.....
24	.....	.....	.....	49	32	28	25	36	57	32	29	.....	.....
25	.....	.....	.....	37	28	11	26	26	59	18	41	.....	.....
26	.....	.....	.....	28	24	4	23	26	57	16	46	.....	.....
27	.....	.....	.....	34	25	2	24	52	52	26	37	.....	.....
28	.....	.....	.....	34	25	1	23	58	54	27	51	.....	.....
29	.....	.....	.....	29	31	1	25	38	58	18	36	.....	.....
30	.....	.....	.....	28	29	2	22	170	54	18	32	.....	.....
31	.....	.....	.....	25	.....	8	.....	375	59	.....	19	.....	.....
Total.	.....	.....	.....	388	698	763	1361	1900	2711	954	871	267	.....
Mean	.....	.....	.....	38.8	23.3	24.6	45.4	61.3	87.5	31.8	.....	.....	.....
Max.	.....	.....	.....	68	32	92	83	375	312	44	.....	.....	.....
Min.	.....	.....	.....	25	19	1	21	12	52	18	.....	.....	.....
Acre-ft.	.....	.....	.....	770	1390	1510	2700	3770	5380	1890	.....	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

GENEVA CREEK AT GRANT.

Location.—In the Pike National Forest, at highway bridge in sec. 9, T. 7 S., R. 74 W., at Grant postoffice; 300 feet above mouth of creek.

Records Available.—November 3, 1911, to November 8, 1916.

Drainage Area.—74 square miles.

Gage.—Vertical staff.

Channel.—Practically permanent.

Discharge Measurements.—Made from bridge during high water and by wading at ordinary stages.

Winter Flow.—Ice causes backwater during the winter months. Discharge estimated from measurements.

Diversions.—There is a court decree for a diversion above this station for 1.0 second-feet from Geneva Creek and a provisional decree for 480 acre-feet.

Accuracy.—Results are considered good.

Co-operation.—Station maintained in co-operation with the United States Geological Survey.

CLEAR CREEK NEAR GOLDEN.

Location.—About 2 miles above Golden, in sec. 6, T. 4 S., R. 70 W., and a short distance below the headgate of the Golden ditch. The only tributary of importance between the station and the mouth is Ralston Creek, which enters about 12 miles below.

Records Available.—December 4, 1908, to December 31, 1909; June 8 to September 24, 1911; January 26, 1912, to November 7, 1916.

Drainage Area.—Approximately 380 square miles.

Gage.—Automatic recording gage, whose datum has remained unchanged.

Channel.—Slightly shifting.

Discharge Measurements.—Made from car and cable located near the gage.

Winter Flow.—Ice causes backwater during the winter months, but discharge measurements are made to determine the approximate winter flow.

Diversions.—Between Forks Creek and the station near Golden there is a court decree for a diversion of 26 second-feet by the Golden ditch.

Accuracy.—Conditions are favorable for accurate results, and the records should be reliable.

Co-operation.—Records were furnished by the United States Geological Survey.

Discharge of Geneva Creek at Grant for 1915.
Drainage Area, 74 Square Miles. Altitude, 8,566 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	18	6	11	11	31	268	141	50	24	37	20	12
2	16	10	10	13	17	230	141	44	23	39	15	12
3	16	7	10	16	16	138	141	36	24	43	21	12
4	14	5	10	14	25	130	138	39	25	41	23	12
5	12	7	9	14	18	141	127	37	26	31	27	13
6	11	11	9	13	18	98	130	40	23	31	23	12
7	10	12	9	13	20	112	115	54	23	30	23	12
8	14	14	9	14	20	130	112	81	22	25	21	12
9	14	16	9	19	26	144	108	68	23	27	18	12
10	12	12	9	16	24	179	108	66	22	28	31	12
11	21	11	10	17	50	248	108	52	22	30	17	12
12	18	11	10	19	105	248	98	44	22	28	21	12
13	21	8	10	19	196	164	98	53	20	30	11	13
14	16	11	10	20	186	136	108	46	21	32	11	13
15	12	12	10	26	149	158	94	46	22	31	12	13
16	10	11	10	17	176	149	88	53	22	29	12	13
17	6	7	10	12	155	212	81	44	22	27	12	13
18	12	10	10	22	161	196	75	43	23	27	12	13
19	18	11	10	17	59	248	72	48	22	24	13	13
20	12	10	10	20	70	230	77	44	22	24	14	13
21	8	8	9	20	47	230	70	48	20	24	14	13
22	3	8	9	25	202	212	72	44	20	23	14	13
23	5	8	10	32	96	199	63	42	19	23	14	13
24	6	10	10	15	141	192	73	43	19	20	13	13
25	6	10	10	14	155	173	68	43	19	22	13	13
26	6	10	11	15	98	161	63	34	40	23	13	13
27	5	10	11	24	133	161	72	30	27	23	12	13
28	4	10	12	66	94	152	66	26	27	23	12	13
29	6	.....	12	42	158	146	54	28	30	23	13	13
30	7	.....	12	73	170	149	61	28	34	22	13	13
31	6	.....	12	.....	268	.....	47	25	.....	25	.....	13
Total	345	276	313	658	3084	5334	2869	1379	708	865	488	392
Mean	11.1	9.9	10.1	21.9	99.5	178	92.5	44.5	23.6	27.9	16,3	12.6
Max.	21	16	12	73	268	268	141	81	40	43	31	13
Min.	3	5	9	11	16	98	47	25	19	22	11	12
Acre-ft.	682	548	621	1300	6120	10600	5690	2740	1400	1720	970	775

Discharge of Geneva Creek at Grant for 1916.
Drainage Area, 74 Square Miles. Altitude, 8,566 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	13	10	9	13	32	172	118	102	54	30	23	.....
2	13	10	12	12	35	145	113	76	49	30	23	.....
3	13	10	19	14	30	140	111	72	49	30	25	.....
4	13	10	14	12	42	145	109	86	47	30	24	.....
5	12	10	12	13	40	145	102	126	41	28	24	.....
6	12	10	10	11	41	134	97	102	40	28	22	.....
7	12	10	10	11	87	118	93	80	38	28	20	.....
8	12	10	10	12	95	118	91	93	37	27	18	.....
9	12	11	10	12	140	145	91	76	36	28	.....	.....
10	11	10	10	14	175	151	95	72	37	27	.....	.....
11	12	10	10	18	157	145	95	62	47	27	.....	.....
12	12	11	11	17	113	175	93	62	49	27	.....	.....
13	12	10	18	19	100	178	86	113	46	27	.....	.....
14	12	12	25	16	95	169	87	95	44	27	.....	.....
15	12	10	19	19	70	151	84	89	41	23	.....	.....
16	12	10	14	17	73	157	84	84	37	30	.....	.....
17	12	10	13	20	72	151	86	80	36	30	.....	.....
18	12	11	11	23	61	163	78	70	39	35	.....	.....
19	12	11	10	22	64	169	74	64	39	23	.....	.....
20	11	10	14	14	74	160	74	61	39	29	.....	.....
21	11	11	19	19	76	151	73	60	35	29	.....	.....
22	11	10	12	24	73	140	73	56	31	28	.....	.....
23	11	10	14	28	66	134	67	56	31	30	.....	.....
24	11	10	10	27	72	140	60	60	31	32	.....	.....
25	11	10	13	30	106	134	61	59	31	19	.....	.....
26	11	10	12	182	104	134	61	61	31	18	.....	.....
27	10	10	9	42	91	134	61	60	30	18	.....	.....
28	10	10	12	53	106	134	61	60	30	19	.....	.....
29	10	10	15	54	118	126	61	60	30	20	.....	.....
30	10	.....	12	38	121	121	91	61	30	21	.....	.....
31	10	.....	14	.....	148	.....	93	59	.....	22	.....	.....
Total	358	297	403	806	2677	4379	2623	2317	1155	820	179	.....
Mean	11.5	10.2	13	26.9	86.4	146	84.6	74.7	38.5	26.5	.....	.....
Max	13	12	25	182	175	178	118	126	54	35	.....	.....
Min	10	10	9	11	30	118	60	56	30	18	.....	.....
Acre-ft.	707	587	799	1600	5310	8690	5200	4590	2290	1630	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Clear Creek near Golden for 1915.
Drainage Area, 380 Square Miles. Altitude, 5,620 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	50	332	791	984	284	142	146	99	.....
2	.....	.....	.....	52	284	928	1010	278	140	133	100	.....
3	.....	.....	.....	54	250	872	928	270	165	121	99	.....
4	.....	.....	.....	56	267	845	928	257	172	133	96	.....
5	.....	.....	.....	51	250	610	872	267	170	127	94	.....
6	.....	.....	61	51	228	610	928	195	172	123	89	.....
7	.....	.....	.....	51	197	610	872	257	162	119	85	.....
8	.....	51	.....	52	218	635	818	431	160	115	81	.....
9	.....	.....	49	51	218	764	712	466	158	111	86	.....
10	.....	.....	.....	48	250	956	660	360	140	107	84	.....
11	.....	.....	.....	52	284	1130	738	302	129	114	.....	.....
12	.....	.....	.....	54	340	1310	872	267	118	116	.....	.....
13	.....	.....	.....	60	360	1400	764	250	118	112	.....	.....
14	.....	.....	.....	80	466	1160	660	234	121	114	.....	.....
15	.....	.....	.....	102	512	928	712	234	131	127	.....	.....
16	.....	.....	.....	114	512	1010	660	267	142	123	.....	.....
17	.....	.....	.....	110	560	1100	635	250	131	120	.....	.....
18	.....	.....	.....	102	502	1160	585	250	118	120	.....	.....
19	.....	.....	.....	97	444	1460	560	234	105	125	.....	.....
20	.....	.....	.....	110	444	1370	507	234	104	120	.....	.....
21	.....	.....	.....	114	444	1280	498	218	105	116	.....	.....
22	.....	.....	.....	123	444	1460	480	203	90	114	.....	.....
23	.....	.....	.....	140	444	1520	457	218	89	108	.....	.....
24	.....	.....	.....	150	444	1400	431	218	99	105	.....	.....
25	.....	.....	.....	167	512	1460	401	212	140	108	.....	.....
26	.....	.....	.....	181	560	1220	409	195	172	108	.....	.....
27	.....	.....	.....	209	560	1190	422	175	152	110	.....	.....
28	.....	.....	.....	234	536	1100	426	155	137	107	.....	.....
29	.....	.....	.....	250	536	1040	380	170	148	104	.....	.....
30	.....	.....	.....	284	536	1010	336	150	160	102	.....	.....
31	.....	.....	.....	.....	610	.....	313	150	.....	100	.....	.....
Total	.....	.....	.....	3249	12544	32329	19958	7651	4090	3608	913	.....
Mean	.....	.....	.....	108	405	1080	644	247	136	116	91.3	.....
Max	.....	.....	.....	284	610	1520	1010	466	172	146	.....	.....
Min	.....	.....	.....	50	197	610	313	150	89	100	.....	.....
Acre-ft.	.....	.....	.....	6430	24900	64300	39600	15200	8090	7130	1810	.....

Discharge of Clear Creek near Golden for 1916.
Drainage Area, 380 Square Miles. Altitude, 5,620 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	66	158	517	615	426	244	110	91	.....
2	.....	.....	.....	71	175	550	580	372	228	121	123	.....
3	.....	.....	.....	72	144	536	605	352	222	118	125	.....
4	.....	.....	.....	68	158	550	555	414	231	116	93	.....
5	.....	.....	.....	71	168	595	526	453	218	112	94	.....
6	.....	.....	48	69	189	541	507	397	225	175	86	.....
7	.....	.....	46	70	298	475	498	376	203	152	81	.....
8	.....	.....	54	72	317	475	498	409	203	90	.....	.....
9	.....	.....	58	66	340	526	517	418	197	89	.....	.....
10	.....	.....	63	61	393	645	531	393	175	94	.....	.....
11	.....	.....	63	76	414	665	507	344	228	93	.....	.....
12	.....	.....	61	76	393	733	480	360	203	102	.....	.....
13	.....	.....	63	86	393	764	440	393	228	108	.....	.....
14	.....	.....	61	84	418	748	426	384	218	107	.....	.....
15	.....	.....	60	82	356	717	393	384	209	135	.....	.....
16	.....	.....	66	84	317	728	393	368	181	125	.....	.....
17	.....	.....	66	81	295	759	440	356	170	144	.....	.....
18	.....	.....	67	93	278	829	431	325	168	150	.....	.....
19	.....	.....	61	97	270	818	414	306	160	150	.....	.....
20	.....	.....	58	90	310	791	368	284	155	143	.....	.....
21	.....	.....	71	85	295	738	356	295	146	136	.....	.....
22	.....	.....	67	89	295	640	360	274	146	129	.....	.....
23	.....	.....	68	90	237	640	321	254	148	125	.....	.....
24	.....	.....	68	104	281	605	321	247	142	121	.....	.....
25	.....	.....	58	118	317	610	302	254	142	112	.....	.....
26	.....	.....	58	131	356	635	317	254	140	112	.....	.....
27	.....	.....	64	148	360	640	321	234	135	109	.....	.....
28	.....	.....	70	175	372	676	332	178	135	121	.....	51
29	.....	.....	74	206	418	702	340	212	125	195	.....	.....
30	.....	.....	69	183	422	686	453	241	123	125	.....	.....
31	.....	.....	70	.....	494	.....	466	260	.....	133	.....	.....
Total	.....	.....	1632	2864	9631	19534	13613	10217	5448	3852	693	.....
Mean	.....	.....	62.8	955	311	651	439	330	182	124	.....	.....
Max	.....	.....	74	206	494	829	615	453	244	195	.....	.....
Min	.....	.....	46	61	144	475	302	178	123	89	.....	.....
Acre-ft.	.....	.....	3240	5680	19100	38700	27000	20300	10800	7620	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

SOUTH BOULDER CREEK NEAR ROLLINSVILLE.

Location.—At highway bridge in sec. 35, T. 1 S., R. 73 W., 1 mile west of Rollinsville, in the Pike National Forest. The nearest important tributary, Jennie Creek, enters 4 miles above.

Records Available.—September 10, 1910, to December 31, 1916.

Drainage Area.—39 square miles.

Gage.—Vertical staff.

Channel.—Fairly permanent.

Discharge Measurements.—Made from bridge during high water and by wading at ordinary stages.

Winter Flow.—Ice causes backwater during the winter months. Flow estimated from measurements.

Diversions.—There are no court decrees for diversions above the station, and therefore it is probable that the records represent the natural run-off.

Accuracy.—Conditions are favorable for fairly accurate results and the estimates of discharge should be reliable.

Co-operation.—Records furnished by the United States Geological Survey.

SOUTH BOULDER CREEK AT ELDORADO SPRINGS.

Location.—At the mouth of the canyon at Eldorado Springs, in sec. 30, T. 1 S., R. 70 W., 3 miles southwest of Marshall. No important tributaries within several miles.

Records Available.—May 15, 1895, to September 30, 1901; July 1, 1904, to November 30, 1916.

Drainage Area.—125 square miles.

Gage.—Vertical staff; datum unchanged.

Channel.—Fairly permanent.

Discharge Measurements.—Made by wading.

Winter Flow.—Warm springs keeping channel open during the winter.

Diversions.—There are court decrees for diversions of 137 second-feet above the station and 1,658 second-feet below. There are also a number of flood-water decrees.

Discharge of South Boulder Creek near Hollinsville for 1915.
Drainage Area, 39 Square Miles. Altitude, 8,500 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	6	8	149	372	254	62	24	27	15	9
2	.....	.....	6	8	114	372	266	67	24	26	14	7
3	.....	.....	6	11	90	288	254	67	39	25	15	7
4	.....	.....	6	14	89	266	242	55	31	24	15	8
5	.....	.....	6	11	77	254	242	44	28	23	13	8
6	.....	.....	6	10	72	242	231	44	27	22	13	9
7	.....	.....	6	10	80	231	231	58	23	21	14	10
8	.....	.....	6	10	67	254	188	86	31	20	13	10
9	.....	.....	6	10	67	266	188	92	24	22	12	11
10	.....	.....	7	10	98	277	188	67	21	22	13	11
11	.....	.....	7	23	114	324	188	52	23	18	18	10
12	.....	.....	7	26	140	348	188	53	21	16	23	9
13	.....	.....	7	31	220	277	188	42	21	22	16	9
14	.....	.....	6	39	231	266	188	58	21	19	21	10
15	.....	.....	7	35	254	266	178	50	23	21	14	9
16	.....	.....	7	35	242	266	168	44	22	24	18	9
17	.....	.....	7	48	242	300	168	42	21	22	18	8
18	.....	.....	7	37	277	266	158	44	21	19	16	8
19	.....	.....	7	42	188	372	158	42	16	20	15	7
20	.....	.....	7	46	168	472	114	32	15	20	12	9
21	.....	.....	6	62	158	422	114	38	15	22	16	10
22	.....	.....	7	53	149	472	114	32	16	16	19	11
23	.....	.....	7	55	149	422	114	32	15	18	13	12
24	.....	.....	7	46	178	372	98	34	15	18	16	10
25	.....	.....	7	46	178	348	83	32	27	16	13	10
26	.....	.....	7	57	198	324	80	32	33	16	13	7
27	.....	.....	7	76	242	324	80	32	27	15	12	7
28	.....	.....	7	95	288	277	83	30	27	12	11	8
29	.....	.....	7	114	242	254	80	30	29	13	10	7
30	.....	.....	8	168	220	277	80	25	27	15	10	7
31	.....	.....	8	.....	254	.....	75	25	.....	15	.....	7
Total	.....	.....	208	1236	5235	9471	4981	1443	706	609	441	274
Mean....	.....	.....	6.7	41.2	169	316	161	46.5	23.5	19.6	14.7	8.84
Max.....	.....	.....	8	168	288	472	266	92	39	27	23	11
Min.....	.....	.....	6	8	67	231	75	25	15	12	10	7
Acre-ft.	.....	.....	413	2450	10400	18800	9900	2860	1400	1210	875	544

Discharge of South Boulder Creek near Hollinsville for 1916.
Drainage Area, 39 Square Miles. Altitude, 8,500 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	8	6	9	19	45	198	205	106	26	17	19	14
2	8	6	9	21	43	239	188	91	29	17	19	13
3	9	6	10	19	47	239	188	100	26	17	19	13
4	10	7	10	19	47	239	188	106	25	17	19	14
5	10	8	10	19	48	239	168	103	23	17	18	14
6	9	9	9	19	55	239	151	100	23	17	17	14
7	9	10	10	19	67	239	151	85	21	17	17	14
8	9	10	10	19	96	239	168	76	21	17	15	14
9	10	9	10	20	119	239	140	63	21	17	15	14
10	9	9	12	19	132	239	123	58	21	17	16	14
11	8	9	12	23	146	273	117	42	23	17	16	14
12	7	9	14	23	146	273	106	50	23	17	14	14
13	7	8	18	23	132	273	103	48	20	17	13	14
14	7	9	14	25	132	273	91	58	19	17	14	13
15	8	9	26	25	132	273	100	53	17	15	15	14
16	7	9	19	25	119	273	94	48	17	20	16	14
17	6	9	19	25	108	273	106	42	20	25	17	14
18	6	9	21	30	98	273	100	40	19	21	17	14
19	7	9	22	30	91	273	79	33	17	20	17	14
20	8	9	21	29	98	273	58	42	17	21	17	14
21	8	9	24	30	98	273	58	30	17	19	17	14
22	10	9	24	31	98	256	60	29	17	23	15	14
23	10	8	23	31	96	239	48	30	17	21	15	14
24	9	8	18	37	98	222	48	29	19	21	14	14
25	10	10	19	40	119	222	50	27	17	21	14	14
26	9	9	19	42	132	239	53	32	17	21	14	14
27	8	9	19	47	132	205	58	29	21	21	14	14
28	7	9	23	47	132	222	58	29	19	21	14	14
29	7	9	19	39	146	222	63	27	19	21	14	12
30	7	.....	18	39	146	222	110	29	17	20	13	12
31	7	.....	19	.....	165	.....	120	26	.....	20	.....	12
Total	254	249	510	834	3263	7401	3350	1661	608	589	474	425
Mean....	8.19	8.59	16.5	27.8	105	247	108	53.6	20.3	19.0	15.8	13.7
Max.....	10	10	26	47	165	273	205	106	29	25	19	14
Min.....	6	6	9	19	43	198	48	26	17	15	13	12
Acre-ft.	504	494	1010	1650	6460	14700	6640	3300	1210	1170	940	842

Unless otherwise noted, all discharges are in cubic feet per second

Discharge of South Boulder Creek at Eldorado Springs for 1915.
Drainage Area, 125 Square Miles. Altitude, 5,800 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	28	276	465	288	85	33	43	30	24
2	.....	.....	.....	.....	37	242	463	311	85	33	38	28	29
3	.....	.....	.....	.....	44	212	462	283	69	33	43	29	29
4	.....	.....	.....	.....	56	198	388	282	55	55	43	30	29
5	.....	.....	.....	.....	63	184	388	269	55	55	43	30	27
6	.....	.....	.....	.....	64	184	373	255	49	43	43	30	27
7	.....	.....	.....	.....	63	212	406	227	55	38	38	30	27
8	.....	.....	.....	.....	65	227	382	226	105	33	33	30	27
9	.....	.....	.....	.....	74	242	455	201	116	43	33	33	27
10	.....	.....	.....	.....	64	242	562	207	90	33	33	29	27
11	.....	.....	.....	.....	77	259	620	199	73	33	33	24	27
12	.....	.....	.....	.....	76	275	680	207	73	33	33	24	27
13	.....	.....	.....	.....	82	359	528	193	59	33	33	24	16
14	.....	.....	.....	.....	85	425	426	207	69	33	33	24	25
15	.....	.....	.....	.....	130	360	366	193	77	33	49	24	19
16	.....	.....	.....	.....	134	359	359	179	69	38	55	29	19
17	.....	.....	.....	.....	130	358	421	166	62	33	55	29	19
18	.....	.....	.....	.....	130	404	379	152	55	29	55	29	28
19	.....	.....	.....	.....	135	316	418	152	55	29	55	27	24
20	.....	.....	.....	.....	126	295	566	152	55	25	43	27	24
21	.....	.....	.....	.....	132	295	516	127	55	25	43	21	22
22	.....	.....	.....	.....	144	258	447	127	49	25	43	30	22
23	.....	.....	.....	.....	153	274	465	127	55	25	38	30	22
24	.....	.....	.....	.....	167	273	399	116	55	25	25	30	22
25	.....	.....	.....	.....	230	336	419	105	55	33	13	16	22
26	.....	.....	.....	.....	258	357	396	105	43	85	9	19	22
27	.....	.....	.....	.....	288	315	376	105	43	49	9	36	22
28	.....	.....	.....	19	244	273	334	105	38	43	9	24	22
29	.....	.....	.....	19	261	275	290	105	38	43	9	24	22
30	.....	.....	.....	24	298	328	288	105	38	55	9	29	22
31	.....	.....	.....	24	.....	329	.....	95	33	.....	9	.....	22
Total	.....	.....	.....	.....	3838	8942	13047	5571	1913	1126	1050	819	743
Mean	.....	.....	.....	.....	128	288	435	180	61.7	37.5	33.9	27.3	24.0
Max.	.....	.....	.....	.....	298	425	680	311	116	85	55	36	29
Min.	.....	.....	.....	.....	28	184	288	95	33	25	9	16	16
Acre-ft.	.....	.....	.....	.....	7620	17700	25900	11100	3790	2230	2080	1620	1480

Discharge of South Boulder Creek at Eldorado Springs for 1916.
Drainage Area, 125 Square Miles. Altitude, 5,800 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	18	18	20.5	21	62	218	170	124	32	21	30	.....
2	.....	18	18	16.5	36	74.5	218	154	81	28	21	30	.....
3	.....	18	18	17	40	61	235	139	72	21	21	24	.....
4	.....	18	18	19	35	92	252	139	81	18	21	28	.....
5	.....	11	18	19	38	101	252	139	62	21	21	28	.....
6	.....	14	18	19	38	89	235	139	96	28	21	25	.....
7	.....	14	18	19	35	106	218	109	102	28	21	21	.....
8	.....	14	18	19	33	140	218	109	62	24	21	21	.....
9	.....	14	18	19	33	166	235	109	72	21	21	24	.....
10	.....	14	18	22	35	200	252	124	81	21	21	19	.....
11	.....	22	18	25	36	162	270	109	62	28	21	24	.....
12	.....	19	18	25	39.5	154	252	95	62	28	21	24	.....
13	.....	19	22	24	48.5	178	252	81	81	28	21	20	.....
14	.....	19	16.5	24	40	185	235	81	81	28	21	20	.....
15	.....	18	16.5	24	45	176	235	47	62	28	105	20	.....
16	.....	18	19	24	44	130	235	95	62	28	48	20	.....
17	.....	18	16.5	24	43.5	140	218	95	62	24	54	22	.....
18	.....	18	16.5	24	50.5	132	235	81	62	21	61	22	.....
19	.....	18	16.5	20	52.5	109	218	81	37	21	46	22	.....
20	.....	18	16.5	20	48.5	194	235	62	24	21	36	22	.....
21	.....	18	17	27	44	206	252	62	37	21	45	22	.....
22	.....	18	16.5	25.5	52.5	209	235	62	47	21	56	22	.....
23	.....	18	19	25.5	54.5	178	202	62	42	21	52	22	.....
24	.....	18	14	24	60.5	162	170	54	42	24	44	22	.....
25	.....	18	16.5	24	60.5	190	186	47	37	21	44	22	.....
26	.....	18	14	24	58	222	186	47	37	21	46	22	.....
27	.....	18	19	24	65	170	186	47	42	21	40	22	.....
28	.....	18	14	27	74	170	202	54	37	21	43	22	.....
29	.....	18	16.5	27	117	186	186	72	32	24	39	22	.....
30	.....	18	.....	27	76	170	170	62	32	21	37	22	.....
31	.....	18	.....	27	.....	202	.....	109	37	.....	37	.....	.....
Total		538	502.5	706	1454	4716.5	6693	2836	1850	713	1127	686	.....
Mean		17.4	17.3	22.8	48.5	152	223	91.5	59.7	23.8	36.4	22.9	.....
Max.		22	22	27	117	222	270	170	124	32	105	30	.....
Min.		11	14	16.5	21	61	170	47	24	18	21	19	.....
Acre-ft.		1070	995	1400	2890	9350	13300	5630	3670	1420	2240	1360	.....

Unless otherwise noted, all discharges are in cubic feet per second.
Note.—Discharge of Community Canal included.

BOULDER CREEK AT ORODELL.

Location.—At Orodell Station in sec. 27, T. 1 N., R. 71 W., just above the mouth of Four-Mile Creek.

Records Available.—March 18, 1907, to November 26, 1914; February 27 to December 12, 1916. From May 14, 1895, to December 20, 1909, a station was maintained about 1 mile below the present site, chiefly by the State Engineer. The records at the two points are not directly comparable, as some water is diverted for irrigation between.

Drainage Area.—108 square miles.

Gage.—Automatic recording gage installed by the Colorado Power Company.

Channel.—Shifts in extreme high water.

Discharge Measurements.—Made from car and cable.

Winter Flow.—Ice causes backwater during the winter months and during that period discharge measurements are made to determine the flow.

Diversions.—There are no diversions from Boulder Creek above the station, but there are court decrees for diversions of 165 second-feet from tributaries entering above. Below the station there are decrees for diversions of 2,871 second-feet from Boulder Creek.

Co-operation.—Station maintained in co-operation with the Colorado Power Co.

ST. VRAIN CREEK AT LYONS.

Location.—Three-fourths of a mile below Lyons, in sec. 17, T. 3 N., R. 70 W., one-fourth mile below the junction of North and South St. Vrain Creeks and just below Stone Canyon.

Records Available.—August 1, 1887, to October 31, 1890; June 13, 1895, to October 31, 1903; July 1, 1904, to December 31, 1916.

Drainage Area.—209 square miles.

Gage.—Inclined staff gage installed August 9, 1909, at practically the same datum as the inclined staff gage used from 1895 to 1903. It is not known whether the gage used prior to 1895 was located at the present site.

Channel.—Permanent.

Discharge Measurements.—Made from car and cable.

Winter Flow.—Ice causes very little backwater at this station.

Diversions.—There are court decrees for the diversion of 166 second-feet from the St. Vrain and tributaries above the station. Below there are court decrees for 1632 second-feet from St. Vrain Creek and flood-water diversions of 190,000 acre-feet.

Co-operation.—Station maintained in co-operation with the Great Western Sugar Co.

Discharge of Boulder Creek at Orodell for 1916.
Drainage Area, 108 Square Miles. Altitude, 5,723 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	96	70	.....	.....	370	195	90	31	38	31
2	.....	.....	.....	87	70	.....	.....	265	153	87	31	34	28
3	.....	.....	.....	117	62	.....	.....	265	180	70	28	34	26
4	.....	.....	.....	96	55	.....	.....	285	166	49	31	31	28
5	.....	.....	.....	94	62	.....	.....	305	195	52	31	28	28
6	.....	.....	.....	92	55	.....	.....	305	180	55	31	28	28
7	.....	.....	.....	90	55	.....	.....	285	180	49	24	28	26
8	.....	.....	.....	87	38	.....	.....	245	195	38	31	26	31
9	.....	.....	.....	84	62	.....	.....	245	180	34	28	22	26
10	.....	.....	.....	82	87	.....	.....	285	166	38	28	34	24
11	.....	.....	.....	80	62	.....	.....	305	166	49	28	43	26
12	.....	.....	.....	78	96	.....	.....	265	166	49	28	45	26
13	.....	.....	.....	62	62	.....	.....	228	180	62	28	47	.....
14	.....	.....	.....	55	49	.....	.....	210	166	78	28	49	.....
15	.....	.....	.....	55	43	.....	.....	228	153	70	43	55	.....
16	.....	.....	.....	55	62	.....	.....	180	140	70	31	55	.....
17	.....	.....	.....	55	62	.....	395	228	140	34	31	62	.....
18	.....	.....	.....	62	70	.....	395	228	140	43	34	55	.....
19	.....	.....	.....	78	70	.....	395	228	140	43	34	43	.....
20	.....	.....	.....	87	78	.....	370	228	128	38	28	62	.....
21	.....	.....	.....	87	70	.....	370	195	117	43	28	55	.....
22	.....	.....	.....	96	62	.....	245	180	117	38	30	49	.....
23	.....	.....	.....	96	87	.....	245	185	117	28	31	49	.....
24	.....	.....	.....	96	96	.....	285	190	117	28	32	49	.....
25	.....	.....	.....	96	106	.....	325	196	114	34	34	49	.....
26	.....	.....	.....	92	106	.....	370	202	110	34	38	49	.....
27	.....	.....	117	89	106	.....	348	208	107	38	43	34	.....
28	.....	.....	87	86	117	.....	370	213	103	34	43	38	.....
29	.....	.....	96	82	117	.....	395	218	100	38	34	31	.....
30	.....	.....	.....	78	117	.....	395	223	97	34	38	31	.....
31	.....	.....	.....	74	.....	.....	.....	228	94	.....	34	.....	.....
Total	.....	.....	.....	2564	2254	.....	4903	7421	4502	1447	992	1253	328
Mean	.....	.....	.....	82.7	75.1	.....	350	239	145	48.2	32.0	41.8	27.3
Max.	.....	.....	.....	117	117	.....	.....	370	195	90	43	62	.....
Min.	.....	.....	.....	55	43	.....	.....	180	94	28	24	22	.....
Acre-ft.	.....	.....	.....	5080	4470	.....	9720	14700	8920	2870	1970	2490	650

Discharge of St. Vrain Creek at Lyons for 1915.
Drainage Area, 209 Square Miles. Altitude, 5,349 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	40	390	390	461	185	99	138	57	15
2	.....	.....	.....	.....	40	346	436	436	185	91	118	57	18
3	.....	.....	.....	.....	57	291	390	436	160	99	118	57	18
4	.....	.....	.....	.....	63	274	390	390	160	185	118	57	22
5	.....	.....	.....	.....	69	291	346	390	138	185	118	57	25
6	.....	.....	.....	.....	69	308	346	413	138	138	99	57	25
7	.....	.....	.....	.....	138	327	346	346	149	108	99	51	25
8	.....	.....	.....	.....	138	390	390	346	212	138	99	57	30
9	.....	.....	.....	.....	138	390	461	327	242	160	91	51	25
10	.....	.....	.....	.....	118	390	540	346	212	128	83	57	25
11	.....	.....	.....	.....	128	368	670	346	185	128	83	45	18
12	.....	.....	.....	.....	138	346	750	390	185	118	83	25	15
13	.....	.....	.....	.....	138	346	540	346	160	138	69	25	12
14	.....	.....	.....	.....	138	390	413	390	149	118	69	22	.....
15	.....	.....	.....	.....	160	327	390	368	138	99	99	35	.....
16	.....	.....	.....	.....	242	308	346	327	138	99	138	51	.....
17	.....	.....	.....	.....	242	291	436	274	128	99	128	40	.....
18	.....	.....	.....	.....	242	390	486	258	149	99	118	40	.....
19	.....	.....	.....	12	242	308	670	274	160	99	99	45	.....
20	.....	.....	.....	12	212	291	830	242	160	99	99	45	.....
21	.....	.....	.....	12	198	274	710	227	149	91	99	45	.....
22	.....	.....	.....	15	242	258	750	212	149	83	99	45	.....
23	.....	.....	.....	18	570	258	750	212	149	83	83	45	.....
24	.....	.....	.....	22	600	242	750	212	185	69	83	35	.....
25	.....	.....	.....	25	600	291	570	185	185	128	76	25	.....
26	.....	.....	.....	18	670	308	540	212	185	242	83	15	.....
27	.....	.....	.....	12	540	258	513	308	160	138	69	35	.....
28	.....	.....	.....	30	436	242	461	750	118	138	69	30	.....
29	.....	.....	.....	25	390	258	436	242	108	185	63	15	.....
30	.....	.....	.....	30	436	308	486	212	108	160	63	35	.....
31	.....	.....	.....	30	.....	308	.....	212	99	.....	63	.....	.....
Total	.....	.....	.....	261	7434	9767	15532	10090	4928	3744	2916	1256	273
Mean	.....	.....	.....	20.1	248	315	518	325	159	125	94.1	41.9	21.0
Max.	.....	.....	.....	30	670	390	830	750	242	242	138	57	30
Min.	.....	.....	.....	12	40	242	346	185	99	69	63	15	12
Acre-ft.	.....	.....	.....	518	14800	19400	30800	20000	9780	7440	5790	2490	541

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of St. Vrain Creek at Lyons for 1916.
Drainage Area, 209 Square Miles. Altitude, 5,340 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	30	138	390	436	308	138	35	83	18
2	.....	.....	.....	.....	25	138	368	390	242	128	35	83	18
3	.....	.....	.....	.....	25	160	346	390	242	118	35	83	22
4	.....	.....	.....	.....	22	160	346	390	242	118	35	76	25
5	.....	.....	.....	.....	30	212	390	390	227	108	35	69	25
6	.....	.....	.....	.....	25	212	390	346	212	128	35	63	25
7	.....	.....	.....	.....	15	242	327	327	212	118	35	51	12
8	.....	.....	.....	.....	18	258	327	346	212	108	45	45	12
9	.....	.....	.....	.....	25	258	390	308	185	99	35	45	12
10	.....	.....	.....	30	25	308	413	486	185	118	25	57	12
11	.....	.....	.....	25	45	291	413	436	172	138	25	57	12
12	.....	.....	.....	30	45	308	436	346	185	108	35	18	18
13	.....	.....	.....	35	83	327	486	308	185	118	30	12	22
14	.....	.....	.....	30	69	346	486	308	212	99	25	25	18
15	.....	.....	.....	35	83	308	436	291	212	99	198	45	18
16	.....	.....	.....	35	91	274	436	308	212	83	99	51	25
17	.....	.....	.....	35	99	242	486	274	198	69	108	57	18
18	.....	.....	.....	40	128	242	513	291	172	69	118	45	18
19	.....	.....	.....	40	83	242	540	274	160	57	118	51	18
20	.....	.....	.....	45	69	461	540	242	160	57	91	51	22
21	.....	.....	.....	57	69	513	461	227	160	57	91	35	18
22	.....	.....	.....	45	83	390	436	212	149	57	99	45	18
23	.....	.....	.....	40	91	327	390	212	118	51	99	35	18
24	.....	.....	.....	40	91	274	436	212	118	51	91	35	18
25	.....	.....	.....	25	118	274	436	227	99	51	83	25	18
26	.....	.....	.....	25	118	274	436	212	99	45	91	35	18
27	.....	.....	.....	25	108	242	436	242	118	45	91	35	15
28	.....	.....	.....	35	118	242	436	227	99	51	99	15	12
29	.....	.....	.....	25	149	149	486	212	99	45	99	18	12
30	.....	.....	.....	30	138	308	461	291	83	40	99	15	12
31	.....	.....	.....	30	.....	346	.....	486	138	.....	91	.....	10
Total	.....	.....	.....	757	2118	8466	12823	9647	5415	2571	2230	1365	539
Mean	.....	.....	.....	34.4	70.6	273	427	311	175	85.7	71.9	45.3	17.4
Max.	.....	.....	.....	.....	149	513	540	486	308	138	198	83	25
Min.	.....	.....	.....	.....	15	138	327	212	83	40	25	12	10
Acre-ft.	.....	.....	.....	1500	4200	16800	25400	19100	10800	5100	4420	2700	1070

Unless otherwise noted, all discharges are in cubic feet per second.

CACHE LA POUDRE RIVER AT MOUTH OF CANON, NEAR FORT COLLINS.

Location.—In sec. 15, T. 8 N., R. 70 W., three miles below the intake of the Fort Collins waterworks, 12 miles above Fort Collins; half a mile above mouth of Lewstone Creek.

Records Available.—March 15, 1884, to October 15, 1901; February 3, 1910, to November 14, 1916.

Drainage Area.—1,060 square miles.

Gage.—An automatic recording gage installed November 30, 1909. No information available concerning the gage used 1884 to 1901.

Channel.—Permanent.

Discharge Measurements.—Made from car and cable.

Winter Flow.—Ice causes backwater during the winter months.

Regulation.—The flow is regulated by the Chambers Lake and Halligan Reservoirs and by ditches diverting water from the headwaters of the Laramie and Grand Rivers and Michigan Creek across the divide.

Diversions.—There are count decrees for the diversion of 614 second-feet above this station.

CACHE LA POUDRE RIVER AT MOUTH.

Location.—About three miles below Greeley and one-half mile above mouth.

Records Available.—March 24, 1903, to October 31, 1903; July 20, 1904, to November 30, 1904; February 1, 1914, to December 11, 1916.

Gage.—The vertical staff gage used since 1914 was replaced April 4, 1916, by a slope gage on the right bank directly opposite the old gage, but reading 2.50 feet lower. A Bristol automatic gage was also installed on this date.

Discharge Measurements.—By wading at low stages and from highway bridge about one mile above at high stages.

Diversions.—Below all diversions on this stream.

Accuracy.—Low water measurements are good, but high water measurements are subject to error on account of poor conditions at the highway bridge.

Co-operation.—During 1916, station was maintained in co-operation with the Colorado Experiment Station.

Discharge of Cache la Poudre River at Mouth of Canon for 1915.
Drainage Area, 1,060 Square Miles. Altitude, 5,070 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	460	1300	1245	255	235	145	90	102
2	.....	.....	.....	.....	.....	350	1660	1245	255	235	115	90	102
3	.....	.....	.....	.....	.....	350	1300	1190	255	278	115	145	130
4	.....	.....	.....	.....	.....	350	1245	1140	255	325	115	198	130
5	.....	.....	.....	.....	.....	350	1190	1090	278	350	115	215	115
6	.....	.....	.....	.....	.....	300	1090	1190	255	325	102	215	102
7	.....	.....	.....	.....	145	255	1040	1090	300	325	102	255	102
8	.....	.....	.....	.....	162	255	1090	900	350	325	102	235	80
9	.....	.....	.....	.....	180	235	1190	810	400	350	90	255	90
10	.....	.....	.....	.....	162	255	1660	855	350	255	90	255	80
11	.....	.....	.....	.....	145	278	1920	855	300	198	90	255	70
12	.....	.....	.....	.....	145	300	2200	855	300	162	90	215	115
13	.....	.....	.....	.....	180	520	1415	810	278	180	90	235	90
14	.....	.....	.....	.....	255	810	1190	770	278	180	90	215	80
15	.....	.....	.....	.....	278	730	1300	730	278	180	102	180	.....
16	.....	.....	.....	.....	350	660	1245	695	300	180	162	145	.....
17	.....	.....	.....	.....	350	810	1535	625	278	180	145	162	.....
18	.....	.....	.....	.....	400	900	1535	555	255	145	145	130	.....
19	.....	.....	.....	.....	400	730	2060	490	300	130	130	102	.....
20	.....	.....	.....	.....	400	590	2200	490	325	115	130	102	.....
21	.....	.....	.....	.....	400	590	1790	460	300	115	130	90	.....
22	.....	.....	.....	.....	430	460	1790	400	278	115	130	90	.....
23	.....	.....	.....	.....	460	520	1920	400	255	115	130	80	.....
24	.....	.....	.....	.....	460	660	1855	400	255	115	130	80	.....
25	.....	.....	.....	.....	400	900	1920	375	255	130	130	70	.....
26	.....	.....	.....	.....	460	990	1790	350	255	235	115	55	.....
27	.....	.....	.....	.....	400	900	1415	350	255	215	115	62	.....
28	.....	.....	.....	.....	350	810	1300	375	198	180	115	62	.....
29	.....	.....	.....	.....	350	810	1190	350	180	180	115	62	.....
30	.....	.....	.....	.....	520	990	1300	300	198	180	115	90	.....
31	.....	.....	.....	.....	.....	1190	.....	300	235	.....	102	.....	.....
Total	.....	.....	.....	.....	7782	18308	45635	21690	8509	6233	3592	4435	1388
Mean	.....	.....	.....	.....	324	591	1521	700	274	208	116	148	99.1
Max.	.....	.....	.....	.....	520	1190	2200	1245	400	350	162	255	130
Min.	.....	.....	.....	.....	145	235	1040	300	180	115	90	55	70
Acre-ft.	.....	.....	.....	.....	15400	36300	90400	43000	16800	12400	7130	8810	2750

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Cache la Poudre River at Mouth of Canon for 1916.
Drainage Area, 1,060 Square Miles. Altitude, 5,070 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	70	358	1720	1300	695	375	145	80	.....
2	.....	.....	.....	.....	70	391	1600	1040	555	350	145	80	.....
3	.....	.....	.....	.....	62	424	1540	1040	490	300	130	90	.....
4	.....	.....	.....	.....	62	457	1660	990	695	300	115	90	.....
5	.....	.....	.....	.....	62	490	1990	945	695	325	115	80	.....
6	.....	.....	.....	.....	62	523	1790	990	590	350	130	70	.....
7	.....	.....	.....	.....	70	555	1540	945	555	350	145	80	.....
8	.....	.....	.....	.....	70	625	1480	945	490	400	130	55	.....
9	.....	.....	.....	.....	70	695	1660	945	460	430	115	55	.....
10	.....	.....	.....	.....	80	770	2060	945	460	490	115	80	.....
11	.....	.....	.....	.....	102	900	1920	945	430	490	115	80	.....
12	.....	.....	.....	62	115	990	1790	855	350	375	130	102	.....
13	.....	.....	.....	62	130	1140	1660	730	350	400	115	62	.....
14	.....	.....	.....	55	145	1140	1920	730	375	375	102	40	.....
15	.....	.....	.....	50	162	990	2060	730	375	300	102	.....	.....
16	.....	.....	.....	40	198	900	2060	810	325	240	102	.....	.....
17	.....	.....	.....	55	180	810	2130	855	325	180	90	.....	.....
18	.....	.....	.....	55	180	770	2130	770	300	145	130	.....	.....
19	.....	.....	.....	62	180	730	1920	660	325	162	145	.....	.....
20	.....	.....	.....	62	180	810	1540	660	300	162	115	.....	.....
21	.....	.....	.....	62	180	855	1480	590	300	145	130	.....	.....
22	.....	.....	.....	55	162	855	1540	520	278	115	115	.....	.....
23	.....	.....	.....	62	162	810	1360	490	255	115	102	.....	.....
24	.....	.....	.....	70	185	900	1480	490	278	115	102	.....	.....
25	.....	.....	.....	70	208	1040	1600	430	278	130	90	.....	.....
26	.....	.....	.....	70	231	1190	1600	400	278	145	102	.....	.....
27	.....	.....	.....	62	254	1040	1480	400	300	145	102	.....	.....
28	.....	.....	.....	62	277	1140	1480	430	278	145	102	.....	.....
29	.....	.....	.....	55	300	1190	1480	430	278	162	90	.....	.....
30	.....	.....	.....	55	325	1240	1420	555	278	162	80	.....	.....
31	.....	.....	.....	70	.....	1540	.....	810	375	.....	80	.....	.....
Total	.....	.....	1196	4534	26268	51090	23375	12316	7878	3526	1044	.....	
Mean	.....	.....	59.8	151	847	1700	754	397	263	114	74.6	.....	
Max.	.....	.....	.....	325	1540	2130	1300	695	490	145	.....	.....	
Min.	.....	.....	.....	62	358	1360	400	255	115	80	.....	.....	
Acre-ft.	.....	.....	2370	8980	52100	101000	46400	24400	15600	7010	2070	.....	

Discharge of Cache la Poudre River at Mouth for 1915.
Drainage Area, ... Square Miles. Altitude, 4,664 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	146	122	41	39	70	59	254	224	138
2	.....	.....	.....	138	134	46	41	63	49	224	214	122
3	.....	.....	.....	146	110	57	39	60	49	205	224	122
4	.....	.....	.....	122	110	57	41	57	49	187	234	115
5	.....	.....	.....	122	105	78	46	60	54	187	244	115
6	.....	.....	.....	108	122	90	46	54	54	187	234	.....
7	.....	.....	.....	146	122	127	41	51	49	205	205	.....
8	.....	.....	.....	138	116	154	41	41	49	196	196	.....
9	.....	.....	.....	138	105	147	41	41	54	187	187	.....
10	.....	.....	.....	138	100	140	41	41	54	187	196	.....
11	.....	.....	.....	122	100	140	41	41	59	187	187	.....
12	.....	.....	.....	154	95	202	46	44	59	205	170	.....
13	.....	.....	.....	214	90	325	44	41	65	205	170	.....
14	.....	.....	.....	205	100	154	41	41	65	187	154	.....
15	.....	.....	.....	122	122	78	41	44	89	389	178	.....
16	.....	.....	.....	102	147	54	41	44	108	378	187	.....
17	.....	.....	.....	108	105	41	39	41	95	367	170	.....
18	.....	.....	.....	102	100	44	37	41	77	314	170	.....
19	.....	.....	138	95	259	44	41	389	71	284	170	.....
20	.....	.....	146	89	362	48	46	214	65	254	170	.....
21	.....	.....	138	77	374	54	46	234	65	244	170	.....
22	.....	.....	154	89	399	54	46	196	71	244	170	.....
23	.....	.....	138	108	259	63	46	146	65	224	178	.....
24	.....	.....	146	214	194	54	46	138	65	214	170	.....
25	.....	.....	146	205	86	63	51	146	89	264	162	.....
26	.....	.....	138	239	60	57	63	154	138	244	162	.....
27	.....	.....	146	270	54	46	100	146	205	244	154	.....
28	.....	.....	122	127	48	41	78	138	325	244	154	.....
29	.....	.....	130	122	44	44	66	115	325	264	138	.....
30	.....	.....	146	127	44	44	54	95	336	254	138	.....
31	.....	.....	138	.....	41	.....	63	71	.....	244	.....	.....
Total	.....	.....	1826	4233	4229	2587	1492	3057	2957	7473	5480	612
Mean	.....	.....	140	141	136	86.2	48.1	98.6	98.6	241	183	122
Max.	.....	.....	154	270	399	325	100	389	336	389	244	138
Min.	.....	.....	122	77	41	41	37	41	49	187	138	115
Acre-ft.	.....	.....	3610	8390	8360	5130	2960	6060	5870	14800	10900	1210

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Cache la Poudre River at Mouth for 1916.
Drainage Area, ... Square Miles. Altitude, 4,664 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	34	40	46	306	40	123	172	158
2	.....	.....	.....	.....	.....	32	58	46	194	46	116	172	158
3	.....	.....	.....	.....	.....	32	52	40	165	46	95	172	158
4	.....	.....	.....	.....	123	34	52	40	144	40	95	172	158
5	.....	.....	.....	.....	116	32	55	40	130	40	95	172	158
6	.....	.....	.....	.....	102	32	59	37	123	40	109	165	144
7	.....	.....	.....	.....	102	32	62	34	123	40	144	158	130
8	.....	.....	.....	.....	95	34	66	37	70	40	179	165	123
9	.....	.....	.....	.....	95	34	70	37	46	40	194	165	130
10	.....	.....	.....	.....	88	34	74	46	46	46	202	165	130
11	.....	.....	.....	.....	88	34	78	70	40	52	194	165	123
12	.....	.....	.....	.....	82	34	82	95	40	52	179	151	123
13	.....	.....	.....	.....	82	37	130	58	46	58	172	130	123
14	.....	.....	.....	.....	82	70	82	46	40	64	165	144	116
15	.....	.....	.....	.....	82	88	70	40	40	76	297	158	116
16	.....	.....	.....	.....	76	70	82	40	37	64	297	151	123
17	.....	.....	.....	.....	88	64	95	40	46	64	234	165	123
18	.....	.....	.....	.....	151	52	151	40	46	88	218	172	130
19	.....	.....	.....	.....	151	40	210	40	40	109	210	172	137
20	.....	.....	.....	.....	130	52	165	37	37	102	202	172	137
21	.....	.....	.....	.....	116	202	137	37	52	102	202	165	130
22	.....	.....	.....	.....	109	562	137	37	40	95	202	158	130
23	.....	.....	.....	.....	116	361	130	37	40	95	202	158	137
24	.....	.....	.....	.....	88	234	144	37	40	95	210	179	137
25	.....	.....	.....	.....	52	179	137	37	40	95	210	172	137
26	.....	.....	.....	.....	37	144	151	37	40	95	210	158	123
27	.....	.....	.....	.....	32	102	151	37	46	95	210	165	102
28	.....	.....	.....	.....	32	88	151	37	40	102	202	165	130
29	.....	.....	.....	.....	32	82	130	37	40	123	194	158	130
30	.....	.....	.....	.....	32	64	76	165	40	116	186	158	130
31	.....	.....	.....	.....	.....	46	.....	400	46	.....	172	.....	137
Total	.....	.....	.....	.....	2379	2935	3077	1807	2223	2160	5720	4894	4121
Mean	.....	.....	.....	.....	88.1	94.7	103	58.3	71.7	72.0	184	163	158
Max.	.....	.....	.....	.....	.....	562	210	400	306	123	297	179	102
Min.	.....	.....	.....	.....	.....	32	40	34	37	40	95	130	.....
Acre-ft.	.....	.....	.....	.....	4720	5820	6130	3580	4410	4280	11300	9700	8180

Unless otherwise noted, all discharges are in cubic feet per second.

NORTH PLATTE RIVER NEAR NORTH GATE, COLO.

Location.—In sec. 11, T. 11 N., R. 80 W., at highway bridge on Interstate Highway, 6 miles south of Colorado-Wyoming line and 6 miles northwest of North Gate, in Jackson County. Three small tributaries, Camp, Three-Mile, and Six-Mile Creeks, enter North Platte between station and state line. These have very little flow except spring run-off.

Drainage Area.—1,440 square miles.

Records Available.—May 23, 1915, to November 8, 1916.

Gage.—Vertical staff located at downstream side of center pier.

Discharge Measurements.—Made from two-span bridge during high water, and by wading at low stages.

Channel and Control.—Channel composed of sand, gravel, and small boulders; control located 200 feet downstream at small rapids which shift slightly. Banks not liable to overflow.

Ice.—Discharge relation seriously affected by ice; observations discontinued during winter months.

Diversions.—There are court decrees for diversions of 3,060 second-feet from the North Platte and tributaries in Colorado.

Regulation.—None.

Accuracy.—Results excellent.

Co-operation.—Station maintained by the United States Geological Survey, from whom records were obtained.

LARAMIE RIVER AT GLENDEVEY.

Location.—At highway bridge one-eighth mile west of Glendevey in sec. 36, T. 10 N., R. 76 W., in the Medicine Bow National Forest; McIntyre Creek enters a short distance below and Nunn Creek above.

Records Available.—June 24, 1904, to October 31, 1905; August 18, 1910, to October 17, 1916.

Drainage Area.—102 square miles.

Gage.—Automatic gage installed by the State Engineer November 17, 1910, replaced vertical staff previously used. The datum of the gages has remained constant.

Channel.—Permanent.

Discharge Measurements.—Made from bridge during high water and by wading at ordinary stages.

Winter Flow.—Ice causes backwater during the winter months.

Diversions.—There are court decrees for diversions of 65 second-feet from Laramie River above the station and for 749 second-feet from tributaries entering above. Of this latter amount 688 second-feet are for diversion into the Cache la Poudre basin.

Accuracy.—Conditions are favorable for excellent results, and the estimates should be reliable.

Discharge of North Platte River near North Gate for 1915.
Drainage Area, 1,440 Square Miles. Altitude, 7,600 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	.....	785	710	187	115	179	160	.....
2	.....	.....	.....	.....	.....	.....	985	635	187	107	164	156	.....
3	.....	.....	.....	.....	.....	.....	785	635	187	117	164	152	.....
4	.....	.....	.....	.....	.....	.....	1020	710	187	117	164	160	.....
5	.....	.....	.....	.....	.....	.....	945	672	187	156	206	160	.....
6	.....	.....	.....	.....	.....	.....	945	598	148	153	216	160	.....
7	.....	.....	.....	.....	.....	.....	905	560	187	139	206	152	.....
8	.....	.....	.....	.....	.....	.....	865	522	187	157	179	179	.....
9	.....	.....	.....	.....	.....	.....	710	485	290	201	175	197	.....
10	.....	.....	.....	.....	.....	.....	748	522	290	168	179	183	.....
11	.....	.....	.....	.....	.....	.....	905	382	235	139	175	197	.....
12	.....	.....	.....	.....	.....	.....	945	320	187	129	206	221	.....
13	.....	.....	.....	.....	.....	.....	1020	350	187	183	221	.....	.....
14	.....	.....	.....	.....	.....	.....	945	320	187	187	206	.....	.....
15	.....	.....	.....	.....	.....	.....	785	320	187	201	221	.....	.....
16	.....	.....	.....	.....	.....	.....	672	350	187	187	257	.....	.....
17	.....	.....	.....	.....	.....	.....	635	290	192	171	326	.....	.....
18	.....	.....	.....	.....	.....	.....	710	290	171	160	320	.....	.....
19	.....	.....	.....	.....	.....	.....	985	235	156	164	262	.....	.....
20	.....	.....	.....	.....	.....	.....	1260	235	197	136	246	.....	.....
21	.....	.....	.....	.....	.....	.....	1180	187	179	136	225	.....	.....
22	.....	.....	.....	.....	.....	.....	1060	187	148	142	211	.....	.....
23	.....	.....	.....	.....	.....	485	1020	148	168	129	201	.....	.....
24	.....	.....	.....	.....	.....	415	1060	187	164	120	197	.....	.....
25	.....	.....	.....	.....	.....	415	1020	187	225	123	187	.....	.....
26	.....	.....	.....	.....	.....	320	1020	211	197	183	179	.....	.....
27	.....	.....	.....	.....	.....	382	945	235	164	274	175	.....	.....
28	.....	.....	.....	.....	.....	485	865	235	148	284	179	.....	.....
29	.....	.....	.....	.....	.....	485	785	235	123	268	171	.....	.....
30	.....	.....	.....	.....	.....	415	710	235	117	230	175	.....	.....
31	.....	.....	.....	.....	.....	450	.....	211	112	.....	168	.....	.....
Total	.....	.....	.....	.....	.....	3852	27220	11399	5668	4976	6340	2077	.....
Mean	.....	.....	.....	.....	.....	428	907	368	183	166	205	173	.....
Max	.....	.....	.....	.....	.....	.....	1260	719	290	284	326	221	.....
Min	.....	.....	.....	.....	.....	.....	635	148	112	107	164	152	.....
Acre-ft.	.....	.....	.....	.....	.....	7640	54000	22600	11300	9880	12600	4120	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of North Platte River near North Gate for 1916.
Drainage Area, 1,440 Square Miles. Altitude, 7,600 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	1200	1100	1040	719	381	260	298	.....
2	.....	.....	.....	.....	.....	995	1150	995	678	324	269	260	.....
3	.....	.....	.....	.....	.....	1040	1100	945	678	279	293	274	.....
4	.....	.....	.....	.....	.....	850	1100	898	678	260	303	274	.....
5	.....	.....	.....	.....	.....	898	1200	805	719	250	324	269	.....
6	.....	.....	.....	.....	.....	1040	1260	719	760	246	324	223	.....
7	.....	.....	.....	.....	.....	1260	1320	719	898	250	324	186	.....
8	.....	.....	.....	.....	.....	1380	1200	678	898	241	329	180	.....
9	.....	.....	.....	.....	.....	1620	1200	678	850	228	381	.....	.....
10	.....	.....	.....	.....	640	1860	1380	760	850	352	387	.....	.....
11	.....	.....	.....	.....	898	1980	1620	898	850	532	358	.....	.....
12	.....	.....	.....	.....	1040	1740	1860	760	850	532	342	.....	.....
13	.....	.....	.....	.....	995	1440	1740	690	898	468	324	.....	.....
14	.....	.....	.....	.....	805	1500	1860	602	898	408	298	.....	.....
15	.....	.....	.....	.....	760	1500	1860	602	532	324	329	.....	.....
16	.....	.....	.....	.....	850	1320	1860	678	500	324	342	.....	.....
17	.....	.....	.....	.....	898	1200	1860	602	500	298	329	.....	.....
18	.....	.....	.....	.....	945	1040	1980	602	468	279	324	.....	.....
19	.....	.....	.....	.....	1090	898	1980	602	408	269	308	.....	.....
20	.....	.....	.....	.....	898	898	1980	567	381	250	308	.....	.....
21	.....	.....	.....	.....	678	1200	1860	532	352	246	324	.....	.....
22	.....	.....	.....	.....	640	1440	1740	500	352	241	438	.....	.....
23	.....	.....	.....	.....	760	1500	1380	468	324	246	462	.....	.....
24	.....	.....	.....	.....	995	1150	1150	438	298	265	432	.....	.....
25	.....	.....	.....	.....	1150	805	1150	381	298	280	352	.....	.....
26	.....	.....	.....	.....	1320	805	1150	408	293	285	352	.....	.....
27	.....	.....	.....	.....	1500	898	1150	468	293	288	342	.....	.....
28	.....	.....	.....	.....	1740	805	1150	532	293	288	319	.....	.....
29	.....	.....	.....	.....	1740	898	1150	602	293	288	303	.....	.....
30	.....	.....	.....	.....	1740	945	1100	678	298	288	298	.....	.....
31	.....	.....	.....	.....	.....	1040	.....	719	352	.....	298	.....	.....
Total	.....	.....	.....	.....	21982	37145	43590	20516	17449	9210	10376	1964	.....
Mean	.....	.....	.....	.....	1050	1200	1450	662	563	307	335	.....	.....
Max	.....	.....	.....	.....	1740	1980	1980	1040	898	532	462	.....	.....
Min	.....	.....	.....	.....	640	805	1100	381	293	241	260	.....	.....
Acre-ft.	.....	.....	.....	.....	43700	73800	86300	40700	34600	18300	20600	.....	.....

Discharge of Laramie River at Glendevey for 1915.
Drainage Area, 102 Square Miles. Altitude, ... Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	66	498	172	33	33	48	33	.....
2	.....	.....	.....	.....	.....	66	521	156	33	33	48	26	.....
3	.....	.....	.....	.....	.....	66	242	140	33	40	48	26	.....
4	.....	.....	.....	.....	.....	66	261	140	33	57	40	19	.....
5	.....	.....	.....	.....	.....	57	242	126	48	48	40	19	.....
6	.....	.....	.....	.....	.....	57	242	112	40	33	33	19	.....
7	.....	.....	.....	.....	.....	57	206	112	33	33	33	19	.....
8	.....	.....	.....	.....	.....	57	242	100	57	33	33	19	.....
9	.....	.....	.....	.....	.....	66	261	87	57	33	33	19	.....
10	.....	.....	.....	.....	.....	100	320	87	48	33	33	33	.....
11	.....	.....	.....	.....	.....	140	363	87	48	40	33	40	.....
12	.....	.....	.....	.....	.....	189	406	87	48	48	48	48	.....
13	.....	.....	.....	.....	.....	261	242	100	40	48	48	.....	.....
14	.....	.....	.....	.....	.....	300	206	100	57	40	33	.....	.....
15	.....	.....	.....	.....	.....	300	206	87	76	33	48	.....	.....
16	.....	.....	.....	.....	.....	261	189	76	87	33	66	.....	.....
17	.....	.....	.....	.....	.....	280	224	66	57	33	66	.....	.....
18	.....	.....	.....	.....	.....	224	206	66	76	33	66	.....	.....
19	.....	.....	.....	.....	.....	156	342	57	57	26	66	.....	.....
20	.....	.....	.....	.....	.....	140	280	48	66	19	66	.....	.....
21	.....	.....	.....	.....	.....	126	224	48	57	19	57	.....	.....
22	.....	.....	.....	.....	.....	126	224	48	48	19	57	.....	.....
23	.....	.....	.....	.....	.....	172	242	48	66	19	57	.....	.....
24	.....	.....	.....	.....	.....	224	242	48	57	33	48	.....	.....
25	.....	.....	.....	.....	.....	224	224	48	57	33	40	.....	.....
26	.....	.....	.....	.....	.....	206	224	48	48	57	33	.....	.....
27	.....	.....	.....	.....	.....	172	189	40	40	66	33	.....	.....
28	.....	.....	.....	.....	.....	156	172	48	40	48	33	.....	.....
29	.....	.....	.....	.....	.....	189	156	40	40	48	33	.....	.....
30	.....	.....	.....	.....	.....	280	156	33	33	48	33	.....	.....
31	.....	.....	.....	.....	.....	280	.....	33	33	.....	33	.....	.....
Total	.....	.....	.....	.....	.....	5064	7752	2488	1546	1119	1386	320	.....
Mean	.....	.....	.....	.....	.....	163	258	80.3	49.9	37.3	44.7	26.7	.....
Max	.....	.....	.....	.....	.....	300	521	172	87	66	66	48	.....
Min	.....	.....	.....	.....	.....	57	156	33	33	19	33	19	.....
Acre-ft.	.....	.....	.....	.....	.....	10000	15400	4940	3070	2220	2750	636	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Laramie River at Glendevey for 1916.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	114	360	180	70	42	60	.....	.....
2	.....	.....	.....	.....	.....	102	324	166	70	36	60	.....	.....
3	.....	.....	.....	.....	.....	80	324	152	80	42	60	.....	.....
4	.....	.....	.....	.....	.....	80	360	126	80	42	60	.....	.....
5	.....	.....	.....	.....	.....	114	378	139	80	31	70	.....	.....
6	.....	.....	.....	.....	.....	166	342	114	80	36	80	.....	.....
7	.....	.....	.....	.....	.....	223	306	114	80	31	80	.....	.....
8	.....	.....	.....	.....	.....	238	324	114	80	31	36	.....	.....
9	.....	.....	.....	.....	.....	223	378	102	80	42	42	.....	.....
10	.....	.....	.....	.....	.....	208	397	102	80	102	51	.....	.....
11	.....	.....	.....	.....	60	208	378	91	80	60	42	.....	.....
12	.....	.....	.....	.....	51	208	378	91	60	70	36	.....	.....
13	.....	.....	.....	.....	51	194	378	80	42	60	36	.....	.....
14	.....	.....	.....	.....	42	194	342	80	42	51	36	.....	.....
15	.....	.....	.....	.....	51	194	289	80	42	42	42	.....	.....
16	.....	.....	.....	.....	42	180	272	80	51	36	42	.....	.....
17	.....	.....	.....	.....	51	152	289	80	70	31	42	.....	.....
18	.....	.....	.....	.....	60	139	289	80	70	31	.....	.....	.....
19	.....	.....	.....	.....	60	152	289	80	51	36	.....	.....	.....
20	.....	.....	.....	.....	42	194	255	80	42	31	.....	.....	.....
21	.....	.....	.....	.....	51	208	255	80	42	36	.....	.....	.....
22	.....	.....	.....	.....	60	194	208	80	36	42	.....	.....	.....
23	.....	.....	.....	.....	70	180	180	80	36	42	.....	.....	.....
24	.....	.....	.....	.....	80	238	180	80	36	51	.....	.....	.....
25	.....	.....	.....	.....	102	252	180	80	36	42	.....	.....	.....
26	.....	.....	.....	.....	126	255	180	80	42	36	.....	.....	.....
27	.....	.....	.....	.....	139	238	180	80	51	31	.....	.....	.....
28	.....	.....	.....	.....	166	289	166	80	42	42	.....	.....	.....
29	.....	.....	.....	.....	180	306	208	80	31	60	.....	.....	.....
30	.....	.....	.....	.....	139	360	208	60	42	60	.....	.....	.....
31	.....	.....	.....	.....	.....	378	.....	60	60	.....	.....	.....	.....
Total	.....	.....	.....	.....	1623	6261	8597	2971	1784	1325	875	.....	.....
Mean	.....	.....	.....	.....	81.2	202	287	95.8	57.5	44.2	51.5	.....	.....
Max	.....	.....	.....	.....	.....	378	397	180	80	102	.....	.....	.....
Min	.....	.....	.....	.....	.....	80	166	60	31	31	.....	.....	.....
Acre-ft.	.....	.....	.....	.....	3220	12400	17100	5890	3540	2630	1740	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

LARAMIE RIVER NEAR JELM, WYO.

Location.—At highway bridge in sec. 15, T. 12 N., R. 77 W., 4 miles south of Jelm postoffice, one-fourth mile below the Colorado-Wyoming line.

Records Available.—May 7, 1911, to November 19, 1916. From June 22, 1904, to October 31, 1905, a station was maintained at Decker's ranch, half a mile south of the state line. The records at the two stations are practically comparable as there are no tributaries nor diversions of any amount between.

Drainage Area.—293 square miles.

Gage.—In 1911 an automatic recording gage was installed. This is referred to the same datum as the vertical staff used at first.

Channel.—Practically permanent.

Discharge Measurements.—Made from bridge.

Winter Flow.—Ice causes backwater during the winter months and the records are discontinued.

Diversions.—Between this station and that at Glendevey, Colo., there are court decrees for diversions of 236 second-feet from Laramie River and 204 second-feet from intervening tributaries. These diversions are all in Colorado.

Accuracy.—Conditions are favorable for accurate results, and the estimates should be excellent.

Discharge of Laramie River at Boswell's Ranch near Jelm, Wyo., for 1915.
Drainage Area, 293 Square Miles. Altitude, ... Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	350	839	231	67	49	88	58	.....
2	.....	.....	.....	.....	.....	198	984	231	67	49	88	58	.....
3	.....	.....	.....	.....	.....	150	578	231	67	67	78	67	.....
4	.....	.....	.....	.....	.....	136	516	250	78	78	67	67	.....
5	.....	.....	.....	.....	.....	136	488	198	67	67	67	67	.....
6	.....	.....	.....	.....	.....	110	488	214	67	58	58	67	.....
7	.....	.....	.....	.....	.....	110	459	182	78	49	49	67	.....
8	.....	.....	.....	.....	.....	110	459	165	88	67	67	67	.....
9	.....	.....	.....	.....	.....	136	459	182	88	78	67	67	.....
10	.....	.....	.....	.....	.....	198	578	165	78	67	49	67	.....
11	.....	.....	.....	.....	.....	214	646	165	67	49	49	67	.....
12	.....	.....	.....	.....	.....	309	682	150	67	49	49	67	.....
13	.....	.....	.....	.....	.....	404	547	123	78	58	58	88	.....
14	.....	.....	.....	.....	.....	547	432	110	88	58	58	78	.....
15	.....	.....	.....	.....	.....	432	459	110	88	67	67	88	.....
16	.....	.....	.....	.....	.....	459	432	123	88	67	67	99	.....
17	.....	.....	.....	.....	.....	488	488	99	78	67	67	88	.....
18	.....	.....	.....	.....	.....	432	459	78	67	67	78	99	.....
19	.....	.....	.....	.....	.....	330	350	78	78	49	78	110	.....
20	.....	.....	.....	.....	136	289	547	78	88	49	78	.....	.....
21	.....	.....	.....	.....	150	269	350	78	88	41	88	.....	.....
22	.....	.....	.....	.....	182	269	377	78	78	49	88	.....	.....
23	.....	.....	.....	.....	165	309	404	78	67	58	99	.....	.....
24	.....	.....	.....	.....	165	309	488	88	67	58	88	.....	.....
25	.....	.....	.....	.....	150	330	459	67	67	67	67	.....	.....
26	.....	.....	.....	.....	165	350	269	67	67	99	58	.....	.....
27	.....	.....	.....	.....	165	377	309	67	78	78	58	.....	.....
28	.....	.....	.....	.....	198	289	269	67	67	78	58	.....	.....
29	.....	.....	.....	.....	214	377	250	78	58	78	67	.....	.....
30	.....	.....	.....	.....	488	488	250	78	49	88	67	.....	.....
31	.....	.....	.....	.....	.....	516	.....	78	49	.....	.....	.....	.....
Total	.....	.....	.....	.....	2178	9421	14315	3987	2267	1903	2132	1436	.....
Mean	.....	.....	.....	.....	198	304	477	129	73.1	63.4	68.8	75.6	.....
Max	.....	.....	.....	.....	488	547	984	250	88	99	99	110	.....
Min	.....	.....	.....	.....	136	110	250	67	49	41	49	58	.....
Acre-ft.	.....	.....	.....	.....	4320	18700	28400	7930	4490	3770	4230	2850	.....

Discharge of Laramie River at Boswell's Ranch near Jelm, Wyo., for 1916.
Drainage Area, 293 Square Miles. Altitude, ... Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	80	185	1050	330	145	90	80	.....	.....
2	.....	.....	.....	.....	80	185	990	310	110	70	100	.....	.....
3	.....	.....	.....	.....	80	170	880	250	110	60	110	.....	.....
4	.....	.....	.....	.....	60	200	930	215	110	60	110	.....	.....
5	.....	.....	.....	.....	70	215	1050	215	120	60	80	.....	.....
6	.....	.....	.....	.....	70	310	930	185	100	60	110	.....	.....
7	.....	.....	.....	.....	70	355	785	185	120	60	110	.....	.....
8	.....	.....	.....	.....	70	785	830	170	100	52	110	.....	.....
9	.....	.....	.....	.....	70	880	990	170	80	52	100	.....	.....
10	.....	.....	.....	.....	80	1500	1110	170	132	170	100	.....	.....
11	.....	.....	.....	.....	100	625	990	158	110	132	80	.....	.....
12	.....	.....	.....	.....	100	625	930	158	100	120	80	.....	.....
13	.....	.....	.....	.....	110	555	990	120	100	145	90	.....	.....
14	.....	.....	.....	.....	110	555	880	120	120	110	80	.....	.....
15	.....	.....	.....	.....	110	555	830	145	110	90	80	.....	.....
16	.....	.....	.....	.....	100	400	785	170	90	80	80	.....	.....
17	.....	.....	.....	.....	100	430	830	120	100	80	90	.....	.....
18	.....	.....	.....	.....	110	430	830	120	110	70	90	.....	.....
19	.....	.....	.....	.....	110	375	700	120	90	60	80	.....	.....
20	.....	.....	.....	.....	100	460	660	100	80	60	80	.....	.....
21	.....	.....	.....	.....	100	520	590	90	80	70	80	.....	.....
22	.....	.....	.....	.....	110	460	555	90	80	70	80	.....	.....
23	.....	.....	.....	.....	110	350	520	80	80	60	80	.....	.....
24	.....	.....	.....	.....	132	375	555	90	70	110	60	.....	.....
25	.....	.....	.....	.....	158	490	555	80	70	100	60	.....	.....
26	.....	.....	.....	.....	170	555	490	80	80	80	80	.....	.....
27	.....	.....	.....	.....	200	625	375	120	90	70	80	.....	.....
28	.....	.....	.....	.....	230	625	430	132	80	60	80	.....	.....
29	.....	.....	.....	.....	270	660	430	120	80	90	70	.....	.....
30	.....	.....	.....	.....	215	785	375	145	80	80	60	.....	.....
31	.....	.....	.....	.....	.....	930	.....	230	100	.....	52	.....	.....
Total	.....	.....	.....	.....	3475	16370	22845	4788	3027	2471	2622	.....	.....
Mean	.....	.....	.....	.....	116	528	762	154	97.6	82.4	84.6	.....	.....
Max	.....	.....	.....	.....	270	1500	1110	330	145	170	110	.....	.....
Min	.....	.....	.....	.....	60	170	375	80	70	52	52	.....	.....
Acre-ft.	.....	.....	.....	.....	6900	32500	45300	9470	6000	4900	5200	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

YAMPA AND WHITE DRAINAGES

YAMPA RIVER AT YAMPA.

Location.—On the bridge connecting the town of Yampa with the Denver and Salt Lake Railroad station.

Records Available.—May 17, 1910, to December 6, 1915.

Drainage Area.—52 square miles.

Gage.—Chain gage.

Channel.—Shifting during high water.

Discharge Measurements.—Made from the highway bridge.

Winter Flow.—Ice causes backwater and the records are discontinued during the winter months.

Diversions.—There are court decrees for diversions of 258 second-feet from the headwater streams above Yampa.

YAMPA RIVER AT STEAMBOAT SPRINGS.

Location.—This station was moved from the lower steel bridge to the Fifth Street bridge at Steamboat Springs on April 26, 1915. It is about one-quarter mile below Spring Creek and one-half mile above Soda Creek.

Records Available.—May 3, 1904, to October 31, 1906; March 1, 1910, to November 30, 1916.

Drainage Area.—500 square miles.

Gage.—Automatic recording gage and vertical staff gage.

Channel.—Practically permanent.

Discharge Measurements.—Made from highway bridge.

Winter Flow.—Hot springs above keep the river practically open during the winter months.

Diversions.—There are court decrees for diversions of 115 second-feet from the Yampa River between Yampa and Steamboat Springs, and diversions of 231 second-feet from intervening tributaries. There are decrees for 258 second-feet above Yampa.

YAMPA RIVER AT CRAIG.

Location.—One mile south of Craig on steel bridge on road to Hamilton, Colo., a short distance below the mouth of Fortification Creek, the nearest tributary.

Records Available.—May 25, 1901, to September 4, 1902; April 30, 1904, to October 31, 1906; April 1, 1910, to November 13, 1916.

Drainage Area.—1,730 square miles.

Gage.—Chain gage.

Channel.—Slightly shifting.

Discharge Measurements.—Made from highway bridge.

Diversions.—There are court decrees for diversions of 238 second-feet from Yampa River between this station and Steamboat Springs, and 411 second-feet from intervening tributaries exclusive of a conditional decree for 587 second-feet from the North Fork of Elkhead Creek.

Discharge of Yampa River at Yampa for 1915.
Drainage Area, 52 Square Miles. Altitude, 7,884 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	30	64	16	9	3	7	10	10	19
2	.....	.....	.....	22	51	26	8	3	7	10	10	19
3	.....	.....	.....	22	35	10	7	3	8	10	10	19
4	.....	.....	.....	22	35	9	7	3	8	10	10	19
5	.....	.....	.....	22	19	8.5	7	4	8	10	10	19
6	.....	.....	.....	22	16	8.5	6	4	8	10	10	19
7	.....	.....	.....	26	16	7	6	4	8	10	13	.....
8	.....	.....	.....	30	19	6	5.5	7	8	10	19	.....
9	.....	.....	.....	30	19	19	5.5	7	8	10	19	.....
10	.....	.....	.....	30	19	26	5	7	8	10	19	.....
11	.....	.....	.....	30	22	40	5	7	8	9.5	19	.....
12	.....	.....	.....	30	57	45	5	7	8	9.5	19	.....
13	.....	.....	.....	30	108	13	5	8	8	9.5	19	.....
14	.....	.....	.....	30	108	9.5	5	8	8	9.5	26	.....
15	.....	.....	.....	35	108	12	4.5	8	8	10	26	.....
16	.....	.....	.....	35	88	13	4	7	8	10	26	.....
17	.....	.....	.....	30	80	26	4	7	8	10	19	.....
18	.....	.....	.....	26	35	45	4	7	8	10	19	.....
19	.....	.....	.....	35	26	80	4	7	8	10	19	.....
20	.....	.....	.....	51	22	108	4	7	8	10	19	.....
21	.....	.....	.....	40	16	64	4	7	7	10	13	.....
22	.....	.....	.....	40	13	57	4	7	7.5	13	13	.....
23	.....	.....	.....	30	13	51	4	7	8	13	13	.....
24	.....	.....	.....	30	13	45	3	7	9	10	13	.....
25	.....	.....	.....	26	19	35	3	7	9.5	10	19	.....
26	.....	.....	.....	26	13	35	3	7	13	10	19	.....
27	.....	.....	.....	26	12	26	3	7	13	10	19	.....
28	.....	.....	.....	51	9	19	3	7	13	10	19	.....
29	.....	.....	.....	88	9	12	3	7	10	10	19	.....
30	.....	.....	.....	80	10	8.5	3	7	10	10	19	.....
31	.....	.....	.....	.....	10	.....	3	7	.....	10	.....	.....
Total	.....	.....	.....	1025	1084	882	146.5	195	258	314	507	114
Mean	.....	.....	.....	34.2	35.0	29.4	4.7	6.3	8.6	10.1	16.9	19
Max.	.....	.....	.....	88	108	108	9	8	13	13	26	.....
Min.	.....	.....	.....	22	9	7	3	3	7	9.5	10	.....
Acre-ft.	.....	.....	.....	2040	2150	1750	289	387	512	621	1010	226

Discharge of Yampa River at Steamboat Springs for 1915.
Drainage Area, 500 Square Miles. Altitude, 6,680 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	1300	2260	405	70	45	140	100	52
2	.....	.....	.....	.....	1010	2260	332	60	52	155	100	52
3	.....	.....	.....	.....	965	1580	355	60	60	125	100	52
4	.....	.....	.....	.....	880	1460	330	52	80	125	100	60
5	.....	.....	.....	.....	725	1520	355	52	70	125	100	60
6	.....	.....	.....	.....	655	1300	355	60	70	125	125	70
7	.....	.....	.....	.....	655	1200	270	60	70	125	125	80
8	.....	.....	.....	.....	655	1350	270	70	80	125	112	70
9	.....	.....	.....	.....	800	1700	270	70	100	125	125	52
10	.....	.....	.....	.....	880	1970	230	80	90	125	140	52
11	.....	.....	.....	.....	1060	2260	190	70	80	125	112	60
12	.....	.....	.....	.....	1350	1970	155	70	70	125	90	52
13	.....	.....	.....	.....	1700	1460	155	80	80	125	100	52
14	.....	.....	.....	.....	2110	1250	125	60	80	125	80	60
15	.....	.....	.....	.....	1830	1250	125	60	90	125	60	38
16	.....	.....	.....	.....	1970	1250	112	60	90	140	30	38
17	.....	.....	.....	.....	2040	1350	112	90	80	140	45	60
18	.....	.....	.....	.....	1830	1150	80	90	80	125	52	60
19	.....	.....	.....	.....	1460	1400	60	80	70	125	60	52
20	.....	.....	.....	.....	1250	1300	60	80	70	125	70	45
21	.....	.....	.....	.....	1150	1150	60	80	45	125	70	38
22	.....	.....	.....	.....	1060	1010	52	70	45	140	60	45
23	.....	.....	.....	.....	1060	922	60	70	45	125	70	45
24	.....	.....	.....	.....	1250	840	52	80	52	112	70	52
25	.....	.....	.....	.....	1400	800	60	80	60	100	52	70
26	.....	.....	.....	.....	1350	690	70	80	125	100	52	45
27	.....	.....	.....	.....	1250	585	52	80	125	100	60	60
28	.....	.....	.....	1060	1250	490	60	70	140	100	70	60
29	.....	.....	.....	1250	1460	460	70	60	140	100	52	38
30	.....	.....	.....	1520	1580	460	80	60	140	100	45	45
31	.....	.....	.....	.....	1830	.....	80	45	.....	100	.....	140
Total	.....	.....	.....	3830	39765	38647	5092	2149	2424	3777	2427	1755
Mean	.....	.....	.....	1280	1280	1290	164	69.3	80.8	122	80.9	56.6
Max.	.....	.....	.....	1520	2110	2260	405	90	140	155	140	140
Min.	.....	.....	.....	1060	655	460	52	45	45	100	30	38
Acre-ft.	.....	.....	.....	7590	78700	76800	10100	4260	4810	6490	4810	3480

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Yampa River at Steamboat Springs for 1916.
Drainage Area, 500 Square Miles. Altitude, 6,680 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	405	922	2570	840	270	140	100	155	.....
2	.....	.....	.....	.....	405	965	2410	725	230	140	125	155	.....
3	.....	.....	.....	.....	405	880	2260	585	190	140	172	172	.....
4	.....	.....	.....	.....	380	880	2650	405	310	140	155	172	.....
5	.....	.....	.....	.....	310	1010	2730	380	310	125	140	172	.....
6	.....	.....	.....	.....	346	1250	2490	355	380	155	210	172	.....
7	.....	.....	.....	.....	382	1700	2260	355	460	125	250	172	.....
8	.....	.....	.....	.....	418	1900	2410	380	332	112	250	155	.....
9	.....	.....	.....	.....	454	2040	2820	355	380	140	250	155	.....
10	.....	.....	.....	.....	490	2260	2980	355	380	380	250	155	.....
11	.....	.....	.....	.....	552	2110	2570	405	270	250	250	155	.....
12	.....	.....	.....	.....	655	2110	2570	332	210	210	245	125	.....
13	.....	.....	.....	.....	800	2040	2650	270	230	172	245	125	.....
14	.....	.....	.....	270	922	1700	2490	250	332	140	245	125	.....
15	.....	.....	.....	250	1010	1350	2410	230	270	125	245	125	.....
16	.....	.....	.....	310	1100	1100	2410	210	230	125	240	112	.....
17	.....	.....	.....	405	1200	1010	2340	230	355	112	240	112	.....
18	.....	.....	.....	490	1150	922	2260	250	290	112	240	140	.....
19	.....	.....	.....	520	1100	965	2110	230	250	125	235	125	.....
20	.....	.....	.....	690	840	1100	1970	190	210	125	235	125	.....
21	.....	.....	.....	762	840	1350	1700	155	210	140	235	125	.....
22	.....	.....	.....	690	1060	1350	1400	125	210	172	235	140	.....
23	.....	.....	.....	1100	1150	1250	1250	155	172	190	230	112	.....
24	.....	.....	.....	880	1200	1350	1200	190	190	210	210	112	.....
25	.....	.....	.....	490	1350	1700	1100	155	190	172	210	112	.....
26	.....	.....	.....	332	1400	1700	1060	140	190	140	210	112	.....
27	.....	.....	.....	355	1520	1520	880	172	210	125	210	112	.....
28	.....	.....	.....	460	1640	1700	840	310	190	112	230	112	.....
29	.....	.....	.....	490	1640	1760	800	250	172	112	172	112	.....
30	.....	.....	.....	432	1250	2040	840	270	155	125	190	112	.....
31	.....	.....	.....	405	.....	2340	.....	310	155	.....	155	.....	.....
Total	.....	.....	.....	9331	26374	46274	60430	9564	7933	4591	6609	4065	.....
Mean	.....	.....	.....	518	879	1490	2010	309	256	153	213	136	.....
Max	.....	.....	.....	.....	1640	2340	2980	840	460	380	250	172	.....
Min	.....	.....	.....	.....	310	880	800	125	155	112	100	112	.....
Acre-ft.	.....	.....	.....	18500	52300	91600	120000	19000	15700	9100	13100	8100	.....

Discharge of Yampa River at Craig for 1915.
Drainage Area, 1,730 Square Miles. Altitude, 6,185 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	1040	4565	3690	1880	230	120	230	.....	.....
2	.....	.....	.....	.....	1210	3450	5150	1750	180	120	230	.....	.....
3	.....	.....	.....	.....	1570	2905	4470	1630	180	85	230	.....	.....
4	.....	.....	.....	.....	1880	2610	3210	1510	140	100	230	.....	.....
5	.....	.....	.....	.....	2075	2905	3370	1390	140	100	230	.....	.....
6	.....	.....	.....	.....	1815	2205	3690	1270	140	120	230	.....	.....
7	.....	.....	.....	.....	1570	1945	3370	1210	140	120	230	.....	.....
8	.....	.....	.....	.....	2075	1880	3130	985	140	140	230	.....	.....
9	.....	.....	.....	.....	2205	1945	3530	930	140	140	230	.....	.....
10	.....	.....	.....	.....	1945	2140	4110	930	140	160	230	.....	.....
11	.....	.....	.....	.....	2140	2270	4755	830	140	160	230	.....	.....
12	.....	.....	.....	.....	1880	2905	5050	830	140	180	230	.....	.....
13	.....	.....	.....	.....	2270	3370	4200	780	140	205	230	.....	.....
14	.....	.....	.....	.....	2540	4380	3210	730	140	230	230	.....	.....
15	.....	.....	.....	.....	2905	3690	2980	630	140	230	230	.....	.....
16	.....	.....	.....	.....	3210	4110	3055	580	140	260	.....	.....	.....
17	.....	.....	.....	.....	3370	4380	3370	530	140	230	.....	.....	.....
18	.....	.....	.....	.....	2905	4025	3210	530	140	230	.....	.....	.....
19	.....	.....	.....	.....	3210	3855	3130	485	140	230	.....	.....	.....
20	.....	.....	.....	.....	3290	2830	3450	360	140	230	.....	.....	.....
21	.....	.....	.....	.....	3610	2830	3210	325	140	230	.....	.....	.....
22	.....	.....	.....	.....	3855	2680	3210	290	140	230	.....	.....	.....
23	.....	.....	.....	.....	3370	2680	2905	230	140	230	.....	.....	.....
24	.....	.....	.....	.....	3290	2980	2755	230	140	230	.....	.....	.....
25	.....	.....	.....	.....	3210	3210	2755	230	140	230	.....	.....	.....
26	.....	.....	.....	.....	2610	3055	2540	230	140	230	.....	.....	.....
27	.....	.....	.....	.....	2830	3055	2610	230	140	230	.....	.....	.....
28	.....	.....	.....	.....	3290	2755	2470	230	120	230	.....	.....	.....
29	.....	.....	.....	.....	3610	2980	2205	230	120	230	.....	.....	.....
30	.....	.....	.....	.....	4470	3130	2010	230	120	230	.....	.....	.....
31	.....	.....	.....	.....	.....	3450	.....	230	120	.....	.....	.....	.....
Total	.....	.....	.....	.....	79250	95170	100800	22455	4430	5690	3450	.....	.....
Mean	.....	.....	.....	.....	2642	3070	3360	724	143	190	230	.....	.....
Max	.....	.....	.....	.....	4470	4565	5150	1880	230	260	230	.....	.....
Min	.....	.....	.....	.....	1040	1880	2010	230	120	85	230	.....	.....
Acre-ft.	.....	.....	.....	.....	157000	189000	200000	44500	8790	11300	6840	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.
Note.—Aug. 1 to Oct. 15 from fragmentary gage heights.

Discharge of Yampa River at Craig for 1916.
Drainage Area, 1,730 Square Miles. Altitude, 6,185 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	4570	6100	2130	830	290	370	500	.....
2	.....	.....	.....	.....	.....	4280	6530	2130	780	290	290	455	.....
3	.....	.....	.....	.....	.....	5170	5990	2280	780	370	730	500	.....
4	.....	.....	.....	.....	.....	4100	6310	2000	730	290	730	500	.....
5	.....	.....	.....	.....	.....	4380	5680	1800	830	290	830	410	.....
6	.....	.....	.....	.....	.....	6100	5680	1680	730	220	730	500	.....
7	.....	.....	.....	.....	.....	6970	6100	1680	1210	250	830	500	.....
8	.....	.....	.....	.....	.....	8220	5470	1500	1040	250	1380	455	.....
9	.....	.....	.....	.....	.....	8450	5470	1740	830	370	935	410	.....
10	.....	.....	.....	.....	.....	9410	6200	1560	830	370	1210	455	.....
11	.....	.....	.....	.....	.....	8930	6200	1380	830	545	1040	370	.....
12	.....	.....	.....	.....	.....	7300	6200	1320	590	590	880	330	.....
13	.....	.....	.....	.....	.....	6200	6100	1260	935	545	880	370	.....
14	.....	.....	.....	.....	.....	6100	6200	1100	935	370	1040	.....	.....
15	.....	.....	.....	.....	.....	5570	6100	990	830	370	990	.....	.....
16	.....	.....	.....	.....	.....	4970	5680	1100	830	330	880	.....	.....
17	.....	.....	.....	.....	.....	4970	5680	990	635	330	730	.....	.....
18	.....	.....	.....	.....	.....	4100	5680	830	590	290	730	.....	.....
19	.....	.....	.....	.....	.....	3640	5880	830	500	220	830	.....	.....
20	.....	.....	.....	.....	.....	3550	5880	680	500	290	780	.....	.....
21	.....	.....	.....	.....	.....	4670	5780	680	370	250	730	.....	.....
22	.....	.....	.....	.....	.....	5070	5370	635	410	220	830	....	.....
23	.....	.....	.....	.....	4480	5270	4300	730	410	220	830	.....	.....
24	.....	.....	.....	.....	5170	5070	4870	590	410	290	680	.....	.....
25	.....	.....	.....	.....	5170	4480	4480	545	370	220	680	.....	.....
26	.....	.....	.....	.....	6200	4570	4380	500	330	410	455	.....	.....
27	.....	.....	.....	.....	6200	4480	4100	500	330	250	500	.....	.....
28	.....	.....	.....	.....	7530	4380	4000	545	330	250	500	.....	.....
29	.....	.....	.....	.....	7640	3820	3820	680	290	250	455	.....	.....
30	.....	.....	.....	.....	6530	5070	3730	680	290	250	455	.....	.....
31	.....	.....	.....	.....	.....	4970	.....	830	290	.....	455	.....	.....
Total	.....	.....	.....	.....	48920	168830	163960	35895	19595	9480	23385	5755	.....
Mean	.....	.....	.....	.....	.....	5450	5470	1160	632	316	754	443	.....
Max.	.....	.....	.....	.....	.....	9410	6530	2280	1210	590	1380	.....	.....
Min.	.....	.....	.....	.....	.....	4100	3730	500	290	220	290	.....	.....
Acre-ft.	.....	.....	.....	.....	97000	335000	325000	71300	38900	18800	46400	11400	.....

Unless otherwise noted, all discharges are in cubic feet per second.

YAMPA RIVER NEAR MAYBELL.

Location.—At highway bridge about three miles above Maybell in sec. 2, T. 6 N., R. 95 W. Nearest tributary, Deception Creek, enters about one mile below.

Records Available.—April 24 to November 12, 1916. From April 17, 1904, to October 31, 1905, and from June 12, 1910, to November 30, 1912, a station was maintained at the Thornburg bridge, about nine miles below Maybell. The present station was established April 25, 1916.

Gage.—Chain gage located on highway bridge.

Channel.—Probably permanent.

Winter Flow.—Station discontinued during the winter months.

Diversions.—Between this station and Craig there are decrees for diversions of 131 second-feet from the Yampa River and 3,269 second-feet from intervening tributaries.

Co-operation.—Station maintained in co-operation with the United States Geological Survey.

SODA CREEK AT STEAMBOAT SPRINGS.

Location.—At the Main Street Bridge at Steamboat Springs, below all tributaries, the nearest being a small creek that enters from the east about 2 miles above.

Records Available.—June 8, 1910, to August 31, 1911; April 24, 1913, to November 30, 1916.

Drainage Area.—47 square miles.

Gage.—Chain gage.

Channel.—Practically permanent.

Discharge Measurements.—Made from highway bridge.

ELK RIVER AT HINMAN PARK.

Location.—At Hinman Park just above the mouth of South Fork and 8 miles above Clark.

Records Available.—May 25, 1912, to November 30, 1916.

Drainage Area.—61 square miles.

Gage.—Bristol automatic gage.

Channel.—Rough, but permanent.

Discharge Measurements.—Made from cable and car.

Winter Flow.—Ice causes backwater. Station discontinued during the winter months.

Co-operation.—Station is maintained by the State Engineer in co-operation with the Elk River Irrigation & Construction Co.

Discharge of Yampa River at Maybell for 1916.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	5620	7190	2960	815	461	351	504	.....
2	.....	.....	.....	.....	4360	7420	2810	704	479	356	473	.....
3	.....	.....	.....	.....	4360	6960	2660	740	402	345	461	.....
4	.....	.....	.....	.....	3800	6730	2380	704	356	1230	443	.....
5	.....	.....	.....	.....	4360	7190	2000	740	325	852	443	.....
6	.....	.....	.....	.....	5840	7890	1880	890	384	726	413	.....
7	.....	.....	.....	.....	7420	6960	1760	1010	334	860	419	.....
8	.....	.....	.....	.....	9390	5620	1650	1140	356	1140	425	.....
9	.....	.....	.....	.....	10400	5620	1650	970	356	1430	419	.....
10	.....	.....	.....	.....	11500	5180	1650	890	437	1240	413	.....
11	.....	.....	.....	.....	11500	6730	1650	890	852	1050	384	.....
12	.....	.....	.....	.....	9910	6960	1540	815	668	875	356	.....
13	.....	.....	.....	.....	8370	6960	1430	778	600	815	.....	.....
14	.....	.....	.....	.....	8130	6960	1180	852	485	778	.....	.....
15	.....	.....	.....	.....	6730	7420	1050	1050	384	740	.....	.....
16	.....	.....	.....	.....	5400	6500	970	890	367	748	.....	.....
17	.....	.....	.....	.....	4360	6060	890	740	379	815	.....	.....
18	.....	.....	.....	.....	3980	6280	890	668	384	815	.....	.....
19	.....	.....	.....	.....	3620	6280	890	740	379	830	.....	.....
20	.....	.....	.....	.....	3980	6280	852	600	362	890	.....	.....
21	.....	.....	.....	.....	5180	5840	740	523	356	704	.....	.....
22	.....	.....	.....	.....	6500	5180	668	485	362	654	.....	.....
23	.....	.....	.....	.....	6280	4360	634	473	345	614	.....	.....
24	.....	.....	.....	3980	5180	3820	600	449	356	600	.....	.....
25	.....	.....	.....	4980	5180	3280	568	419	362	607	.....	.....
26	.....	.....	.....	5970	6060	3620	568	407	367	588	.....	.....
27	.....	.....	.....	6960	5620	3620	568	384	402	568	.....	.....
28	.....	.....	.....	7890	5180	3280	600	362	362	535	.....	.....
29	.....	.....	.....	8610	5620	3280	600	379	356	523	.....	.....
30	.....	.....	.....	8370	6060	3280	970	402	356	485	.....	.....
31	.....	.....	.....	.....	6500	.....	704	479	.....	504	.....	.....
Total.	.....	.....	.....	46760	196390	172750	39962	21388	12378	23268	5153	.....
Mean....	.....	.....	.....	6680	6340	5760	1290	690	413	751	.....	.....
Max.....	.....	.....	.....	8610	11500	7890	2960	1140	852	1430	.....	.....
Min.....	.....	.....	.....	3980	3620	3280	568	362	329	345	.....	.....
Acre-ft.	.....	.....	.....	92600	390000	343000	79300	42400	24600	46200	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Soda Creek at Steamboat Springs for 1915.
Drainage Area, 47 Square Miles. Altitude, 6,680 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	207	273	46	3	1	3	5	.....
2	.....	.....	.....	.....	.....	155	381	38	3	1	3	5	.....
3	.....	.....	.....	.....	.....	129	255	35	3	1	4	4	.....
4	.....	.....	.....	.....	.....	107	129	35	3	2	3	4	.....
5	.....	.....	.....	.....	.....	98	168	31	3	2	3	4	.....
6	.....	.....	.....	.....	.....	73	129	27	3	2	3	4	.....
7	.....	.....	.....	.....	.....	73	107	23	3	2	3	5	.....
8	.....	.....	.....	.....	.....	73	118	20	3.5	3	3	5	.....
9	.....	.....	.....	.....	.....	89	194	17	3.5	2	3	5	.....
10	.....	.....	.....	.....	.....	129	309	14	3.5	2	3	5	.....
11	.....	.....	.....	.....	.....	129	273	10	3	2	3	5	.....
12	.....	.....	.....	.....	.....	181	207	10	2.5	2	3	12	.....
13	.....	.....	.....	.....	.....	237	207	8	2	2.5	3	6	.....
14	.....	.....	.....	.....	.....	222	155	8	2	3	3	6	.....
15	.....	.....	.....	.....	.....	222	181	8	2	3	4	6	.....
16	.....	.....	.....	.....	.....	237	222	7	2	3	4	6	.....
17	.....	.....	.....	.....	.....	273	237	6	2	3	4	6	.....
18	.....	.....	.....	.....	.....	237	168	6	2	3	4	6	.....
19	.....	.....	.....	.....	.....	181	181	5.5	2	3	4	6	.....
20	.....	.....	.....	.....	.....	107	207	5	2	2.5	4	5.5	.....
21	.....	.....	.....	.....	.....	89	168	4.5	2	2.5	3.5	5.5	.....
22	.....	.....	.....	.....	.....	89	194	4	2	2.5	3.5	5.5	.....
23	.....	.....	.....	.....	.....	107	168	4	2	2.5	3.5	5	.....
24	.....	.....	.....	.....	.....	142	181	4	2	3	3	5	.....
25	.....	.....	.....	.....	129	129	155	4	2	3	3	5	.....
26	.....	.....	.....	.....	118	129	107	3.5	2	3.5	3	5	.....
27	.....	.....	.....	.....	129	129	118	3.5	2	4	3	5	.....
28	.....	.....	.....	.....	142	107	73	3.5	2	4	3.5	5	.....
29	.....	.....	.....	.....	168	118	59	3.5	1.5	3	4.5	5	.....
30	.....	.....	.....	.....	291	118	49	3	1	3	4.5	5	.....
31	.....	.....	.....	.....	.....	181	.....	3	1	.....	5	.....	.....
Total	.....	.....	.....	.....	977	4497	5373	400	72.5	76.0	107	161.5	.....
Mean	.....	.....	.....	.....	163	145	179	12.9	2.3	2.5	3.5	5.4	.....
Max	.....	.....	.....	.....	291	273	381	46	3.5	4	5	12	.....
Min	.....	.....	.....	.....	118	73	49	3	1	1	3	4	.....
Acre-ft.	.....	.....	.....	.....	1940	8920	10700	793	141	149	215	321	.....

Discharge of Soda Creek at Steamboat Springs for 1916.
Drainage Area, 47 Square Miles. Altitude, 6,680 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	50	138	303	116	5	5	6	5	.....
2	.....	.....	.....	.....	54	130	285	102	5	5	6	5	.....
3	.....	.....	.....	.....	50	102	267	96	5	5	6	5	.....
4	.....	.....	.....	.....	50	102	276	78	5	5	6	5	.....
5	.....	.....	.....	.....	50	123	294	73	5	6	6	5	.....
6	.....	.....	.....	.....	50	123	242	68	5	6	6	5	.....
7	.....	.....	.....	.....	50	170	226	58	5	6	6	5	.....
8	.....	.....	.....	.....	50	285	234	54	5	5	6	5	.....
9	.....	.....	.....	.....	46	322	226	50	5	5	6	5	.....
10	.....	.....	.....	.....	50	234	285	46	5	5	6	5	.....
11	.....	.....	.....	.....	68	258	267	42	5	5	6	5	.....
12	.....	.....	.....	.....	73	242	258	38	5	5	6	5	.....
13	.....	.....	.....	18	73	162	312	28	5	5	8	4	.....
14	.....	.....	.....	18	84	146	276	26	5	5	8	4	.....
15	.....	.....	.....	13	90	146	242	23	5	5	9	4	.....
16	.....	.....	.....	15	96	116	242	18	5	5	9	4	.....
17	.....	.....	.....	20	96	109	267	18	5	5	8	4	.....
18	.....	.....	.....	28	84	123	258	13	5	5	8	4	.....
19	.....	.....	.....	35	73	123	258	13	5	5	8	4	.....
20	.....	.....	.....	50	78	123	258	9	5	5	6	4	.....
21	.....	.....	.....	54	84	138	234	6	5	5	6	4	.....
22	.....	.....	.....	50	90	146	178	6	5	5	6	4	.....
23	.....	.....	.....	50	102	138	123	6	5	5	6	4	.....
24	.....	.....	.....	42	102	138	138	6	5	5	6	4	.....
25	.....	.....	.....	38	138	123	162	6	5	5	6	4	.....
26	.....	.....	.....	38	186	123	162	6	5	5	5	4	.....
27	.....	.....	.....	38	210	146	170	4	5	5	5	4	.....
28	.....	.....	.....	38	194	178	170	3.5	5	6	5	4	.....
29	.....	.....	.....	38	178	202	146	5	5	6	5	4	.....
30	.....	.....	.....	42	178	226	123	7.5	5	6	5	4	.....
31	.....	.....	.....	46	.....	285	.....	6	5	.....	5	.....	.....
Total.	.....	.....	.....	671	2777	5120	6882	1031	155	156	196	132	.....
Mean	.....	.....	.....	.....	92.6	165	229	33.3	5.0	5.2	6.3	4.4	.....
Max	.....	.....	.....	.....	210	322	312	116	5	6	9	5	.....
Min	.....	.....	.....	.....	46	102	123	3.5	5	5	5	4	.....
Acre-ft.	.....	.....	.....	1330	5510	10100	13600	2050	307	309	387	262	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Elk River at Kinman Park for 1915.
Drainage Area, 61 Square Miles. Altitude, 7,800 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	270	340	465	100	68	68	68	.....
2	.....	.....	.....	.....	.....	186	340	465	100	68	68	61	.....
3	.....	.....	.....	.....	.....	162	322	420	83	68	76	54	.....
4	.....	.....	.....	.....	.....	186	322	442	92	68	76	61	.....
5	.....	.....	.....	.....	.....	186	304	400	92	68	68	61	.....
6	.....	.....	.....	.....	.....	212	304	570	92	68	76	54	.....
7	.....	.....	.....	.....	.....	212	270	515	83	68	83	54	.....
8	.....	.....	.....	.....	.....	240	322	340	92	68	83	54	.....
9	.....	.....	.....	.....	.....	240	570	322	92	54	92	54	.....
10	.....	.....	.....	.....	.....	240	655	340	100	54	100	54	.....
11	.....	.....	.....	.....	.....	270	745	287	83	68	100	54	.....
12	.....	.....	.....	.....	.....	240	625	270	83	100	110	47	.....
13	.....	.....	.....	.....	.....	360	400	255	83	54	76	54	.....
14	.....	.....	.....	.....	.....	490	380	240	68	47	68	61	.....
15	.....	.....	.....	.....	.....	442	380	212	68	54	68	68	.....
16	.....	.....	.....	.....	140	420	465	199	76	54	83	68	.....
17	.....	.....	.....	.....	140	465	542	186	76	54	83	76	.....
18	.....	.....	.....	.....	162	442	515	162	83	76	83	83	.....
19	.....	.....	.....	.....	186	304	685	130	83	68	68	70	.....
20	.....	.....	.....	.....	186	270	685	120	76	76	83	70	.....
21	.....	.....	.....	.....	212	240	625	120	68	83	76	70	.....
22	.....	.....	.....	.....	186	240	625	120	68	83	68	83	.....
23	.....	.....	.....	.....	162	304	625	120	68	83	61	83	.....
24	.....	.....	.....	.....	162	380	598	120	76	76	83	89	.....
25	.....	.....	.....	.....	151	380	655	120	68	76	76	83	.....
26	.....	.....	.....	.....	162	340	655	120	68	61	76	66	.....
27	.....	.....	.....	.....	212	304	598	162	68	54	68	76	.....
28	.....	.....	.....	.....	270	304	515	151	61	68	68	76	.....
29	.....	.....	.....	.....	340	340	442	140	54	76	76	83	.....
30	.....	.....	.....	.....	420	340	465	130	61	76	76	70	.....
31	.....	.....	.....	.....	.....	340	.....	110	68	.....	68	.....	.....
Total	.....	.....	.....	.....	3091	9349	14974	7753	2433	2039	2408	2005	.....
Mean	.....	.....	.....	.....	206	302	499	250	78	68	78	67	.....
Max	.....	.....	.....	.....	420	490	745	570	100	100	110	89	.....
Min	.....	.....	.....	.....	140	162	270	110	54	47	61	47	.....
Acre-ft.	.....	.....	.....	.....	6130	18500	29700	15400	4830	4040	4780	3980	.....

Discharge of Elk River at Kinman Park for 1916.
Drainage Area, 61 Square Miles. Altitude, 7,800 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	210	725	620	152	70	93	57	.....
2	.....	.....	.....	.....	.....	225	780	620	128	63	128	57	.....
3	.....	.....	.....	.....	.....	260	845	595	115	63	115	63	.....
4	.....	.....	.....	.....	.....	295	945	502	128	70	140	63	.....
5	.....	.....	.....	.....	.....	348	980	480	128	63	115	63	.....
6	.....	.....	.....	.....	.....	400	868	480	140	70	104	63	.....
7	.....	.....	.....	.....	.....	348	945	460	115	63	104	63	.....
8	.....	.....	.....	.....	.....	312	980	460	115	63	93	63	.....
9	.....	.....	.....	.....	.....	295	1080	440	115	85	77	63	.....
10	.....	.....	.....	.....	.....	295	1160	400	104	140	77	63	.....
11	.....	.....	.....	.....	.....	330	878	382	93	77	104	63	.....
12	.....	.....	.....	.....	.....	382	878	348	165	77	104	63	.....
13	.....	.....	.....	.....	.....	525	845	330	260	63	93	63	.....
14	.....	.....	.....	.....	.....	595	945	312	128	63	85	63	.....
15	.....	.....	.....	.....	.....	620	945	295	93	63	85	63	.....
16	.....	.....	.....	.....	.....	725	1160	278	93	63	77	57	.....
17	.....	.....	.....	.....	.....	725	1020	242	93	63	85	57	.....
18	.....	.....	.....	.....	.....	570	910	242	93	57	77	57	.....
19	.....	.....	.....	.....	.....	570	945	242	93	57	85	57	.....
20	.....	.....	.....	.....	.....	548	845	260	93	51	77	57	.....
21	.....	.....	.....	.....	.....	440	780	260	85	51	85	57	.....
22	.....	.....	.....	.....	.....	348	670	260	77	51	77	57	.....
23	.....	.....	.....	.....	.....	330	502	195	70	51	77	57	.....
24	.....	.....	.....	.....	.....	330	548	152	77	104	70	57	.....
25	.....	.....	.....	.....	.....	460	570	152	77	85	70	57	.....
26	.....	.....	.....	.....	.....	420	670	140	77	77	70	57	.....
27	.....	.....	.....	.....	.....	420	670	165	77	70	70	57	.....
28	.....	.....	.....	.....	.....	440	670	165	70	70	70	57	.....
29	.....	.....	.....	.....	.....	480	645	152	63	63	70	57	.....
30	.....	.....	.....	.....	.....	525	645	165	77	70	63	57	.....
31	.....	.....	.....	.....	.....	620	.....	152	85	.....	63	.....	.....
Total	.....	.....	.....	.....	.....	13391	25049	9946	3279	2076	2703	1788	.....
Mean	.....	.....	.....	.....	.....	432	835	321	106	69.2	87.2	59.6	.....
Max	.....	.....	.....	.....	.....	725	1160	620	260	140	140	63	.....
Min	.....	.....	.....	.....	.....	210	502	140	63	51	63	57	.....
Acre-ft.	.....	.....	.....	.....	.....	26600	49700	19700	6520	4120	5360	3550	.....

Unless otherwise noted, all discharges are in cubic feet per second.

ELK RIVER NEAR CLARK.

Location.—At Kinney's ranch, 2 miles above Clark postoffice.

Records Available.—May 1, 1910, to September 30, 1916.

Drainage Area.—206 square miles.

Gage.—Chain gage.

Channel.—Rough but permanent.

Diversions.—There are court decrees for diversions of 4 second-feet from Elk River above this station and 25 second-feet from the tributaries entering above.

Co-operation.—The State Engineer maintains the station in co-operation with the Elk River Irrigation & Construction Co.

ELK RIVER NEAR TRULL.

Location.—Two miles southwest of Trull postoffice on the road between Steamboat Springs and Hayden; below all tributaries; none above the station for several miles.

Records Available.—May 2, 1904, to August 16, 1906; May 1, 1910, to November 30, 1916.

Drainage Area.—415 square miles.

Gage.—Chain gage.

Channel.—Fairly permanent.

Discharge Measurements.—Made from highway bridge.

Diversions.—Between this station and that near Clark there are court decrees for diversions of 111 second-feet from Elk River and 62 second-feet from intervening tributaries. There are no decrees for diversions below the station.

MAD CREEK NEAR STEAMBOAT SPRINGS.

Location.—At highway bridge on road to Hahn's Peak, 6 miles Steamboat Springs.

Records Available.—July 1, 1912, to November 30, 1916.

Drainage Area.—40 square miles.

Gage.—Vertical staff.

Channel.—Rough, but permanent.

Discharge Measurements.—Made from bridge.

Winter Flow.—No data, as records were discontinued.

Discharge of Elk River near Clark for 1915.
Drainage Area, 206 Square Miles. Altitude, 7,300 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	435	1180	605	142	142	88	88	.....
2	.....	.....	.....	.....	.....	555	1362	555	184	168	102	88	.....
3	.....	.....	.....	.....	.....	330	1215	530	168	199	95	82	.....
4	.....	.....	.....	.....	.....	370	1180	505	168	142	102	82	.....
5	.....	.....	.....	.....	.....	458	1110	290	155	102	88	95	.....
6	.....	.....	.....	.....	.....	390	1250	216	142	102	102	88	.....
7	.....	.....	.....	.....	.....	480	1180	184	142	168	102	95	.....
8	.....	.....	.....	.....	.....	458	1480	142	142	168	95	102	.....
9	.....	.....	.....	.....	.....	530	1325	184	142	155	102	102	.....
10	.....	.....	.....	.....	.....	350	1008	142	142	184	102	95	.....
11	.....	.....	.....	.....	.....	435	975	155	142	95	95	102	.....
12	.....	.....	.....	.....	.....	412	1075	168	155	120	102	102	.....
13	.....	.....	.....	.....	.....	880	1110	142	168	168	102	88	.....
14	.....	.....	.....	.....	.....	1362	1180	142	184	233	88	88	.....
15	.....	.....	.....	.....	.....	1250	1008	168	168	142	95	82	.....
16	.....	.....	.....	.....	.....	942	1075	142	95	111	82	95	.....
17	.....	.....	.....	.....	505	1040	1440	168	142	142	88	88	.....
18	.....	.....	.....	.....	680	1040	1215	168	199	111	95	102	.....
19	.....	.....	.....	.....	605	942	1215	155	155	168	102	88	.....
20	.....	.....	.....	.....	530	1325	1180	184	233	131	102	88	.....
21	.....	.....	.....	.....	680	530	910	199	199	168	76	88	.....
22	.....	.....	.....	.....	480	458	1725	168	216	142	88	102	.....
23	.....	.....	.....	.....	480	735	880	184	155	142	102	102	.....
24	.....	.....	.....	.....	605	580	942	168	199	168	88	111	.....
25	.....	.....	.....	.....	530	820	942	168	184	155	88	102	.....
26	.....	.....	.....	.....	655	655	910	168	199	184	102	82	.....
27	.....	.....	.....	.....	605	820	975	168	155	216	88	95	.....
28	.....	.....	.....	.....	1040	880	975	155	199	155	88	95	.....
29	.....	.....	.....	.....	880	880	790	168	102	102	102	102	.....
30	.....	.....	.....	.....	505	790	1110	168	111	102	95	88	.....
31	.....	.....	.....	.....	.....	1325	.....	168	142	.....	95	.....	.....
Total	.....	.....	.....	.....	8780	22457	33922	6827	5029	4485	2941	2807	.....
Mean	.....	.....	.....	.....	627	725	1131	220	162	150	95	94	.....
Max	.....	.....	.....	.....	1040	1362	1725	605	233	233	102	111	.....
Min	.....	.....	.....	.....	505	330	790	142	95	95	76	82	.....
Acre-ft.	.....	.....	.....	.....	17400	44500	67300	13500	10000	8900	5830	5570	.....

Gage Heights questionable, July, August and September.

Discharge of Elk River near Clark for 1916.
Drainage Area, 206 Square Miles. Altitude, 7,300 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	62	650	1220	1420	225	132	.....	.....	.....
2	.....	.....	.....	.....	62	570	1340	1340	250	118	.....	.....	.....
3	.....	.....	.....	.....	62	410	1340	1300	265	118	.....	.....	.....
4	.....	.....	.....	.....	62	905	1520	1220	328	118	.....	.....	.....
5	.....	.....	.....	.....	62	1400	1520	1180	385	110	.....	.....	.....
6	.....	.....	.....	.....	62	1620	1180	1060	385	125	.....	.....	.....
7	.....	.....	.....	.....	66	1880	1100	1060	448	238	.....	.....	.....
8	.....	.....	.....	.....	76	2280	1220	955	448	265	.....	.....	.....
9	.....	.....	.....	.....	82	2360	1420	955	615	250	.....	.....	.....
10	.....	.....	.....	.....	120	1860	1520	920	515	200	.....	.....	.....
11	.....	.....	.....	.....	168	1340	1560	760	448	170	.....	.....	.....
12	.....	.....	.....	.....	252	1340	1560	590	425	150	.....	.....	.....
13	.....	.....	.....	.....	330	1300	1610	515	385	132	.....	.....	.....
14	.....	.....	.....	.....	370	1260	1660	448	310	110	.....	.....	.....
15	.....	.....	.....	.....	233	1030	1710	385	280	110	.....	.....	.....
16	.....	.....	.....	.....	82	670	1660	385	238	110	.....	.....	.....
17	.....	.....	.....	.....	88	405	1710	345	212	98	.....	.....	.....
18	.....	.....	.....	.....	88	328	1760	328	170	98	.....	.....	.....
19	.....	.....	.....	.....	88	405	1760	328	150	98	.....	.....	.....
20	.....	.....	.....	.....	111	405	1660	280	140	98	.....	.....	.....
21	.....	.....	.....	.....	111	425	1520	280	132	98	.....	.....	.....
22	.....	.....	.....	.....	155	730	1520	250	150	98	.....	.....	.....
23	.....	.....	.....	.....	184	700	1520	250	345	98	.....	.....	.....
24	.....	.....	.....	.....	233	790	1520	250	345	98	.....	.....	.....
25	.....	.....	.....	.....	412	760	1420	238	345	105	.....	.....	.....
26	.....	.....	.....	.....	480	700	1470	265	250	132	.....	.....	.....
27	.....	.....	.....	.....	1070	855	1470	615	238	160	.....	.....	.....
28	.....	.....	.....	.....	1580	790	1380	888	225	280	.....	.....	.....
29	.....	.....	.....	.....	2000	1030	1340	730	170	225	.....	.....	.....
30	.....	.....	.....	.....	1440	1060	1300	565	150	200	.....	.....	.....
31	.....	.....	.....	.....	.....	1100	.....	425	132	.....	.....	.....	.....
Total.	.....	.....	.....	.....	10191	31358	44490	20530	9104	4342	.....	.....	.....
Mean	.....	.....	.....	.....	340	1010	1480	662	294	145	.....	.....	.....
Max	.....	.....	.....	.....	2000	2360	1760	1420	615	280	.....	.....	.....
Min	.....	.....	.....	.....	62	328	1100	238	132	98	.....	.....	.....
Acre-ft.	.....	.....	.....	.....	20200	62100	88100	40700	18100	8630	.....	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Elk River near Trull for 1915.
Drainage Area, 415 Square Miles. Altitude, 6,650 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	245	1420	1380	1025	115	74	160	105	.....
2	.....	.....	.....	.....	215	1260	1460	912	125	68	148	105	.....
3	.....	.....	.....	.....	262	1140	1712	875	125	80	148	105	.....
4	.....	.....	.....	.....	382	840	1500	1100	115	95	148	105	.....
5	.....	.....	.....	.....	262	950	1542	772	115	115	160	105	.....
6	.....	.....	.....	.....	262	805	1628	708	115	115	148	105	.....
7	.....	.....	.....	.....	300	675	1542	645	115	115	125	115	.....
8	.....	.....	.....	.....	405	772	1340	615	148	135	125	125	.....
9	.....	.....	.....	.....	382	805	1340	588	148	135	125	125	.....
10	.....	.....	.....	.....	455	950	1460	615	148	135	125	125	.....
11	.....	.....	.....	.....	455	988	1670	532	125	115	125	125	.....
12	.....	.....	.....	.....	405	1140	1460	505	115	95	125	105	.....
13	.....	.....	.....	.....	675	1420	1542	505	135	105	115	105	.....
14	.....	.....	.....	.....	772	1460	1500	455	115	135	115	115	.....
15	.....	.....	.....	.....	912	1460	1460	430	135	105	115	115	.....
16	.....	.....	.....	.....	988	1340	1420	430	115	95	115	135	.....
17	.....	.....	.....	.....	1100	1340	1420	360	115	95	125	148	.....
18	.....	.....	.....	.....	1220	1420	1542	360	115	105	125	160	.....
19	.....	.....	.....	.....	1180	1220	1755	300	105	148	125	160	.....
20	.....	.....	.....	.....	1180	1300	1670	245	115	148	135	160	.....
21	.....	.....	.....	.....	1300	1220	1670	215	115	105	125	160	.....
22	.....	.....	.....	.....	1260	1180	1712	185	88	115	125	135	.....
23	.....	.....	.....	.....	1180	1140	1670	215	88	115	125	135	.....
24	.....	.....	.....	.....	1025	1260	1585	230	95	160	125	135	.....
25	.....	.....	.....	.....	875	1220	1755	215	115	148	105	160	.....
26	.....	.....	.....	.....	875	1140	1840	185	105	172	105	172	.....
27	.....	.....	.....	.....	1025	1300	1798	148	105	172	95	185	.....
28	.....	.....	.....	.....	1340	1300	1670	148	80	160	95	185	.....
29	.....	.....	.....	.....	1542	1300	1628	148	80	172	95	185	.....
30	.....	.....	.....	.....	1628	1380	1542	148	68	185	105	185	.....
31	.....	.....	.....	.....	.....	1420	.....	148	68	.....	105	.....	.....
Total.	.....	.....	.....	.....	24107	36565	47213	13962	3466	3717	3837	4085	.....
Mean....	.....	.....	.....	.....	804	1180	1574	450	112	124	124	136	.....
Max,.....	.....	.....	.....	.....	1628	1460	1840	1100	148	185	160	185	.....
Min.....	.....	.....	.....	.....	215	675	1340	148	68	68	95	105	.....
Acre-ft.	.....	.....	.....	.....	47800	72500	93600	27700	6880	7370	7610	8100	.....

Discharge of Elk River near Trull for 1916.
Drainage Area, 415 Square Miles. Altitude, 6,650 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	300	1760	2840	1980	300	148	135	148	.....
2	.....	.....	.....	.....	360	1220	2350	1840	280	200	172	160	.....
3	.....	.....	.....	.....	455	1540	2500	1630	300	172	245	172	.....
4	.....	.....	.....	.....	430	1800	2350	1420	340	148	230	148	.....
5	.....	.....	.....	.....	455	2590	2500	1260	405	148	280	148	.....
6	.....	.....	.....	.....	360	2990	2210	1340	588	148	320	148	.....
7	.....	.....	.....	.....	300	3360	2070	1340	1030	135	480	172	.....
8	.....	.....	.....	.....	262	3250	2500	1180	340	160	708	172	.....
9	.....	.....	.....	.....	300	3460	2540	1220	340	405	560	172	.....
10	.....	.....	.....	.....	505	3620	2690	1140	300	532	430	200	.....
11	.....	.....	.....	.....	772	2940	2540	950	340	300	230	215	.....
12	.....	.....	.....	.....	988	2590	2790	875	340	230	185	160	.....
13	.....	.....	.....	.....	988	2640	2500	772	480	200	185	172	.....
14	.....	.....	.....	.....	988	2260	2450	532	588	148	262	160	.....
15	.....	.....	.....	.....	1140	2160	2400	805	280	148	245	172	.....
16	.....	.....	.....	.....	1260	1760	2500	772	172	125	300	160	.....
17	.....	.....	.....	.....	1180	1580	2640	675	185	125	300	185	.....
18	.....	.....	.....	.....	1340	1500	2790	615	200	148	300	172	.....
19	.....	.....	.....	.....	1420	1800	2740	480	148	148	300	200	.....
20	.....	.....	.....	.....	1060	2020	2500	430	215	135	340	215	.....
21	.....	.....	.....	.....	1060	2120	2300	382	200	125	262	185	.....
22	.....	.....	.....	.....	1220	2020	2210	405	148	135	230	215	.....
23	.....	.....	.....	.....	1420	1670	1980	340	135	105	230	230	.....
24	.....	.....	.....	.....	1760	1630	1840	340	160	125	262	230	.....
25	.....	.....	.....	.....	2300	2070	1840	300	160	135	230	230	.....
26	.....	.....	.....	.....	2640	1880	1930	320	200	135	215	185	.....
27	.....	.....	.....	.....	2790	1840	1880	262	160	135	200	200	.....
28	.....	.....	.....	.....	3040	2120	1880	405	135	135	172	215	.....
29	.....	.....	.....	.....	2940	2300	1880	430	148	125	172	230	.....
30	.....	.....	.....	.....	2070	2120	1880	382	160	135	135	245	.....
31	.....	.....	.....	.....	.....	2500	.....	430	148	.....	148	.....	.....
Total	.....	.....	.....	.....	36103	69110	70020	25252	8925	5193	8463	5616	.....
Mean....	.....	.....	.....	.....	1200	2230	2330	815	288	173	273	187	.....
Max.	.....	.....	.....	.....	3040	3620	2840	1980	1030	532	708	245	.....
Min.	.....	.....	.....	.....	262	1220	1840	262	135	105	135	148	.....
Acre-ft.	.....	.....	.....	.....	71400	137000	139000	50100	17700	10300	16800	11100	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Mad Creek near Steamboat Springs for 1915.
Drainage Area, 40 Square Miles. Altitude, 6,740 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	74	272	182	12	6	12	8	.....
2	.....	.....	.....	.....	.....	139	272	182	12	6	12	8	.....
3	.....	.....	.....	.....	.....	103	332	167	12	6	12	8	.....
4	.....	.....	.....	.....	.....	114	332	152	12	6	12	8	.....
5	.....	.....	.....	.....	.....	114	405	139	12	12	12	8	.....
6	.....	.....	.....	.....	.....	126	332	126	12	12	12	8	.....
7	.....	.....	.....	.....	.....	93	405	126	12	8	12	8	.....
8	.....	.....	.....	.....	.....	83	405	139	17	8	12	8	.....
9	.....	.....	.....	.....	.....	103	405	139	17	8	31	8	.....
10	.....	.....	.....	.....	.....	114	405	139	12	8	31	8	.....
11	.....	.....	.....	.....	.....	139	405	126	12	6	36	8	.....
12	.....	.....	.....	.....	.....	272	490	114	12	6	20	8	.....
13	.....	.....	.....	.....	.....	247	405	103	12	6	20	8	.....
14	.....	.....	.....	.....	.....	368	490	103	10	10	17	8	.....
15	.....	.....	.....	.....	.....	405	405	83	10	12	17	8	.....
16	.....	.....	.....	.....	.....	405	490	94	8	8	12	8	.....
17	.....	.....	.....	.....	.....	582	490	46	8	8	14	8	.....
18	.....	.....	.....	.....	.....	582	405	46	20	8	14	8	.....
19	.....	.....	.....	.....	.....	582	405	40	17	6	10	8	.....
20	.....	.....	.....	.....	.....	490	490	40	8	6	10	8	.....
21	.....	.....	.....	.....	.....	405	405	40	8	6	59	8	.....
22	.....	.....	.....	.....	.....	405	405	31	7	6	59	8	.....
23	.....	.....	.....	.....	.....	490	405	31	8	6	46	8	.....
24	.....	.....	.....	.....	.....	332	405	23	8	6	46	8	.....
25	.....	.....	.....	.....	.....	272	332	23	14	6	27	8	.....
26	.....	.....	.....	.....	.....	272	332	23	17	17	12	.....	.....
27	.....	.....	.....	.....	83	272	332	23	12	23	12	.....	.....
28	.....	.....	.....	.....	182	332	272	17	12	31	8	.....	.....
29	.....	.....	.....	.....	247	332	222	17	8	31	7	.....	.....
30	.....	.....	.....	.....	182	405	222	17	10	31	7	.....	.....
31	.....	.....	.....	.....	.....	405	.....	12	10	.....	7	.....	.....
Total	.....	.....	.....	.....	694	9057	11372	3543	361	319	618	200	.....
Mean	.....	.....	.....	.....	174	292	379	82.0	11.6	10.6	19.9	8	.....
Max	.....	.....	.....	.....	247	582	490	182	20	31	59	.....	.....
Min	.....	.....	.....	.....	83	74	222	12	7	6	7	.....	.....
Acre-ft.	.....	.....	.....	.....	1380	18000	22600	5040	713	631	1220	397	.....

Discharge of Mad Creek near Steamboat Springs for 1916.
Drainage Area, 40 Square Miles. Altitude, 6,740 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	.....	636	48	32	14	27	.....
2	.....	.....	.....	.....	.....	.....	755	48	32	14	27	.....
3	.....	.....	.....	.....	.....	.....	636	48	32	14	20	.....
4	.....	.....	.....	.....	.....	.....	636	48	32	27	20	.....
5	.....	.....	.....	.....	.....	.....	448	77	27	48	20	.....
6	.....	.....	.....	.....	.....	.....	317	117	27	77	20	.....
7	.....	.....	.....	.....	.....	.....	377	77	42	117	20	.....
8	.....	.....	.....	.....	.....	.....	412	48	48	180	20	.....
9	.....	.....	.....	.....	.....	.....	317	48	48	180	20	.....
10	.....	.....	.....	.....	.....	.....	264	48	48	117	20	.....
11	.....	.....	.....	.....	.....	.....	199	48	48	117	20	.....
12	.....	.....	.....	.....	.....	.....	145	48	48	95	20	.....
13	.....	.....	.....	.....	.....	.....	131	48	37	77	20	.....
14	.....	.....	.....	.....	.....	.....	117	48	37	61	20	.....
15	.....	.....	.....	.....	.....	.....	117	42	37	48	20	.....
16	.....	.....	.....	.....	.....	.....	86	37	37	61	17	.....
17	.....	.....	.....	.....	.....	.....	86	37	37	61	17	.....
18	.....	.....	.....	.....	.....	.....	77	37	37	77	17	.....
19	.....	.....	.....	.....	.....	.....	77	37	37	77	14	.....
20	.....	.....	.....	.....	.....	.....	61	37	37	77	14	.....
21	.....	.....	.....	.....	.....	.....	61	48	27	95	14	.....
22	.....	.....	.....	.....	.....	.....	54	48	27	95	14	.....
23	.....	.....	.....	.....	.....	.....	61	48	27	95	14	.....
24	.....	.....	.....	.....	.....	.....	61	42	27	77	14	.....
25	.....	.....	.....	.....	.....	.....	61	48	27	77	14	.....
26	.....	.....	.....	.....	.....	.....	61	48	20	61	14	.....
27	.....	.....	.....	.....	.....	.....	54	48	14	48	14	.....
28	.....	.....	.....	.....	.....	.....	54	27	14	48	14	.....
29	.....	.....	.....	.....	.....	.....	54	27	14	37	14	.....
30	.....	.....	.....	.....	.....	.....	54	32	14	27	14	.....
31	.....	.....	.....	.....	.....	.....	48	37	.....	27	.....	.....
Total.	.....	.....	.....	.....	.....	.....	6517	1479	971	2226	533	.....
Mean	.....	.....	.....	.....	.....	.....	210	47.7	32.4	71.8	17.8	.....
Max	.....	.....	.....	.....	.....	.....	755	117	48	180	27	.....
Min	.....	.....	.....	.....	.....	.....	48	27	14	14	14	.....
Acre-ft	.....	.....	.....	.....	.....	.....	12900	2930	1930	4410	1060	.....

Unless otherwise noted, all discharges are in cubic feet per second.
Note—Gage heights unreliable prior to July 1.

ELK HEAD CREEK NEAR CRAIG.

Location.—One mile above the mouth at bridge on road between Steamboat Springs and Craig, the latter being 6 miles west. No tributary between the station and the mouth and none for several miles above.

Records Available.—April 27 to September 7, 1906; April 17, 1910, to October 31, 1916.

Drainage Area.—249 square miles.

Gage.—Chain gage.

Channel.—Practically permanent.

Diversions.—There are court decrees for diversions of 45 second-feet from Elk Head Creek above the station and 48 second-feet from tributaries entering above. In addition, there are conditional decrees for reservoir diversions of 177,000 acre-feet from Elk Head Creek and a diversion of 587 second-feet from the North Fork.

FORTIFICATION CREEK AT CRAIG.

Location.—One-eighth mile east of Craig on the road to Hayden. No tributaries between the station and the mouth, and none for some distance above.

Records Available.—June 12, 1905, to July 30, 1906; March 5, 1910, to November 30, 1916.

Drainage Area.—256 square miles.

Gage.—Chain gage.

Channel.—Very shifting.

Discharge Measurements.—Made from bridge.

Diversions.—There are court decrees for diversions of 91 second-feet from Fortification Creek above the station and 20 second-feet from tributaries entering above. There is also a conditional decree for a diversion of 235,000 acre-feet from Fortification Creek.

WILLIAMS RIVER AT HAMILTON.

Location.—Near Hamilton, at highway bridge, on the road from Meeker to Craig. Morapos Creek, the nearest tributary, enters some distance below the station.

Records Available.—April 29, 1904, to October 31, 1906; April 15, 1910, to November 15, 1916.

Drainage Area.—341 square miles.

Gage.—Chain gage.

Channel.—Shifting.

Discharge Measurements.—Made from highway bridge.

Diversions.—There are court decrees for diversions of 40 second-feet from Williams River above the station, and 7 second-feet below. There are also decrees for diversions of 87 second-feet from tributaries entering above.

Discharge of Elk Head Creek near Craig for 1915.
Drainage Area, 249 Square Miles. Altitude, 6,200 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	139	611	172	16	4	1	4	7	.....
2	.....	.....	.....	.....	188	460	301	16	4	1	4	7	.....
3	.....	.....	.....	.....	188	350	288	11	2	1	4	7	.....
4	.....	.....	.....	.....	197	340	256	11	2	1	4	7	.....
5	.....	.....	.....	.....	188	310	360	14	2	1	4	7	.....
6	.....	.....	.....	.....	248	301	527	16	2	1	4	4	.....
7	.....	.....	.....	.....	265	274	482	16	2	1	4	4	.....
8	.....	.....	.....	.....	292	265	350	16	2	1	4	4	.....
9	.....	.....	.....	.....	370	274	310	11	2	1	4	4	.....
10	.....	.....	.....	.....	390	292	274	11	2	1	4	4	.....
11	.....	.....	.....	.....	410	310	265	7	2	1	4	4	.....
12	.....	.....	.....	.....	380	340	240	7	2	1	4	4	.....
13	.....	.....	.....	.....	493	340	188	7	2	2	4	7	.....
14	.....	.....	.....	.....	563	370	180	7	2	2	4	7	.....
15	.....	.....	.....	.....	671	320	172	7	2	2	4	7	.....
16	.....	.....	.....	.....	758	292	155	7	2	2	4	7	.....
17	.....	.....	.....	.....	732	265	123	7	2	2	7	7	.....
18	.....	.....	.....	.....	832	256	100	4	2	2	7	7	.....
19	.....	.....	.....	.....	695	301	100	4	2	2	7	7	.....
20	.....	.....	.....	.....	635	283	100	4	2	2	7	7	.....
21	.....	.....	.....	.....	623	240	85	4	2	2	7	7	.....
22	.....	.....	.....	.....	695	283	72	4	2	2	7	7	.....
23	.....	.....	.....	.....	635	310	72	4	2	2	7	7	.....
24	.....	.....	.....	48	575	274	59	4	2	2	7	7	.....
25	.....	.....	.....	38	430	265	43	4	2	2	7	7	.....
26	.....	.....	.....	48	482	256	38	4	1	4	7	7	.....
27	.....	.....	.....	72	471	240	38	4	1	7	7	7	.....
28	.....	.....	.....	100	575	231	22	4	1	7	7	7	.....
29	.....	.....	.....	163	611	214	14	4	1	7	7	7	.....
30	.....	.....	.....	115	732	188	16	4	1	7	7	7	.....
31	.....	.....	.....	85	.....	180	.....	4	1	.....	7	.....	.....
Total.	.....	.....	.....	669	14463	9235	5397	243	60	70	169	189	.....
Mean	.....	.....	.....	83.6	482	298	180	7.8	1.9	2.3	5.4	6.3	.....
Max.	.....	.....	.....	163	832	611	527	16	4	7	7	7	.....
Min.	.....	.....	.....	.....	139	180	14	4	1	1	4	4	.....
Acre-ft.	.....	.....	.....	1330	28700	18400	10700	480	117	137	332	375	.....

Discharge of Elk Head Creek near Craig for 1916.
Drainage Area, 249 Square Miles. Altitude, 6,200 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	156	552	480	25	4.5	20	4.5	.....	.....
2	.....	.....	.....	.....	233	636	410	37	4.5	4.5	7.0	.....	.....
3	.....	.....	.....	.....	251	521	381	80	1.5	2.0	25.0	.....	.....
4	.....	.....	.....	.....	190	626	390	80	7.0	1.8	37	.....	.....
5	.....	.....	.....	.....	181	882	390	80	7.0	1.0	37	.....	.....
6	.....	.....	.....	.....	165	1060	372	80	15.0	2.0	65	.....	.....
7	.....	.....	.....	.....	148	1250	314	65	31	2.0	97	.....	.....
8	.....	.....	.....	.....	140	1260	296	72	37	2.0	65	.....	.....
9	.....	.....	.....	.....	148	1260	260	15	65	44.0	65	.....	.....
10	.....	.....	.....	.....	372	1290	251	2	7	44	50	.....	.....
11	.....	.....	.....	.....	552	1100	260	7	2	44	65	.....	.....
12	.....	.....	.....	.....	500	998	260	15	2	25	50	.....	.....
13	.....	.....	.....	.....	400	906	233	2	2	25	44	.....	.....
14	.....	.....	.....	.....	480	790	165	1.5	37	15	37	.....	.....
15	.....	.....	.....	.....	647	594	198	1.2	50	2.0	31	.....	.....
16	.....	.....	.....	.....	636	480	173	1.0	25	2.0	25	.....	.....
17	.....	.....	.....	.....	584	470	190	1.5	20	1.5	37	.....	.....
18	.....	.....	.....	.....	636	490	173	1.5	15	1.5	37	.....	.....
19	.....	.....	.....	.....	510	500	181	1.0	15	1.5	37	.....	.....
20	.....	.....	.....	.....	390	542	148	1.0	2.0	1.5	50	.....	.....
21	.....	.....	.....	.....	343	658	131	1.0	2	2.0	25	.....	.....
22	.....	.....	.....	.....	490	689	131	1.0	2	2.0	25	.....	.....
23	.....	.....	.....	.....	658	605	131	2.0	2	2.0	25	.....	.....
24	.....	.....	.....	.....	825	500	88	2.0	2	1.5	15	.....	.....
25	.....	.....	.....	.....	963	563	80	1.5	2.0	1.5	7	.....	.....
26	.....	.....	.....	156	1090	521	80	2.0	0.5	1.8	7	.....	.....
27	.....	.....	.....	173	1210	470	58	2.0	2.0	1.8	7	.....	.....
28	.....	.....	.....	206	1220	470	44	2.0	2.0	1.8	7	.....	.....
29	.....	.....	.....	173	1240	490	25	1.5	2.0	1.8	7	.....	.....
30	.....	.....	.....	173	825	450	25	7.0	2.0	2.0	7	.....	.....
31	.....	.....	.....	233	.....	500	.....	4.5	15.0	.....	7	.....	.....
Total	.....	.....	.....	1114	16183	22123	6318	595.2	383.0	260.5	1004.5	.....	.....
Mean	.....	.....	.....	.....	539	714	211	19.2	12.4	8.7	33.5	.....	.....
Max.	.....	.....	.....	.....	1240	1290	480	80.0	65.0	44.0	97.0	.....	.....
Min.	.....	.....	.....	.....	140	470	25	1.0	0.5	1.0	4.5	.....	.....
Acre-ft.	.....	.....	.....	2210	32100	43900	12600	1180	762	518	1990	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Fortification Creek at Craig for 1915.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	122	327	72	0	0	0	.....	.....	.....
2	.....	.....	.....	.....	126	198	153	0	0	0	.....	.....	.....
3	.....	.....	.....	.....	108	153	198	0	0	0	.....	.....	.....
4	.....	.....	.....	.....	168	130	158	0	0	0	.....	.....	.....
5	.....	.....	.....	.....	126	108	148	0	0	0	.....	.....	.....
6	.....	.....	.....	.....	122	100	308	0	0	0	.....	.....	.....
7	.....	.....	.....	.....	122	92	284	0	0	0	.....	.....	.....
8	.....	.....	.....	.....	163	100	296	4	0	0	.....	.....	.....
9	.....	.....	.....	.....	228	112	163	0	0	0	.....	.....	.....
10	.....	.....	.....	.....	163	126	158	2	0	0	.....	.....	.....
11	.....	.....	.....	.....	173	100	144	2	0	0	.....	.....	.....
12	.....	.....	.....	.....	188	144	122	4	0	0	.....	.....	.....
13	.....	.....	.....	.....	233	178	108	4	0	0	.....	.....	.....
14	.....	.....	.....	.....	260	228	84	0	0	0	.....	.....	.....
15	.....	.....	.....	.....	353	203	64	0	0	0	.....	.....	.....
16	.....	.....	.....	.....	340	163	40	0	0	0	.....	.....	.....
17	.....	.....	.....	126	314	144	44	0	0	0	.....	.....	.....
18	.....	.....	.....	135	208	144	33	0	0	0	.....	.....	.....
19	.....	.....	.....	135	244	130	30	0	0	0	.....	.....	.....
20	.....	.....	.....	122	260	100	27	0	0	0	.....	.....	.....
21	.....	.....	.....	112	278	84	21	0	0	0	.....	.....	.....
22	.....	.....	.....	92	244	88	15	0	0	0	.....	.....	.....
23	.....	.....	.....	80	233	84	2	0	0	0	.....	.....	.....
24	.....	.....	.....	193	173	80	0	0	0	0	.....	.....	.....
25	.....	.....	.....	208	173	76	4	0	0	0	.....	.....	.....
26	.....	.....	.....	153	188	72	2	0	47	0	.....	.....	.....
27	.....	.....	.....	183	198	80	0	0	21	0	.....	.....	.....
28	.....	.....	.....	278	255	61	0	0	6	0	.....	.....	.....
29	.....	.....	.....	203	296	61	0	0	2	0	.....	.....	.....
30	.....	.....	.....	88	398	72	0	0	0	0	.....	.....	.....
31	.....	.....	.....	72	.....	76	0	0	0	0	.....	.....	.....
Total	.....	.....	.....	2180	6452	3814	2678	16	76	0	.....	.....	.....
Mean	.....	.....	.....	145	215	123	89	0.5	2.4	0	.....	.....	.....
Max	.....	.....	.....	278	398	327	308	4	47	0	.....	.....	.....
Min	.....	.....	.....	72	108	61	0	0	0	0	.....	.....	.....
Acre-ft.	.....	.....	.....	4320	12800	7560	5310	32	151	0	.....	.....	.....

Discharge of Fortification Creek at Craig for 1916.

Drainage Area, 256 Square Miles. Altitude, 6,185 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	79	178	112	3.0	0.0	4.5	0.1	9.0	.....
2	.....	.....	.....	.....	107	144	102	2.2	0.0	1.0	0.1	9.0	.....
3	.....	.....	.....	.....	161	155	83	2.2	0.0	0.4	42.0	10.0	.....
4	.....	.....	.....	.....	133	200	75	1.0	26.0	0.2	88	9.0	.....
5	.....	.....	.....	.....	138	296	88	0.5	21	0.1	52	6.0	.....
6	.....	.....	.....	.....	83	382	92	0.5	71	0.1	17	10.0	.....
7	.....	.....	.....	.....	79	420	75	0.5	45	0.1	155	7.5	.....
8	.....	.....	.....	.....	67	438	67	0.5	19	0.1	71	10.0	.....
9	.....	.....	.....	.....	92	444	48	1.5	7.5	2.2	39	14.0	.....
10	.....	.....	.....	.....	167	456	63	3.0	4.5	6.0	17	15	.....
11	.....	.....	.....	.....	325	354	71	3.0	2.2	15.0	150	12	.....
12	.....	.....	.....	.....	296	296	59	1.5	1.0	7.5	30	12	.....
13	.....	.....	.....	.....	189	268	48	0.5	28.0	4.5	19	12	.....
14	.....	.....	.....	.....	161	246	45	0.5	45	3.0	15	12	.....
15	.....	.....	.....	.....	240	224	42	0.5	19	1.5	12	12	.....
16	.....	.....	.....	.....	257	138	33	0.5	7.5	1.0	9.0	12	.....
17	.....	.....	.....	.....	262	107	26	0.5	6.0	0.2	7.5	12	.....
18	.....	.....	.....	.....	268	92	28	0.5	6.0	0.1	10.0	10	.....
19	.....	.....	.....	.....	246	88	23	0.0	3.0	0.1	10.0	10	.....
20	.....	.....	.....	706	200	97	17	0.0	1.5	0.1	9.0	10	.....
21	.....	.....	.....	658	117	224	14	0.0	1.5	0.1	9.0	10	.....
22	.....	.....	.....	558	133	286	9	0.0	1.5	0.1	12.0	10	.....
23	.....	.....	.....	444	240	200	6	0.0	1.0	0.1	9.0	10	.....
24	.....	.....	.....	420	308	128	6	0.0	0.5	0.1	0.9	8	.....
25	.....	.....	.....	150	360	122	1.5	0.0	0.5	0.1	6.0	8	.....
26	.....	.....	.....	107	415	117	3.0	0.0	0.4	0.1	6.0	8	.....
27	.....	.....	.....	194	432	92	3.0	0.0	0.2	0.1	9.0	8	.....
28	.....	.....	.....	331	456	88	3.0	0.0	0.1	0.1	9.0	8	.....
29	.....	.....	.....	286	438	92	1.5	0.0	0.0	0.1	9.0	8	.....
30	.....	.....	.....	122	274	102	4.5	0.0	3.0	0.1	9.0	8	.....
31	.....	.....	.....	88	.....	112	.....	0.2	10.0	.....	9.0	.....	.....
Total.	.....	.....	.....	4064	6723	6586	1248.5	22.1	331.9	48.7	848.7	299.5	.....
Mean	.....	.....	.....	339	224	212	41.6	0.7	10.7	1.6	27.4	10.0	.....
Max	.....	.....	.....	.....	456	456	112	3.0	71.0	15.0	155	15.0	.....
Min	.....	.....	.....	.....	67	88	1.5	0.0	0.0	0.1	0.1	6.0	.....
Acre-ft.	.....	.....	.....	8060	13300	13000	2480	43	658	95	1680	595	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Williams River at Hamilton for 1915.
Drainage Area, 341 Square Miles. Altitude 6,400 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	98	640	420	178	31	31	52	34	.....
2	.....	.....	.....	.....	105	390	620	178	31	31	52	34	.....
3	.....	.....	.....	.....	125	315	508	165	28	31	52	34	.....
4	.....	.....	.....	.....	155	270	405	165	28	34	52	34	.....
5	.....	.....	.....	.....	145	270	390	155	28	42	52	34	.....
6	.....	.....	.....	.....	135	270	345	155	28	75	47	38	.....
7	.....	.....	.....	.....	125	215	270	155	34	47	42	38	.....
8	.....	.....	.....	.....	145	240	345	145	82	90	42	42	.....
9	.....	.....	.....	.....	155	270	455	125	52	42	42	52	.....
10	.....	.....	.....	.....	145	285	600	75	42	38	42	52	.....
11	.....	.....	.....	.....	135	405	600	75	38	34	42	63	.....
12	.....	.....	.....	.....	145	542	640	75	34	34	42	63	.....
13	.....	.....	.....	.....	178	720	490	75	34	42	34	75	.....
14	.....	.....	.....	.....	255	765	390	63	31	52	38	75	.....
15	.....	.....	.....	.....	300	640	390	52	31	42	42	.....	.....
16	.....	.....	.....	.....	300	640	438	52	34	42	42	.....	.....
17	.....	.....	.....	.....	330	660	472	47	34	42	42	.....	.....
18	.....	.....	.....	.....	255	600	472	42	34	42	42	.....	.....
19	.....	.....	.....	.....	360	525	525	42	34	42	42	.....	.....
20	.....	.....	.....	.....	405	405	525	42	31	38	42	.....	.....
21	.....	.....	.....	.....	455	345	455	38	28	34	42	.....	.....
22	.....	.....	.....	.....	472	315	420	38	28	34	42	.....	.....
23	.....	.....	.....	.....	390	300	390	34	28	34	42	.....	.....
24	.....	.....	.....	.....	270	455	390	34	28	34	42	.....	.....
25	.....	.....	.....	.....	330	472	360	34	34	42	42	.....	.....
26	.....	.....	.....	.....	330	455	345	34	47	63	38	.....	.....
27	.....	.....	.....	.....	390	420	315	34	34	75	34	.....	.....
28	.....	.....	.....	.....	525	420	255	31	31	75	34	.....	.....
29	.....	.....	.....	.....	640	390	228	31	31	63	34	.....	.....
30	.....	.....	.....	.....	878	420	202	31	31	58	34	.....	.....
31	.....	.....	.....	.....	.....	420	.....	31	31	.....	34	.....	.....
Total	.....	.....	.....	.....	8676	13479	12660	2431	1070	1383	1301	668	.....
Mean	.....	.....	.....	.....	289	435	422	78.4	34.5	46.1	42.0	47.7	.....
Max.	.....	.....	.....	.....	878	765	640	178	82	90	52	.....	.....
Min.	.....	.....	.....	.....	98	215	202	31	28	31	34	.....	.....
Acre-ft.	.....	.....	.....	.....	17200	26700	25100	4820	2120	2740	2580	1320	.....

Discharge of Williams River at Hamilton for 1916.
Drainage Area, 341 Square Miles. Altitude, 6,400 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	70	902	1280	458	130	100	70	82	.....
2	.....	.....	.....	.....	100	835	1020	405	114	94	88	82	.....
3	.....	.....	.....	.....	94	390	1040	375	139	70	114	82	.....
4	.....	.....	.....	.....	100	440	1070	360	178	64	130	88	.....
5	.....	.....	.....	.....	88	625	1220	330	148	64	107	94	.....
6	.....	.....	.....	.....	76	925	790	285	168	64	94	100	.....
7	.....	.....	.....	.....	76	1330	790	272	168	64	139	88	.....
8	.....	.....	.....	.....	76	1410	858	260	114	64	272	88	.....
9	.....	.....	.....	.....	76	1780	1020	260	114	114	148	88	.....
10	.....	.....	.....	.....	76	1940	1120	458	114	168	107	88	.....
11	.....	.....	.....	.....	148	1440	948	315	114	130	158	88	.....
12	.....	.....	.....	.....	148	1300	970	248	114	107	139	76	.....
13	.....	.....	.....	.....	158	1170	1020	235	168	82	130	64	.....
14	.....	.....	.....	.....	178	858	1050	188	235	76	107	58	.....
15	.....	.....	.....	130	158	835	995	188	122	64	107	52	.....
16	.....	.....	.....	139	168	565	1020	188	94	64	94	.....	.....
17	.....	.....	.....	139	178	475	995	188	107	64	88	.....	.....
18	.....	.....	.....	139	235	405	948	188	100	58	100	.....	.....
19	.....	.....	.....	130	260	645	970	168	94	58	130	.....	.....
20	.....	.....	.....	148	222	725	995	168	82	58	114	.....	.....
21	.....	.....	.....	210	188	790	948	122	88	52	107	.....	.....
22	.....	.....	.....	130	178	858	925	76	88	52	94	.....	.....
23	.....	.....	.....	130	300	812	625	100	76	52	88	.....	.....
24	.....	.....	.....	114	405	880	585	100	64	64	88	.....	.....
25	.....	.....	.....	94	475	1170	565	100	70	64	82	.....	.....
26	.....	.....	.....	82	585	925	545	114	70	64	82	.....	.....
27	.....	.....	.....	82	745	745	585	114	70	64	82	.....	.....
28	.....	.....	.....	100	835	1020	585	114	70	64	82	.....	.....
29	.....	.....	.....	107	1070	948	545	114	64	64	82	.....	.....
30	.....	.....	.....	100	970	1120	510	122	100	64	82	.....	.....
31	.....	.....	.....	88	.....	1380	.....	168	114	.....	82	.....	.....
Total	.....	.....	.....	2062	8436	29643	26537	6781	3491	2231	3387	1218	.....
Mean	.....	.....	.....	121	281	956	885	219	113	74.4	109	81.2	.....
Max.	.....	.....	.....	.....	1070	1940	1280	458	235	168	272	.....	.....
Min.	.....	.....	.....	.....	70	390	510	76	64	52	70	.....	.....
Acre-ft.	.....	.....	.....	4090	16700	58800	52700	13500	6950	4430	6700	2420	.....

Unless otherwise noted, all discharges are in cubic feet per second.

SOUTH FORK OF LITTLE SNAKE RIVER AT GARDNER'S RANCH.

Location.—At Gardner's ranch, in sec. 28, T. 12 N., R. 86 W., 10 miles above Battle Creek. No important tributary between the station and the mouth.

Records Available.—May 8 to October 31, 1916.

Drainage Area.—46 square miles.

Gage.—Bristol automatic gage.

Channel.—Practically permanent.

Discharge Measurements.—From bridge.

Diversions.—There are decrees for diversions of 8 second-feet from the South Fork.

Co-operation.—The State Engineer maintains the station in co-operation with the Elk River Irrigation & Construction Co.

MIDDLE FORK OF LITTLE SNAKE RIVER AT GARDNER'S RANCH.

Location.—At Gardner's ranch, in sec. 21, T. 12 N., R. 86 W., on the county road bridge, 10 miles above Battle Creek.

Records Available.—May 8 to October 31, 1916.

Drainage Area.—152 square miles.

Gage.—Bristol automatic gage.

Channel.—Practically permanent.

Discharge Measurements.—From bridge.

Co-operation.—The State Engineer maintains the station in co-operation with the Elk River Irrigation & Construction Co.

SLATER FORK OF LITTLE SNAKE RIVER, AT BAXTER'S RANCH, NEAR SLATER.

Location.—At Baxter's ranch, in sec. 22, T. 11 N., R. 89 W., 10 miles south of Slater.

Records Available.—May 6, 1912, to November 15, 1916.

Drainage Area.—80 square miles.

Gage.—Bristol automatic gage. Staff gage after July 8, 1916.

Channel.—Rough but permanent.

Discharge Measurements.—From bridge.

Diversions.—There are court decrees for diversions of 14 second-feet from Slater Creek, all below the station.

Co-operation.—The State Engineer maintains the station in co-operation with the Elk River Irrigation & Construction Co.

Discharge of South Fork Little Snake River at Gardner's Ranch for 1915.
Drainage Area, 46 Square Miles. Altitude, 7,000 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	80	58	14	4	3	11	6	26
2	.....	.....	.....	.....	.....	65	72	14	4	3	11	6	30
3	.....	.....	.....	.....	.....	52	65	14	3	4	11	6	40
4	.....	.....	.....	.....	.....	52	65	14	3	8	8	6	35
5	.....	.....	.....	.....	.....	52	72	14	4	8	8	8	26
6	.....	.....	.....	.....	.....	46	104	14	4	8	8	8	18
7	.....	.....	.....	.....	.....	52	80	11	4	6	8	8	11
8	.....	.....	.....	.....	.....	52	80	11	8	8	8	8	11
9	.....	.....	.....	.....	.....	52	80	14	4	6	14	6	14
10	.....	.....	.....	.....	.....	52	80	11	4	4	14	8	11
11	.....	.....	.....	.....	.....	52	72	8	4	6	8	8	14
12	.....	.....	.....	.....	.....	58	65	8	4	4	8	14	14
13	.....	.....	.....	.....	.....	65	65	11	4	4	8	14	.....
14	.....	.....	.....	.....	.....	80	52	8	4	6	8	14	.....
15	.....	.....	.....	.....	65	65	52	8	4	8	8	18	.....
16	.....	.....	.....	.....	65	65	46	8	4	8	11	18	.....
17	.....	.....	.....	.....	65	65	40	6	4	8	11	18	.....
18	.....	.....	.....	.....	65	65	46	4	4	8	8	26	.....
19	.....	.....	.....	.....	65	65	52	4	4	8	8	22	.....
20	.....	.....	.....	.....	65	65	40	4	6	4	8	14	.....
21	.....	.....	.....	.....	72	65	30	4	4	4	8	11	.....
22	.....	.....	.....	.....	80	65	30	4	4	4	8	8	.....
23	.....	.....	.....	.....	95	65	30	4	4	6	8	11	.....
24	.....	.....	.....	.....	65	65	30	4	4	8	8	8	.....
25	.....	.....	.....	.....	58	65	26	4	6	8	8	22	.....
26	.....	.....	.....	.....	52	65	22	4	4	14	8	18	.....
27	.....	.....	.....	.....	65	65	22	3	4	11	8	11	.....
28	.....	.....	.....	.....	80	65	22	4	4	11	8	18	.....
29	.....	.....	.....	.....	80	65	22	4	6	8	8	26	.....
30	.....	.....	.....	.....	95	52	14	4	4	11	8	26	.....
31	.....	.....	.....	.....	.....	52	.....	4	3	.....	8	.....	.....
Total	.....	.....	.....	.....	1132	1889	1534	243	131	207	275	395	250
Mean	.....	.....	.....	.....	71	61	51	7.8	4.2	6.9	8.9	13	21
Max.	.....	.....	.....	.....	95	80	104	14	8	14	14	26	40
Min.	.....	.....	.....	.....	52	46	14	3	3	3	8	6	11
Acre-ft.	.....	.....	.....	.....	2240	3750	3040	482	260	411	546	785	496

Note.—Dec. 1-5 may be high on account of ice conditions.

Discharge of South Fork Little Snake River at Gardner's Ranch for 1916.
Drainage Area, 46 Square Miles. Altitude, 7,000 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	84	118	25	3.0	4.5	6.0	.....	.....
2	.....	.....	.....	.....	.....	84	118	25	3.0	4.5	6.0	.....	.....
3	.....	.....	.....	.....	.....	76	118	20	4.5	3.0	9.0	.....	.....
4	.....	.....	.....	.....	.....	109	118	16	6.0	3.0	12.0	.....	.....
5	.....	.....	.....	.....	.....	158	109	16	6.0	3.0	9.0	.....	.....
6	.....	.....	.....	.....	.....	191	100	20	9.0	3.0	12.0	.....	.....
7	.....	.....	.....	.....	.....	214	92	20	4.5	3.0	25	.....	.....
8	.....	.....	.....	.....	.....	191	84	16	3.0	3.0	16	.....	.....
9	.....	.....	.....	.....	.....	202	92	16	4.5	4.5	9	.....	.....
10	.....	.....	.....	.....	.....	202	100	12	4.5	4.5	6	.....	.....
11	.....	.....	.....	.....	.....	226	92	12	4.5	3.0	6	.....	.....
12	.....	.....	.....	.....	.....	169	84	12	3.0	3.0	3	.....	.....
13	.....	.....	.....	.....	.....	158	76	12	4.5	3.0	6	.....	.....
14	.....	.....	.....	.....	.....	128	76	12	6.0	3.0	6	.....	.....
15	.....	.....	.....	.....	.....	100	69	12	4.5	4.5	4.5	.....	.....
16	.....	.....	.....	.....	.....	92	69	9	3.0	3.0	3.0	.....	.....
17	.....	.....	.....	.....	.....	92	69	9	4.5	4.5	6.0	.....	.....
18	.....	.....	.....	.....	.....	84	62	9	4.5	3.0	6.0	.....	.....
19	.....	.....	.....	.....	.....	92	55	9	4.5	3.0	4.5	.....	.....
20	.....	.....	.....	.....	42	109	55	6	3.0	4.5	4.5	.....	.....
21	.....	.....	.....	.....	48	158	55	9	3.0	4.5	3.0	.....	.....
22	.....	.....	.....	.....	62	148	48	9	3.0	4.5	2.0	.....	.....
23	.....	.....	.....	.....	84	128	48	6	3.0	6.0	4.5	.....	.....
24	.....	.....	.....	.....	100	128	42	6	3.0	6.0	4.5	.....	.....
25	.....	.....	.....	.....	118	128	42	9	3.0	4.5	4.5	.....	.....
26	.....	.....	.....	.....	138	118	36	6	3.0	6.0	4.5	.....	.....
27	.....	.....	.....	.....	148	118	36	9	4.5	4.5	6.0	.....	.....
28	.....	.....	.....	.....	180	109	30	12	3.0	4.5	3.0	.....	.....
29	.....	.....	.....	.....	169	109	30	9	3.0	6.0	3.0	.....	.....
30	.....	.....	.....	.....	100	118	30	4.5	4.5	6.0	3.0	.....	.....
31	.....	.....	.....	.....	.....	128	.....	4.5	4.5	.....	3.0	.....	.....
Total	.....	.....	.....	.....	1189	4151	2153	372	127.5	123.0	200.5	.....	.....
Mean	.....	.....	.....	.....	108	134	71.8	12	4.1	4.1	6.5	.....	.....
Max.	.....	.....	.....	.....	.....	226	118	25	9.0	6.0	25.0	.....	.....
Min.	.....	.....	.....	.....	.....	76	30	4.5	3.0	3.0	3.0	.....	.....
Acre-ft.	.....	.....	.....	.....	2360	8240	4270	738	252	244	400	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Middle Fork of Little Snake River at Gardner's Ranch for 1915.
Drainage Area, 152 Square Miles. Altitude, 7,000 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	342	462	86	18	10	20	14	14
2	.....	.....	.....	.....	.....	262	510	86	18	10	20	14	14
3	.....	.....	.....	.....	.....	236	415	71	18	10	16	12	16
4	.....	.....	.....	.....	.....	210	385	71	16	16	16	14	16
5	.....	.....	.....	.....	.....	210	430	59	16	16	16	16	16
6	.....	.....	.....	.....	.....	210	526	65	16	23	16	16	14
7	.....	.....	.....	.....	.....	210	446	59	20	16	16	18	12
8	.....	.....	.....	.....	.....	236	446	59	26	20	16	16	12
9	.....	.....	.....	.....	.....	262	462	59	26	16	16	16	12
10	.....	.....	.....	.....	.....	262	462	49	20	12	16	12	14
11	.....	.....	.....	.....	.....	328	430	44	16	12	16	16	14
12	.....	.....	.....	.....	.....	385	385	40	16	14	18	20	12
13	.....	.....	.....	.....	.....	462	328	32	14	14	20	18	.....
14	.....	.....	.....	.....	.....	478	314	32	12	20	23	12	.....
15	.....	.....	.....	.....	262	430	288	32	12	20	23	10	.....
16	.....	.....	.....	.....	262	400	262	32	14	20	26	11	.....
17	.....	.....	.....	.....	262	400	262	32	16	18	26	11	.....
18	.....	.....	.....	.....	275	430	262	32	12	16	26	11	.....
19	.....	.....	.....	.....	328	370	275	26	16	12	26	11	.....
20	.....	.....	.....	.....	342	314	223	29	16	11	20	11	.....
21	.....	.....	.....	.....	370	328	186	26	12	11	20	10	.....
22	.....	.....	.....	.....	328	342	186	29	12	11	20	10	.....
23	.....	.....	.....	.....	262	370	164	29	11	11	18	11	.....
24	.....	.....	.....	.....	236	370	153	29	11	11	16	11	.....
25	.....	.....	.....	.....	262	356	142	32	12	16	16	14	.....
26	.....	.....	.....	.....	301	370	122	29	12	26	16	14	.....
27	.....	.....	.....	.....	385	342	103	29	12	29	16	12	.....
28	.....	.....	.....	.....	462	328	103	40	12	26	14	16	.....
29	.....	.....	.....	.....	560	314	103	32	11	26	14	16	.....
30	.....	.....	.....	.....	494	370	103	26	10	20	16	14	.....
31	.....	.....	.....	.....	.....	342	.....	20	10	.....	16	.....	.....
Total	.....	.....	.....	.....	5391	10269	8938	1316	463	493	574	407	166
Mean	.....	.....	.....	.....	337	331	298	42	15	16.5	18.5	13.6	13.8
Max.	.....	.....	.....	.....	560	478	526	86	26	29	26	20	16
Min.	.....	.....	.....	.....	236	210	103	20	10	10	14	10	12
Acre-ft.	.....	.....	.....	.....	10700	20400	17700	2610	918	978	1140	807	329

Discharge of Middle Fork Little Snake River at Gardner's Ranch for 1916.
Drainage Area, 152 Square Miles. Altitude, 7,000 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	384	720	119	23	26	23	.....	.....
2	.....	.....	.....	.....	.....	368	680	102	23	20	44	.....	.....
3	.....	.....	.....	.....	.....	368	660	102	30	18	50	.....	.....
4	.....	.....	.....	.....	.....	522	660	102	50	18	44	.....	.....
5	.....	.....	.....	.....	.....	824	660	94	50	16	39	.....	.....
6	.....	.....	.....	.....	.....	1090	600	87	80	23	61	.....	.....
7	.....	.....	.....	.....	.....	1210	504	80	50	34	138	.....	.....
8	.....	.....	.....	.....	.....	1230	504	80	34	18	102	.....	.....
9	.....	.....	.....	.....	.....	1380	540	74	34	20	61	.....	.....
10	.....	.....	.....	.....	.....	1180	600	68	30	39	50	.....	.....
11	.....	.....	.....	.....	.....	956	560	68	26	23	61	.....	.....
12	.....	.....	.....	.....	.....	978	504	61	23	20	50	.....	.....
13	.....	.....	.....	.....	.....	868	522	56	44	18	44	.....	.....
14	.....	.....	.....	.....	.....	660	522	50	56	18	44	.....	.....
15	.....	.....	.....	.....	.....	540	504	50	34	18	39	.....	.....
16	.....	.....	.....	.....	.....	451	522	44	30	16	34	.....	.....
17	.....	.....	.....	.....	.....	417	504	39	30	16	34	.....	.....
18	.....	.....	.....	.....	.....	434	486	39	23	16	34	.....	.....
19	.....	.....	.....	.....	.....	468	400	39	20	16	30	.....	.....
20	.....	.....	.....	.....	148	540	338	34	18	16	30	.....	.....
21	.....	.....	.....	.....	148	620	308	26	20	14	39	.....	.....
22	.....	.....	.....	.....	178	600	278	26	18	16	44	.....	.....
23	.....	.....	.....	.....	250	504	250	30	18	16	39	.....	.....
24	.....	.....	.....	.....	353	600	225	30	18	50	34	.....	.....
25	.....	.....	.....	.....	451	640	200	30	18	30	34	.....	.....
26	.....	.....	.....	.....	580	560	178	30	18	23	34	.....	.....
27	.....	.....	.....	.....	680	560	158	30	20	23	34	.....	.....
28	.....	.....	.....	.....	824	580	138	30	18	23	34	.....	.....
29	.....	.....	.....	.....	680	620	128	34	16	23	34	.....	.....
30	.....	.....	.....	.....	434	680	128	30	26	23	34	.....	.....
31	.....	.....	.....	.....	.....	740	.....	26	50	.....	34	.....	.....
Total	.....	.....	.....	.....	4726	21572	12981	1710	948	650	1406	.....	.....
Mean	.....	.....	.....	.....	430	696	433	55.2	30.6	21.7	45.4	.....	.....
Max.	.....	.....	.....	.....	.....	1380	720	119	80	50	138	.....	.....
Min.	.....	.....	.....	.....	.....	368	128	26	16	14	23	.....	.....
Acre-ft.	.....	.....	.....	.....	9370	42800	25800	3390	1880	1290	2790	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Slater Fork of Little Snake River at Baxter's Ranch for 1915.
Drainage Area, 80 Square Miles. Altitude, 7,000 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	280	405	86	15	10	29	15	.....
2	.....	.....	.....	.....	.....	280	458	86	15	10	29	15	.....
3	.....	.....	.....	.....	.....	266	340	86	15	15	25	15	.....
4	.....	.....	.....	.....	.....	266	340	86	12	21	25	18	.....
5	.....	.....	.....	.....	.....	266	340	72	12	21	21	21	.....
6	.....	.....	.....	.....	.....	252	355	66	12	21	25	21	.....
7	.....	.....	.....	.....	.....	252	295	60	18	15	21	25	.....
8	.....	.....	.....	.....	.....	252	280	60	34	21	21	18	.....
9	.....	.....	.....	.....	.....	280	340	60	21	15	21	15	.....
10	.....	.....	.....	.....	.....	295	370	60	15	15	21	12	.....
11	.....	.....	.....	.....	.....	340	355	49	15	15	21	25	.....
12	.....	.....	.....	.....	.....	405	280	39	15	15	18	39	.....
13	.....	.....	.....	.....	.....	440	226	34	15	15	21	39	.....
14	.....	.....	.....	.....	226	440	214	29	15	21	21	60	.....
15	.....	.....	.....	.....	226	370	202	29	15	21	21	54	.....
16	.....	.....	.....	.....	202	370	214	29	10	18	21	39	.....
17	.....	.....	.....	.....	179	340	226	25	10	15	25	54	.....
18	.....	.....	.....	.....	179	340	226	21	10	15	21	44	.....
19	.....	.....	.....	.....	202	310	252	21	10	15	21	29	.....
20	.....	.....	.....	.....	202	280	202	15	10	12	21	25	.....
21	.....	.....	.....	.....	226	252	190	12	10	12	21	21	.....
22	.....	.....	.....	.....	226	280	179	15	10	12	21	21	.....
23	.....	.....	.....	.....	226	280	179	15	10	12	21	.....	.....
24	.....	.....	.....	.....	226	310	179	15	15	15	21	.....	.....
25	.....	.....	.....	.....	252	310	179	12	12	34	18	.....	.....
26	.....	.....	.....	.....	252	310	157	15	12	49	18	.....	.....
27	.....	.....	.....	.....	252	280	128	15	15	49	15	.....	.....
28	.....	.....	.....	.....	252	280	118	18	10	39	18	.....	.....
29	.....	.....	.....	.....	280	310	101	18	10	29	21	.....	.....
30	.....	.....	.....	.....	280	310	101	15	10	29	18	.....	.....
31	.....	.....	.....	.....	.....	295	.....	15	10	.....	15	.....	.....
Total	.....	.....	.....	.....	3888	9541	7431	1178	418	606	656	625	.....
Mean	.....	.....	.....	.....	229	308	248	38	13.5	20	21	28	.....
Max.	.....	.....	.....	.....	280	440	458	86	34	49	29	60	.....
Min.	.....	.....	.....	.....	179	252	101	12	10	10	15	12	.....
Acre-ft.	.....	.....	.....	.....	7710	18900	14700	2340	829	1200	1300	1240	.....

Discharge of Slater Fork Little Snake River at Baxter's Ranch for 1916.
Drainage Area, 80 Square Miles. Altitude, 7,000 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	.....	.....	21	26	31	41	.....
2	.....	.....	.....	.....	.....	.....	.....	21	17	65	36	.....
3	.....	.....	.....	.....	.....	.....	.....	31	13	80	41	.....
4	.....	.....	.....	.....	.....	.....	.....	31	17	58	41	.....
5	.....	.....	.....	.....	.....	.....	.....	36	26	26	52	.....
6	.....	.....	.....	.....	.....	.....	.....	31	26	21	46	.....
7	.....	.....	.....	.....	.....	.....	.....	26	17	26	52	.....
8	.....	.....	.....	.....	.....	.....	.....	26	13	31	52	.....
9	.....	.....	.....	.....	.....	398	88	36	17	36	52	.....
10	.....	.....	.....	.....	.....	470	80	31	26	58	46	.....
11	.....	.....	.....	.....	.....	451	80	36	26	52	52	.....
12	.....	.....	.....	.....	.....	451	72	21	13	58	46	.....
13	.....	.....	.....	.....	.....	398	72	36	13	88	52	.....
14	.....	.....	.....	.....	.....	398	72	58	17	134	52	.....
15	.....	.....	.....	.....	.....	381	88	36	13	80	58	.....
16	.....	.....	.....	.....	.....	364	65	31	13	52	.....	.....
17	.....	.....	.....	.....	.....	381	65	26	13	52	.....	.....
18	.....	.....	.....	.....	.....	381	46	17	17	58	.....	.....
19	.....	.....	.....	.....	.....	334	31	21	13	52	.....	.....
20	.....	.....	.....	.....	.....	304	26	17	21	52	.....	.....
21	.....	.....	.....	.....	.....	276	21	26	13	46	.....	.....
22	.....	.....	.....	.....	.....	237	21	26	13	52	.....	.....
23	.....	.....	.....	.....	.....	200	21	17	21	52	.....	.....
24	.....	.....	.....	.....	.....	154	21	13	17	46	.....	.....
25	.....	.....	.....	.....	.....	212	26	13	13	41	.....	.....
26	.....	.....	.....	.....	.....	.....	21	17	13	46	.....	.....
27	.....	.....	.....	.....	.....	.....	26	17	17	36	.....	.....
28	.....	.....	.....	.....	.....	.....	26	21	13	41	.....	.....
29	.....	.....	.....	.....	.....	.....	21	21	13	36	.....	.....
30	.....	.....	.....	.....	.....	.....	21	36	13	41	.....	.....
31	.....	.....	.....	.....	.....	.....	26	46	.....	36	.....	.....
Total	.....	.....	.....	.....	.....	5790	1036	842	503	1583	719	.....
Mean	.....	.....	.....	.....	.....	341	45.0	27.2	16.8	51.1	47.9	.....
Max.	.....	.....	.....	.....	.....	.....	.....	58	26	134	.....	.....
Min.	.....	.....	.....	.....	.....	.....	.....	13	13	21	.....	.....
Acre-ft.	.....	.....	.....	.....	.....	11500	2050	1670	1000	3140	1420	.....

Unless otherwise noted, all discharges are in cubic feet per second.

LITTLE SNAKE RIVER NEAR DIXON, WYO.

Location.—One mile west of Dixon, Wyo., in sec. 6, T. 12 N., R. 90 W. Nearest tributaries are Cottonwood Creek, which enters a short distance east of Dixon, and Willow Creek, which enters a mile or less downstream.

Records Available.—May 27, 1910, to November 30, 1916.

Drainage Area.—1,294 square miles.

Gage.—Chain gage.

Channel.—Slightly shifting during high water.

SAVERY CREEK NEAR SAVERY, WYO.

Location.—At bridge on road about one-half mile southeast of Savery, Wyo., and about one and one-half miles above mouth.

Records Available.—May 1, 1915, to November 17, 1916.

Drainage Area.—Not measured.

Gage.—Vertical staff.

Channel.—Practically permanent.

Discharge Measurements.—Made from bridge at high water and by wading at low stages.

Winter Flow.—Records discontinued during the winter months.

Accuracy.—Records considered good.

MUDDY CREEK NEAR BAGGS, WYO.

Location.—At road bridge, 1¼ miles northeast of Baggs, Wyo., and about 1 mile above mouth.

Records Available.—May 1, 1915, to August 10, 1916.

Drainage Area.—Not measured.

Gage.—Chain gage.

Channel.—Shifting.

Discharge Measurements.—Made from bridge and by wading.

Winter Flow.—Records discontinued during the winter months.

Accuracy.—Results fair.

Discharge of Little Snake River at Dixon, Wyoming, for 1915.
Drainage Area, 1,294 Square Miles. Altitude, 6,300 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	1230	1688	310	10	8	105	80	.....
2	.....	.....	.....	.....	.....	1230	2970	310	12	8	92	80	.....
3	.....	.....	.....	.....	.....	1230	2330	290	9	8	80	80	.....
4	.....	.....	.....	.....	.....	1300	2158	270	10	40	60	80	.....
5	.....	.....	.....	.....	.....	1230	1995	252	12	25	60	80	.....
6	.....	.....	.....	.....	.....	1165	2075	235	10	40	80	80	.....
7	.....	.....	.....	.....	.....	1035	2158	218	9	70	80	80	.....
8	.....	.....	.....	.....	.....	1035	2035	165	10	50	80	80	.....
9	.....	.....	.....	.....	.....	1230	1995	150	15	40	70	80	.....
10	.....	.....	.....	.....	.....	1405	2075	150	12	32	60	92	.....
11	.....	.....	.....	.....	.....	1475	2242	120	10	20	60	105	.....
12	.....	.....	.....	.....	.....	1875	2158	92	12	32	80	92	.....
13	.....	.....	.....	.....	.....	2470	2200	60	10	40	80	70	.....
14	.....	.....	.....	.....	.....	2570	2285	50	9	32	80	92	.....
15	.....	.....	.....	.....	.....	2200	2242	40	10	60	80	105	.....
16	.....	.....	.....	.....	.....	2115	2200	32	10	40	80	105	.....
17	.....	.....	.....	.....	.....	2035	2242	40	12	50	80	105	.....
18	.....	.....	.....	.....	.....	1955	2115	32	10	40	80	105	.....
19	.....	.....	.....	.....	.....	1955	2242	32	9	40	80	105	.....
20	.....	.....	.....	.....	.....	1615	1650	20	10	20	80	105	.....
21	.....	.....	.....	.....	.....	1370	1165	12	10	15	80	105	.....
22	.....	.....	.....	.....	.....	1405	1068	9	10	15	80	105	.....
23	.....	.....	.....	.....	.....	1440	945	9	9	15	80	92	.....
24	.....	.....	.....	.....	.....	1475	772	8	9	20	80	120	.....
25	.....	.....	.....	.....	.....	1475	828	9	9	25	80	120	.....
26	.....	.....	.....	.....	.....	1580	800	9	9	40	80	105	.....
27	.....	.....	.....	.....	.....	1615	690	9	9	120	80	105	.....
28	.....	.....	.....	.....	.....	1475	608	10	10	105	80	105	.....
29	.....	.....	.....	.....	.....	1440	390	9	10	105	80	105	.....
30	.....	.....	.....	.....	.....	1580	370	9	10	92	80	105	.....
31	.....	.....	.....	.....	.....	1725	.....	9	10	.....	80	.....	.....
Total	.....	.....	.....	.....	.....	48935	50691	2970	316	1247	2427	2868	.....
Mean	.....	.....	.....	.....	.....	1579	1690	96	10	42	78	96	.....
Max	.....	.....	.....	.....	.....	2570	2970	310	15	120	105	120	.....
Min	.....	.....	.....	.....	.....	1035	370	8	9	8	60	70	.....
Acre-ft.	.....	.....	.....	.....	.....	97100	101000	5890	627	2470	4810	5690	.....

Discharge of Little Snake River at Dixon, Wyo., for 1916.
Drainage Area, 1,294 Square Miles. Altitude, 6,300 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	552	1760	2660	530	110	160	90	205	.....
2	.....	.....	.....	.....	485	1900	2410	485	90	100	110	205	.....
3	.....	.....	.....	.....	405	1520	2260	445	385	90	190	190	.....
4	.....	.....	.....	.....	425	2030	2360	385	365	70	238	175	.....
5	.....	.....	.....	.....	485	2260	2510	365	308	80	220	190	.....
6	.....	.....	.....	.....	405	3400	2410	290	665	160	190	160	.....
7	.....	.....	.....	.....	385	4160	2120	220	405	220	485	160	.....
8	.....	.....	.....	.....	365	3880	1940	220	238	90	735	160	.....
9	.....	.....	.....	.....	405	4230	1940	220	385	70	425	160	.....
10	.....	.....	.....	.....	530	4370	2120	255	255	120	325	190	.....
11	.....	.....	.....	.....	810	3340	2310	205	190	160	530	190	.....
12	.....	.....	.....	.....	950	3160	2120	190	145	100	465	190	.....
13	.....	.....	.....	575	890	3050	1980	190	145	90	325	190	.....
14	.....	.....	.....	485	980	2780	1940	160	365	70	290	190	.....
15	.....	.....	.....	465	1010	2030	1760	130	238	90	255	175	.....
16	.....	.....	.....	465	1130	1850	1680	130	190	80	255	175	.....
17	.....	.....	.....	485	1130	1600	1680	130	205	80	255	175	.....
18	.....	.....	.....	445	1300	1520	1640	110	175	80	238	175	.....
19	.....	.....	.....	552	1400	1600	1520	110	130	70	238	175	.....
20	.....	.....	.....	760	1300	1800	1400	90	110	70	220	175	.....
21	.....	.....	.....	1070	1440	2720	1200	90	110	70	220	175	.....
22	.....	.....	.....	860	1100	2660	1160	70	110	70	255	175	.....
23	.....	.....	.....	760	1520	2160	1010	70	110	70	255	175	.....
24	.....	.....	.....	710	2080	1940	1230	70	90	70	238	175	.....
25	.....	.....	.....	530	2410	2210	835	70	80	110	238	175	.....
26	.....	.....	.....	508	3000	1980	785	40	80	100	255	175	.....
27	.....	.....	.....	508	3280	1900	735	30	70	90	255	175	.....
28	.....	.....	.....	620	3520	2030	688	50	70	90	255	175	.....
29	.....	.....	.....	688	3700	2120	665	90	70	90	255	175	.....
30	.....	.....	.....	508	2310	2260	598	255	80	90	220	175	.....
31	.....	.....	.....	425	.....	2510	.....	160	160	.....	220	.....	.....
Total	.....	.....	.....	11419	39702	76730	49666	5855	6129	2900	8745	5355	.....
Mean	.....	.....	.....	601	1320	2480	1660	189	198	96.7	282	178	.....
Max	.....	.....	.....	.....	3700	4370	2660	530	665	220	735	205	.....
Min	.....	.....	.....	.....	365	1520	598	30	70	70	90	160	.....
Acre-ft.	.....	.....	.....	22600	78600	152000	98800	11600	12200	5750	17300	10600	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Savery Creek at Savery, Wyo., for 1915.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	395	207	46	0	0	10	15	52
2	.....	.....	.....	.....	315	412	52	0	0	10	15	52
3	.....	.....	.....	.....	285	345	46	0	0	10	15	46
4	.....	.....	.....	.....	270	285	39	0	52	10	15	46
5	.....	.....	.....	.....	243	300	33	0	39	10	15	65
6	.....	.....	.....	.....	207	448	0	0	33	10	15	58
7	.....	.....	.....	.....	207	315	0	0	27	15	15	65
8	.....	.....	.....	.....	186	285	0	0	15	15	27	65
9	.....	.....	.....	.....	175	256	0	0	10	15	27	65
10	.....	.....	.....	.....	186	270	0	0	10	15	27	65
11	.....	.....	.....	.....	186	285	0	0	6	15	27	65
12	.....	.....	.....	.....	196	230	0	0	6	15	39	65
13	.....	.....	.....	.....	207	207	0	0	6	27	39	65
14	.....	.....	.....	.....	256	196	0	0	6	39	39	.....
15	.....	.....	.....	.....	270	164	0	0	6	39	39	.....
16	.....	.....	.....	.....	230	144	0	0	6	39	39	.....
17	.....	.....	.....	.....	207	97	0	0	10	33	39	.....
18	.....	.....	.....	.....	207	97	0	0	10	15	33	.....
19	.....	.....	.....	.....	285	124	0	0	10	27	33	.....
20	.....	.....	.....	.....	218	115	0	0	10	15	33	.....
21	.....	.....	.....	.....	207	97	0	0	10	6	33	.....
22	.....	.....	.....	.....	207	88	0	0	10	10.5	33	.....
23	.....	.....	.....	.....	230	80	0	0	10	15	39	.....
24	.....	.....	.....	.....	207	72	0	0	52	15	33	.....
25	.....	.....	.....	.....	230	58	0	0	46	15	39	.....
26	.....	.....	.....	.....	186	58	0	0	39	15	46	.....
27	.....	.....	.....	.....	186	58	0	0	27	10.5	46	.....
28	.....	.....	.....	.....	196	52	0	0	15	21	46	.....
29	.....	.....	.....	.....	186	52	0	0	10	10.5	46	.....
30	.....	.....	.....	.....	186	46	0	0	10	10.5	46	.....
31	.....	.....	.....	.....	164	.....	0	0	.....	15	.....	.....
Total	.....	.....	.....	.....	6916	5443	216	0	491	528	953	774
Mean	.....	.....	.....	.....	223	181	7.0	0	16.4	17.0	31.8	59.5
Max.	.....	.....	.....	.....	395	448	52	0	52	39	46	65
Min.	.....	.....	.....	.....	164	46	0	0	6	6	15	46
Acre-ft.	.....	.....	.....	.....	13700	10800	428	0	974	1050	1890	1530

Discharge of Savery Creek at Savery, Wyo., for 1916.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	150	696	264	25	25	16	13	16	.....
2	.....	.....	.....	150	650	250	19	9	13	19	19	.....
3	.....	.....	.....	139	696	222	19	9	11	22	13	.....
4	.....	.....	.....	150	743	208	16	11	11	29	19	.....
5	.....	.....	.....	139	793	208	13	11	13	60	13	.....
6	.....	.....	.....	139	768	183	9	9	16	110	13	.....
7	.....	.....	.....	129	650	183	11	13	16	129	19	.....
8	.....	.....	.....	110	562	183	13	16	19	100	19	.....
9	.....	.....	.....	129	482	183	19	22	25	76	25	.....
10	.....	.....	.....	183	446	183	19	25	22	48	25	.....
11	.....	.....	.....	326	429	172	19	19	19	43	25	.....
12	.....	.....	.....	376	394	172	19	16	16	33	25	.....
13	.....	.....	.....	376	326	160	13	13	16	33	25	.....
14	.....	.....	.....	342	250	160	16	16	11	33	25	.....
15	.....	.....	.....	342	250	139	19	19	11	25	25	.....
16	.....	.....	.....	359	235	129	13	25	9	19	25	.....
17	.....	.....	.....	359	208	119	19	22	13	22	25	.....
18	.....	.....	.....	429	196	110	13	22	13	16	25	.....
19	.....	.....	250	412	183	100	11	22	16	11	.....	.....
20	.....	.....	264	376	160	92	11	19	19	11	.....	.....
21	.....	.....	250	280	482	83	9	16	16	13	.....	.....
22	.....	.....	235	310	412	83	13	13	13	11	.....	.....
23	.....	.....	222	412	376	83	7	19	13	9	.....	.....
24	.....	.....	222	501	310	68	5	13	16	11	.....	.....
25	.....	.....	196	606	295	68	3	19	13	13	.....	.....
26	.....	.....	183	818	250	68	3	25	19	16	.....	.....
27	.....	.....	196	896	235	54	5	25	16	19	.....	.....
28	.....	.....	208	896	208	48	7	19	13	22	.....	.....
29	.....	.....	196	793	208	48	11	22	13	25	.....	.....
30	.....	.....	150	696	208	48	11	19	13	25	.....	.....
31	.....	.....	110	.....	235	.....	22	19	.....	19	.....	.....
Total	.....	.....	2682	11323	12336	4071	412	552	450	1035	381	.....
Mean	.....	.....	206	377	398	136	13.3	17.8	15.0	33.4	21.2	.....
Max.	.....	.....	.....	896	793	264	25	25	25	129	.....	.....
Min.	.....	.....	.....	110	160	48	3	9	9	9	.....	.....
Acre-ft.	.....	.....	5310	22400	24500	8090	818	1090	893	2050	756	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Muddy Creek at Baggs, Wyoming, for 1915.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	40	20	0.8	0	3.5	44	90	.....
2	.....	.....	.....	.....	.....	40	21	0.8	2.2	3.8	40	77	.....
3	.....	.....	.....	.....	.....	40	44	0.8	3.8	4.2	58	56	.....
4	.....	.....	.....	.....	.....	39	99	0.0	2.2	5	67	58	.....
5	.....	.....	.....	.....	.....	40	122	0.8	1.5	4.2	77	32	.....
6	.....	.....	.....	.....	.....	38	125	2.2	0.8	4.2	87	15	.....
7	.....	.....	.....	.....	.....	28	147	2.2	0	3.5	99	12	.....
8	.....	.....	.....	.....	.....	30	90	1.5	0	3.8	102	12	.....
9	.....	.....	.....	.....	.....	24	58	3	0	3	87	13	.....
10	.....	.....	.....	.....	.....	26	48	3.5	2.2	2.2	84	10	.....
11	.....	.....	.....	.....	.....	26	30	4.2	0.8	1.5	72	6.5	.....
12	.....	.....	.....	.....	.....	22	21	3	3	0	58	5.8	.....
13	.....	.....	.....	.....	.....	24	27	2.2	2.2	0	54	6.5	.....
14	.....	.....	.....	.....	.....	26	38	1.5	0.8	0	52	5.8	.....
15	.....	.....	.....	.....	.....	26	40	0.8	1.5	0.8	46	3.5	.....
16	.....	.....	.....	.....	.....	22	40	1.5	0.8	0	54	4.2	.....
17	.....	.....	.....	.....	.....	18	42	2.2	0	0	60	4.2	.....
18	.....	.....	.....	.....	.....	16	38	0.8	0	0	96	3.0	.....
19	.....	.....	.....	.....	.....	14	38	0.8	0	0	102	0.8	.....
20	.....	.....	.....	.....	.....	14	24	0	0	0	122	0	.....
21	.....	.....	.....	.....	.....	14	9	0	0	0	122	0	.....
22	.....	.....	.....	.....	.....	15	3.5	0	0	0	90	0	.....
23	.....	.....	.....	.....	.....	16	4.2	0	0	0	159	0	.....
24	.....	.....	.....	.....	.....	22	3.8	0	0	0	159	0	.....
25	.....	.....	.....	.....	.....	17	3.5	0	0	0	139	0	.....
26	.....	.....	.....	.....	.....	17	3.8	0	0	0	77	0	.....
27	.....	.....	.....	.....	.....	20	3.8	0	0	0	96	0	.....
28	.....	.....	.....	.....	.....	17	3	0	0	0	93	0	.....
29	.....	.....	.....	.....	.....	14	1.5	0	0	0	122	0	.....
30	.....	.....	.....	.....	.....	15	0.8	0	0	0	179	0	.....
31	.....	.....	.....	.....	.....	18	.....	0	0	.....	122	.....	.....
Total	.....	.....	.....	.....	.....	738	1148.9	32.6	21.8	39.7	2819	415.3	.....
Mean	.....	.....	.....	.....	.....	23.8	38.2	1.0	0.7	1.3	90.9	13.8	.....
Max.	.....	.....	.....	.....	.....	40	147	4.2	3.8	5	179	90	.....
Min.	.....	.....	.....	.....	.....	14	0.8	0	0	0	40	0	.....
Acre-ft.	.....	.....	.....	.....	.....	1460	2279	65	44	78	5590	821	.....

Discharge of Muddy Creek at Baggs, Wyo., for 1916.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	83	78	66	0.2	40	.....	.....	.....	.....
2	.....	.....	.....	.....	64	76	61	0.0	50	.....	.....	.....	.....
3	.....	.....	.....	.....	62	73	44	0.0	78	.....	.....	.....	.....
4	.....	.....	.....	.....	61	71	40	0.2	106	.....	.....	.....	.....
5	.....	.....	.....	.....	54	78	32	1.0	396	.....	.....	.....	.....
6	.....	.....	.....	.....	52	76	22	1.0	270	.....	.....	.....	.....
7	.....	.....	.....	.....	44	74	16	1.0	220	.....	.....	.....	.....
8	.....	.....	.....	.....	46	73	15	0.8	224	.....	.....	.....	.....
9	.....	.....	.....	.....	50	74	10	0.5	412	.....	.....	.....	.....
10	.....	.....	.....	.....	52	80	6	1.0	99	.....	.....	.....	.....
11	.....	.....	.....	314	52	82	6	1.0	.....	.....	.....	.....	.....
12	.....	.....	.....	327	48	85	3	0.8	.....	.....	.....	.....	.....
13	.....	.....	.....	381	49	87	2.5	0.5	.....	.....	.....	.....	.....
14	.....	.....	.....	375	59	76	1.0	0.5	.....	.....	.....	.....	.....
15	.....	.....	.....	356	67	71	1.5	1.0	.....	.....	.....	.....	.....
16	.....	.....	.....	369	80	68	1.0	1.0	.....	.....	.....	.....	.....
17	.....	.....	.....	381	80	59	1.5	1.0	.....	.....	.....	.....	.....
18	.....	.....	.....	399	78	44	0.8	1.0	.....	.....	.....	.....	.....
19	.....	.....	.....	375	74	101	1.0	0.8	.....	.....	.....	.....	.....
20	.....	.....	.....	372	76	354	1.0	0.8	.....	.....	.....	.....	.....
21	.....	.....	.....	287	80	312	2.0	0.5	.....	.....	.....	.....	.....
22	.....	.....	.....	183	87	297	1.5	0.8	.....	.....	.....	.....	.....
23	.....	.....	.....	146	85	254	1.0	0.5	.....	.....	.....	.....	.....
24	.....	.....	.....	157	85	249	0.8	1.0	.....	.....	.....	.....	.....
25	.....	.....	.....	157	76	236	0.5	1.0	.....	.....	.....	.....	.....
26	.....	.....	.....	148	74	216	0.2	1.0	.....	.....	.....	.....	.....
27	.....	.....	.....	140	73	202	0.2	1.0	.....	.....	.....	.....	.....
28	.....	.....	.....	105	82	193	0.2	0.5	.....	.....	.....	.....	.....
29	.....	.....	.....	99	80	105	0.2	0.5	.....	.....	.....	.....	.....
30	.....	.....	.....	92	76	92	0.2	1.0	.....	.....	.....	.....	.....
31	.....	.....	.....	92	.....	83	.....	0.5	.....	.....	.....	.....	.....
Total.	.....	.....	5255	2031	4019	338.1	29.4	1895	.....	.....	.....	.....	.....
Mean	.....	.....	250	67.7	130	11.3	0.72	190	.....	.....	.....	.....	.....
Max.	.....	.....	.....	.....	87	354	66	1.0	.....	.....	.....	.....	.....
Min.	.....	.....	.....	.....	44	44	0.2	0.0	.....	.....	.....	.....	.....
Acre-ft.	.....	.....	10400	4030	7990	672	44	3760	.....	.....	.....	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

WILLOW CREEK AT RYAN'S RANCH, NEAR BAGGS, WYO.

Location.—In Colorado, about sec. 26, T. 11 N., R. 90 W., 2 miles northeast of Ryan's ranch house and 22 miles southeast of Baggs, Wyo. No important tributary between the station and the mouth of Willow Creek.

Records Available.—May 4, 1912, to November 30, 1916.

Drainage Area.—Approximately 5 square miles.

Gage.—Bristol automatic gage.

Channel.—Small cobblestones, placed especially for the station.

Discharge Measurements.—Made from foot-bridge.

Co-operation.—Station maintained by the State Engineer in co-operation with the Elk River Irrigation & Construction Co.

FOURMILE CREEK AT RANGER STATION, NEAR BAGGS, WYO.

Location.—In Colorado, at forest ranger station near Ryan's ranch, in sec. 9, T. 10 N., R. 90 W., 20 miles southeast of Baggs, Wyo.

Records Available.—May 1, 1912, to November 30, 1916.

Drainage Area.—Approximately 4 square miles.

Gage.—Bristol automatic gage.

Channel.—Probably permanent.

Discharge Measurements.—Made from foot-bridge.

Co-operation.—The State Engineer maintains the station in co-operation with the Elk River Irrigation & Construction Co.

Discharge of Willow Creek at Ryan's Ranch for 1915.
Drainage Area, 5.0 (Approx.) Square Miles. Altitude 8,000 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	22	34	17	2.5	1	8.5	.....	.....
2	.....	.....	.....	.....	.....	20	34	17	1.8	3.5	10	.....	.....
3	.....	.....	.....	.....	.....	13	22	17	1.8	5.8	7	.....	.....
4	.....	.....	.....	.....	.....	12	22	15	1.8	7	7	.....	.....
5	.....	.....	.....	.....	.....	10	22	15	1.8	7	5.8	.....	.....
6	.....	.....	.....	.....	.....	10	22	15	2.5	4.5	7	.....	.....
7	.....	.....	.....	.....	.....	13	22	13	2.5	3.5	5.8	.....	.....
8	.....	.....	.....	.....	.....	17	22	15	2.5	5.8	4.5	.....	.....
9	.....	.....	.....	.....	.....	22	22	13	2.5	2.5	4.5	.....	.....
10	.....	.....	.....	.....	.....	22	34	13	2.5	2.5	4.5	.....	.....
11	.....	.....	.....	.....	.....	24	42	12	1.8	1.8	7	.....	.....
12	.....	.....	.....	.....	.....	27	51	10	1	2.5	4.5	.....	.....
13	.....	.....	.....	.....	.....	38	27	8.5	1.8	1.8	5.8	.....	.....
14	.....	.....	.....	.....	13	42	27	8.5	1	2.5	4.5	.....	.....
15	.....	.....	.....	.....	15	34	27	8.5	2.5	4.5	4.5	.....	.....
16	.....	.....	.....	.....	17	34	30	7	1.8	3.5	4.5	.....	.....
17	.....	.....	.....	.....	13	27	34	7	1	2.5	5.8	.....	.....
18	.....	.....	.....	.....	13	27	30	7	1.8	2.5	7	.....	.....
19	.....	.....	.....	.....	17	27	34	13	1.8	2.5	8.5	.....	.....
20	.....	.....	.....	.....	17	22	34	10	1.8	1.8	10	.....	.....
21	.....	.....	.....	.....	24	22	27	10	1	1.8	7	.....	.....
22	.....	.....	.....	.....	17	22	27	7	1	1.8	8.5	.....	.....
23	.....	.....	.....	.....	17	20	27	7	2.5	1.8	7	.....	.....
24	.....	.....	.....	.....	13	22	27	7	4.5	5.8	7	.....	.....
25	.....	.....	.....	.....	13	22	27	7	2.5	10	10	.....	.....
26	.....	.....	.....	.....	17	22	24	4.5	2.5	12	8.5	.....	.....
27	.....	.....	.....	.....	17	22	22	4.5	2.5	10	5.8	.....	.....
28	.....	.....	.....	.....	27	24	17	7	2.5	8.5	4.5	.....	.....
29	.....	.....	.....	.....	27	27	17	7	2.5	7	4.5	.....	.....
30	.....	.....	.....	.....	30	22	17	5.8	2.5	8.5	3.5	.....	.....
31	.....	.....	.....	.....	.....	22	.....	2.5	2.5	.....	2.5	.....	.....
Total	.....	.....	.....	.....	307	710	824	310.8	65	136.2	195.5	.....	.....
Mean	.....	.....	.....	.....	18	23	27	10	2.1	4.5	6.3	.....	.....
Max	.....	.....	.....	.....	30	42	51	17	4.5	8.5	10	.....	.....
Min	.....	.....	.....	.....	13	10	17	2.5	1	1	2.5	.....	.....
Acre-ft	.....	.....	.....	.....	609	1410	1630	617	129	270	388	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Willow Creek at Ryan's Ranch for 1916.
Drainage Area, 5.0 (approx.) Square Miles. Altitude, 8,000 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	10	44	24	6.0	2.2	1.2	1.5	.....
2	.....	.....	.....	.....	.....	8.2	38	20	4.1	1.8	1.8	1.2	.....
3	.....	.....	.....	.....	.....	10	44	16	4.1	1.8	1.5	1.5	.....
4	.....	.....	.....	.....	.....	16	69	13	6.0	1.2	0.8	1.5	.....
5	.....	.....	.....	.....	.....	28	98	13	8.2	1.5	1.0	1.5	.....
6	.....	.....	.....	.....	.....	44	69	16	10.0	1.8	1.8	1.2	.....
7	.....	.....	.....	.....	.....	52	38	16	8.2	1.5	28.0	1.2	.....
8	.....	.....	.....	.....	.....	44	38	20	6.0	1.5	8.2	1.8	.....
9	.....	.....	.....	.....	.....	69	69	20	10.0	2.2	1.8	1.5	.....
10	.....	.....	.....	.....	.....	52	88	16	10.0	2.2	2.2	1.5	.....
11	.....	.....	.....	.....	.....	32	88	13	13.0	1.0	10.0	1.2	.....
12	.....	.....	.....	.....	.....	38	78	10	10.0	1.0	4.1	1.2	.....
13	.....	.....	.....	.....	.....	32	78	10	16.0	1.2	2.2	1.2	.....
14	.....	.....	.....	.....	.....	24	78	10	8.2	1.5	1.8	1.2	.....
15	.....	.....	.....	.....	.....	13	69	10	6.0	1.8	1.8	1.2	.....
16	.....	.....	.....	.....	.....	13	78	10	6.0	1.8	1.8	1.2	.....
17	.....	.....	.....	.....	.....	13	88	10	6.0	1.2	1.5	1.2	.....
18	.....	.....	.....	.....	.....	13	78	10	4.1	1.2	1.8	1.2	.....
19	.....	.....	.....	.....	.....	20	69	8.2	4.1	1.0	1.8	1.2	.....
20	.....	.....	.....	.....	.....	24	44	6.0	2.2	1.2	1.5	1.2	.....
21	.....	.....	.....	.....	6.0	32	38	8.2	2.2	1.2	2.2	1.2	.....
22	.....	.....	.....	.....	8.2	24	38	8.2	1.8	1.2	1.5	1.2	.....
23	.....	.....	.....	.....	8.2	20	28	6.0	2.2	1.2	1.2	1.2	.....
24	.....	.....	.....	.....	10.0	24	28	6.0	1.8	1.0	1.2	1.2	.....
25	.....	.....	.....	.....	16	24	28	6.0	2.2	1.2	1.0	1.2	.....
26	.....	.....	.....	.....	16	20	28	6.0	2.2	1.2	1.8	1.2	.....
27	.....	.....	.....	.....	24	20	24	4.1	1.8	1.0	4.1	1.2	.....
28	.....	.....	.....	.....	28	24	20	8.2	1.5	1.2	2.2	1.2	.....
29	.....	.....	.....	.....	20	28	20	8.2	1.5	1.2	1.8	1.2	.....
30	.....	.....	.....	.....	13	32	24	10.0	1.8	1.5	1.2	1.2	.....
31	.....	.....	.....	.....	.....	44	.....	6.0	2.2	.....	1.2	.....	.....
Total	.....	.....	.....	.....	149.4	847.2	1619	348.1	169.4	42.5	96.0	38.4	.....
Mean	.....	.....	.....	.....	14.9	27.3	54	11.2	5.5	1.4	3.1	1.28	.....
Max.	.....	.....	.....	.....	.....	69	98	24.0	16.0	2.2	28.0	1.8	.....
Min.	.....	.....	.....	.....	.....	8.2	20	4.1	1.5	1.0	1.2	1.2	.....
Acre-ft.	.....	.....	.....	.....	296	1680	3210	689	338	83	191	76	.....

Discharge of Four-Mile Creek at Ranger Station for 1915.
Drainage Area, 4 (approx.) Square Miles. Altitude, 7,800 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	20	16	6.5	1.5	1	1.5	.....	.....
2	.....	.....	.....	.....	.....	13	28	6.5	1.2	1	2	.....	.....
3	.....	.....	.....	.....	.....	13	20	8	1.5	1.2	1.5	.....	.....
4	.....	.....	.....	.....	.....	13	28	5	1.5	1.5	1.5	.....	.....
5	.....	.....	.....	.....	.....	13	28	5	1.5	1.5	1.5	.....	.....
6	.....	.....	.....	.....	.....	13	38	5	1.5	2.5	1.5	.....	.....
7	.....	.....	.....	.....	.....	13	28	5	1.5	1.5	1.5	.....	.....
8	.....	.....	.....	.....	.....	13	28	5	1.2	1.5	1.5	.....	.....
9	.....	.....	.....	.....	.....	20	28	5	1	1.5	2	.....	.....
10	.....	.....	.....	.....	.....	20	20	5	1	1.5	1.5	.....	.....
11	.....	.....	.....	.....	.....	28	20	5	1.2	1.5	1.5	.....	.....
12	.....	.....	.....	.....	.....	28	13	2.5	1.2	1.5	1.5	.....	.....
13	.....	.....	.....	.....	13	38	13	3.8	1.5	1	1.5	.....	.....
14	.....	.....	.....	.....	16	28	13	2.5	1.5	1	1.5	.....	.....
15	.....	.....	.....	.....	20	24	8	2.5	1.2	1.5	2	.....	.....
16	.....	.....	.....	.....	20	20	8	2.5	1.2	1.5	2	.....	.....
17	.....	.....	.....	.....	13	20	8	2.5	1	1.5	1.5	.....	.....
18	.....	.....	.....	.....	20	20	8	2	1	1.2	1.5	.....	.....
19	.....	.....	.....	.....	20	13	8	1.5	1.5	1	1.5	.....	.....
20	.....	.....	.....	.....	20	8	8	1.5	1	[illegible]	1.5	.....	.....
21	.....	.....	.....	.....	28	8	6.5	1.5	1	1	1.5	.....	.....
22	.....	.....	.....	.....	20	8	6.5	1.5	1	1.2	1.5	.....	.....
23	.....	.....	.....	.....	20	8	6.5	1.5	1	1.2	1.5	.....	.....
24	.....	.....	.....	.....	16	13	8	2.5	1	1.5	1.5	.....	.....
25	.....	.....	.....	.....	13	13	8	1.5	1	2.5	1	.....	.....
26	.....	.....	.....	.....	20	13	8	1.5	1	3.8	1	.....	.....
27	.....	.....	.....	.....	28	13	5	1.5	1	2.5	1.2	.....	.....
28	.....	.....	.....	.....	38	13	6.5	1.5	1	1.5	2.5	.....	.....
29	.....	.....	.....	.....	49	13	6.5	1.5	1	1.5	2.5	.....	.....
30	.....	.....	.....	.....	38	13	6.5	1.5	1	1.5	2.5	.....	.....
31	.....	.....	.....	.....	.....	13	.....	1.5	1	.....	1.5	.....	.....
Total	.....	.....	.....	.....	412	506	437	99.8	36.9	45.6	50.2	.....	.....
Mean	.....	.....	.....	.....	23	16	15	3.2	1.2	1.5	1.6	.....	.....
Max.	.....	.....	.....	.....	49	38	38	8	1.5	3.8	2.5	.....	.....
Min.	.....	.....	.....	.....	13	8	5	1.5	1	1	1	.....	.....
Acre-ft.	.....	.....	.....	.....	817	1000	867	198	73	90	100	.....	.....

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of Four-Mile Creek at Ranger Station for 1916.
Drainage Area, 4 (Approx.) Square Miles. Altitude, 7,800 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	13	24	3.8	0.8	2.0	2.5	2.5	.....
2	.....	.....	.....	.....	.....	13	20	3.8	1.0	1.5	3.8	2.5	.....
3	.....	.....	.....	.....	.....	16	20	2.5	2.0	1.5	3.8	3.8	.....
4	.....	.....	.....	.....	.....	24	20	1.5	8.0	1.5	2.5	5.0	.....
5	.....	.....	.....	.....	.....	44	20	1.2	10	2.0	2.5	1.5	.....
6	.....	.....	.....	.....	.....	62	16	1.2	8	2.5	6.5	1.5	.....
7	.....	.....	.....	.....	.....	49	13	1.2	3.8	1.5	16.0	1.5	.....
8	.....	.....	.....	.....	.....	49	13	1.5	3.8	1.5	8	1.5	.....
9	.....	.....	.....	.....	.....	62	20	5.0	3.8	3.8	5	1.5	.....
10	.....	.....	.....	.....	.....	44	20	3.8	3.8	3.8	6.5	1.2	.....
11	.....	.....	.....	.....	.....	33	16	2.5	3.8	2.5	10.0	1.2	.....
12	.....	.....	.....	.....	.....	38	16	1.5	3.8	2.5	6.5	1.2	.....
13	.....	.....	.....	.....	.....	33	16	0.8	8.0	2.0	8.0	1.2	.....
14	.....	.....	.....	.....	.....	20	16	0.8	5.0	2.0	6.5	1.2	.....
15	.....	.....	.....	.....	.....	13	13	0.5	3.8	2.5	5.0	1.2	.....
16	.....	.....	.....	.....	.....	13	13	0.8	2.5	2.0	2.5	1.2	.....
17	.....	.....	.....	.....	.....	13	13	0.5	2.5	2.0	3.8	1.2	.....
18	.....	.....	.....	.....	.....	13	10	0.5	2.5	1.5	2.5	1.2	.....
19	.....	.....	.....	.....	.....	16	10	0.5	2.0	1.5	3.8	1.2	.....
20	.....	.....	.....	.....	.....	20	8	0.8	2.0	1.5	3.8	1.2	.....
21	.....	.....	.....	.....	.....	49	8	0.8	1.5	1.5	3.8	1.2	.....
22	.....	.....	.....	.....	10	38	6.5	1.0	1.5	2.0	2.5	1.2	.....
23	.....	.....	.....	.....	13	28	6.5	1.0	2.0	2.0	2.0	1.2	.....
24	.....	.....	.....	.....	16	28	6.5	1.0	2.5	2.0	5.0	1.2	.....
25	.....	.....	.....	.....	24	20	5.0	1.2	3.8	2.0	3.8	1.2	.....
26	.....	.....	.....	.....	33	16	3.8	1.2	2.5	2.5	3.8	1.2	.....
27	.....	.....	.....	.....	33	16	3.8	1.2	2.5	2.0	3.8	1.2	.....
28	.....	.....	.....	.....	44	20	3.8	1.5	2.5	1.5	2.5	1.2	.....
29	.....	.....	.....	.....	24	20	3.8	2.0	3.8	2.5	2.0	1.2	.....
30	.....	.....	.....	.....	16	24	5.0	1.2	5.0	2.5	2.5	1.2	.....
31	.....	.....	.....	.....	.....	24	.....	0.8	2.5	.....	2.5	.....	.....
Total	.....	.....	.....	.....	213	871	369.7	47.6	111.0	62.1	143.7	46.5	.....
Mean	.....	.....	.....	.....	23.7	28.1	12.3	1.5	3.6	2.1	4.6	1.6	.....
Max.	.....	.....	.....	.....	.....	62	24	5.0	10.0	3.8	16.0	5.0	.....
Min.	.....	.....	.....	.....	.....	13	3.8	0.5	0.8	1.5	2.0	1.2	.....
Acre-ft.	.....	.....	.....	.....	422	1730	732	92	221	123	283	95	.....

Unless otherwise noted, all discharges are in cubic feet per second.

NORTH FORK OF WHITE RIVER AT BUFORD.

Location.—At Genier's ranch, 1½ miles above Buford, about sec. 3, T. 1 S., R. 91 W. No important tributary between the station and the mouth of South Fork. The gage and foot-bridge at Genier's ranch went out on May 27th, and was re-established on June 26th on the private road bridge at Buford P. O., 1½ miles below.

Records Available.—May 24, 1910, to December 7, 1915.

Drainage Area.—240 square miles.

Gage.—Vertical staff.

Channel.—Practically permanent.

Discharge Measurements.—Made from private road bridge.

Diversions.—There is a court decree for a diversion of 1.6 second-feet from the North Fork above the station, but none below. There are also decrees for diversions of 33 second-feet from tributaries entering above the station.

SOUTH FORK OF WHITE RIVER NEAR BUFORD.

Location.—At Shepherd's ranch, 7 miles above Buford, about sec. 7, T. 2 S., R. 90 W. Nearest tributary a small creek that enters from the east just below the station.

Records Available.—July 25, 1903, to October 31, 1906, station maintained by the United States Geological Survey; June 1, 1910, to November 30, 1915.

Drainage Area.—148 square miles.

Gage.—Vertical staff.

Channel.—Fairly permanent.

Discharge Measurements.—Made from highway bridge during high water and by wading at ordinary stages.

Winter Flow.—Ice causes backwater and records are discontinued during the winter months.

Diversions.—There are no court decrees for diversions from the South Fork above the station, but below there is a decree for 5.4 second-feet. There is a decree for a diversion of 9.2 second-feet from tributaries entering above the station.

Discharge of North Fork White River at Buford for 1915.
Drainage Area, 240 Square Miles. Altitude, 7,000 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	180	345	615	510	210	165	195	150	180
2	.....	.....	.....	.....	180	345	615	460	210	165	195	150	210
3	.....	.....	.....	.....	180	345	560	460	195	165	195	150	210
4	.....	.....	.....	.....	195	345	485	410	195	165	180	150	210
5	.....	.....	.....	.....	210	365	510	410	195	165	180	150	210
6	.....	.....	.....	.....	210	365	510	410	195	165	180	150	210
7	.....	.....	.....	.....	210	365	460	365	210	165	180	210	210
8	.....	.....	.....	.....	210	365	510	345	228	165	180	180	.....
9	.....	.....	.....	.....	245	410	588	325	210	180	180	180	.....
10	.....	.....	.....	.....	210	410	730	325	195	180	180	195	.....
11	.....	.....	.....	.....	228	435	670	305	195	180	180	210	.....
12	.....	.....	.....	.....	245	615	670	285	195	180	180	195	.....
13	.....	.....	.....	.....	325	435	588	285	180	180	180	180	.....
14	.....	.....	.....	.....	365	615	560	285	180	180	180	180	.....
15	.....	.....	.....	.....	365	535	560	245	180	180	180	165	.....
16	.....	.....	.....	.....	388	485	588	245	180	180	180	165	.....
17	.....	.....	.....	.....	435	535	730	245	180	180	180	165	.....
18	.....	.....	.....	.....	510	670	615	245	180	180	180	165	.....
19	.....	.....	.....	.....	730	670	700	245	180	180	180	180	.....
20	.....	.....	.....	.....	615	615	760	245	180	180	180	180	.....
21	.....	.....	.....	165	588	615	700	228	180	180	180	180	.....
22	.....	.....	.....	165	460	615	700	210	180	180	180	180	.....
23	.....	.....	.....	165	435	460	700	228	180	180	180	180	.....
24	.....	.....	.....	165	435	510	700	210	180	180	180	180	.....
25	.....	.....	.....	165	435	510	642	210	180	228	180	180	.....
26	.....	.....	.....	165	410	460	588	228	180	210	180	180	.....
27	.....	.....	.....	165	410	460	588	228	180	210	180	180	.....
28	.....	.....	.....	165	388	410	588	245	165	228	180	210	.....
29	.....	.....	.....	165	396	460	535	228	165	210	165	210	.....
30	.....	.....	.....	165	365	535	510	210	165	195	165	210	.....
31	.....	.....	.....	165	.....	485	.....	210	165	.....	150	.....	.....
Total	.....	.....	.....	1815	10527	14790	18275	9085	5793	5481	5565	5340	1440
Mean	.....	.....	.....	165	351	477	610	293	187	183	180	178	206
Max.	.....	.....	.....	165	730	670	760	510	228	228	195	210	210
Min.	.....	.....	.....	165	180	345	460	210	165	165	150	150	180
Acre-ft.	.....	.....	.....	3600	20900	29300	36200	18000	11500	10900	11100	10600	2860

Unless otherwise noted, all discharges are in cubic feet per second.

Discharge of South Fork White River near Buford for 1915.
Drainage Area, 148 Square Miles. Altitude, 7,200 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	110	375	755	507	125	110	110	95	.....
2	.....	.....	.....	110	340	728	435	125	110	110	95	.....
3	.....	.....	.....	110	318	674	364	125	110	110	95	.....
4	.....	.....	.....	125	248	594	352	125	110	110	95	.....
5	.....	.....	.....	125	237	544	329	125	110	110	95	.....
6	.....	.....	.....	135	214	519	329	135	110	110	95	.....
7	.....	.....	.....	118	226	495	306	168	110	110	95	.....
8	.....	.....	.....	125	237	495	306	168	110	110	95	.....
9	.....	.....	.....	125	237	594	283	145	125	110	95	.....
10	.....	.....	.....	118	237	918	260	145	125	110	95	.....
11	.....	.....	.....	125	237	1072	260	145	110	110	110	.....
12	.....	.....	.....	125	260	1130	237	125	110	110	110	.....
13	.....	.....	.....	125	352	932	214	125	125	110	110	.....
14	.....	.....	.....	110	435	755	214	125	118	110	110	.....
15	.....	.....	.....	125	594	782	191	125	110	118	95	.....
16	.....	.....	.....	156	660	796	191	125	110	125	95	.....
17	.....	.....	.....	168	582	904	168	125	110	110	110	.....
18	.....	.....	.....	168	495	960	168	125	110	110	95	.....
19	.....	.....	.....	180	495	918	168	125	110	110	110	.....
20	.....	.....	.....	191	447	904	168	125	110	110	110	.....
21	.....	.....	.....	214	423	850	168	125	110	110	95	.....
22	.....	.....	.....	214	387	809	145	125	110	110	95	.....
23	.....	.....	.....	214	387	796	145	135	118	110	95	.....
24	.....	.....	.....	191	423	768	145	145	125	110	95	.....
25	.....	.....	.....	191	447	728	145	125	125	110	95	.....
26	.....	.....	.....	168	447	701	145	125	125	110	95	.....
27	.....	.....	.....	180	423	688	145	125	125	110	95	.....
28	.....	.....	.....	248	447	620	145	110	125	110	110	.....
29	.....	.....	.....	306	447	594	145	110	110	110	110	.....
30	.....	.....	.....	375	471	556	125	110	110	110	110	.....
31	.....	.....	.....	.....	634	.....	125	110	.....	110	.....	.....
Total	.....	.....	.....	4975	12162	22579	7028	4001	3436	3433	3000	.....
Mean	.....	.....	.....	166	392	753	227	134	114	111	100	.....
Max	.....	.....	.....	375	660	1130	507	168	125	125	110	.....
Min	.....	.....	.....	110	214	495	125	110	110	110	95	.....
Acre-ft.	.....	.....	.....	9870	24100	44800	13900	7940	6820	6820	5950	.....

Unless otherwise noted, all discharges are in cubic feet per second.

WHITE RIVER NEAR MEEKER.

Location.—At the Rees ranch, 3½ miles east of Meeker, in sec. 24, T. 1 N., R. 93 W. Nearest tributary above is Curtis Creek; nearest below is Sulphur Creek. Station moved from Van Cleave's to Rees' ranch October 20, 1913.

Records Available.—May 7, 1910, to November 30, 1916. From April 12, 1904, to October 31, 1906, a station was maintained 2.5 miles below this point by the United States Geological Survey.

Drainage Area.—634 square miles.

Gage.—Automatic recording gage.

Channel.—Practically permanent.

Discharge Measurements.—Made from private road bridge.

Diversions.—There are court decrees for diversions of 186 second-feet from White River above the station and 59 second-feet from tributaries entering above. Below there are decrees for diversions of 198 second-feet from White River.

Note.—Station moved to get above the head of the Meeker Power Canal. Diversion started during winter of 1912-1913.

1913 records prior to October 20 corrected for the diversion. Average diversion about 90 second-feet.

Discharge of White River near Meeker for 1915.
Drainage Area, 634 Square Miles. Altitude, 6,182 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	275	1020	1110	800	290	310	350	330	370
2	.....	.....	.....	.....	290	930	1365	760	275	310	350	330	370
3	.....	.....	.....	.....	290	800	1060	760	275	330	330	330	370
4	.....	.....	.....	.....	290	720	1110	680	275	330	330	330	370
5	.....	.....	.....	.....	275	645	1020	610	275	330	330	330	330
6	.....	.....	.....	.....	260	645	1065	610	290	310	330	330	330
7	.....	.....	.....	.....	275	610	930	540	290	310	330	330	330
8	.....	.....	.....	.....	330	610	930	540	290	330	330	290	330
9	.....	.....	.....	.....	350	610	1110	540	310	330	330	275	350
10	.....	.....	.....	.....	350	745	1420	480	290	330	330	310	370
11	.....	.....	.....	.....	395	755	1600	450	290	330	330	350	330
12	.....	.....	.....	.....	420	960	1660	420	290	330	330	395	330
13	.....	.....	.....	.....	510	845	1365	420	310	310	330	420	350
14	.....	.....	.....	.....	575	1110	1110	420	310	330	330	310	350
15	.....	.....	.....	.....	610	1180	1110	450	290	330	350	310	350
16	.....	.....	.....	.....	680	1170	1110	450	290	330	370	330	330
17	.....	.....	.....	.....	645	1130	1310	395	290	330	370	330	290
18	.....	.....	.....	.....	575	1150	1420	370	290	330	330	330	330
19	.....	.....	.....	.....	760	1130	1420	350	290	290	350	350	370
20	.....	.....	.....	.....	760	1010	1480	350	290	290	350	350	370
21	.....	.....	.....	.....	840	970	1310	310	290	290	350	370	510
22	.....	.....	.....	330	840	840	1310	290	275	310	350	350	480
23	.....	.....	.....	330	760	840	1310	275	260	330	350	330	450
24	.....	.....	.....	350	680	885	1310	290	290	330	350	330	420
25	.....	.....	.....	370	680	930	1210	275	310	370	330	310	370
26	.....	.....	.....	350	680	930	1210	275	330	370	330	330	480
27	.....	.....	.....	350	840	885	1065	290	330	350	330	330	370
28	.....	.....	.....	290	840	840	975	310	330	370	330	275	370
29	.....	.....	.....	290	1020	840	840	290	310	370	350	290	450
30	.....	.....	.....	290	1065	840	840	290	310	350	350	310	420
31	.....	.....	.....	275	.....	975	.....	310	310	.....	330	.....	510
Total	.....	.....	.....	8225	17160	27540	36085	13600	9145	9860	10530	9885	11750
Mean	.....	.....	.....	322	572	888	1203	439	295	329	340	330	379
Max.	.....	.....	.....	370	1065	1180	1660	800	330	370	370	420	510
Min.	.....	.....	.....	275	260	610	840	275	260	290	330	275	290
Acre-ft.	.....	.....	.....	6400	34000	54600	71600	27000	18100	19600	20900	19600	23300

Discharge of White River near Meeker for 1916.
Drainage Area, 634 Square Miles. Altitude, 6,182 Feet Above Sea Level.

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	420	952	1920	1440	575	370	450	350	.....
2	.....	.....	.....	.....	395	870	1860	1230	575	370	480	350	.....
3	.....	.....	.....	.....	395	830	1860	1180	610	370	510	395	.....
4	.....	.....	.....	.....	395	870	1920	1080	610	370	575	370	.....
5	.....	.....	.....	.....	395	1130	2060	1040	610	370	480	350	.....
6	.....	.....	.....	.....	395	1380	1990	910	680	420	510	330	.....
7	.....	.....	.....	.....	395	1670	1920	910	680	370	715	350	.....
8	.....	.....	.....	.....	395	1920	1920	910	540	370	790	330	.....
9	.....	.....	.....	.....	370	2280	2130	952	540	420	610	370	.....
10	.....	.....	.....	.....	395	2680	2200	910	540	645	610	370	.....
11	.....	.....	.....	330	450	2280	2200	870	510	510	645	370	.....
12	.....	.....	.....	310	480	1990	2130	910	480	480	610	370	.....
13	.....	.....	.....	350	480	1670	2280	870	645	420	610	370	.....
14	.....	.....	.....	350	480	1490	2280	830	750	370	575	370	.....
15	.....	.....	.....	350	510	1280	2200	830	610	420	540	370	.....
16	.....	.....	.....	395	510	1180	2360	750	610	480	510	370	.....
17	.....	.....	.....	420	540	1080	2440	750	540	450	540	370	.....
18	.....	.....	.....	420	575	995	2520	750	510	450	575	370	.....
19	.....	.....	.....	395	610	995	2600	680	480	450	510	330	.....
20	.....	.....	.....	420	575	1080	2680	645	450	450	480	330	.....
21	.....	.....	.....	510	575	1330	2440	610	450	420	480	310	.....
22	.....	.....	.....	480	610	1380	2280	610	420	420	480	290	.....
23	.....	.....	.....	480	645	1330	1990	610	420	420	450	290	.....
24	.....	.....	.....	450	790	1440	1860	575	420	480	420	310	.....
25	.....	.....	.....	420	870	1610	1670	540	420	450	420	310	.....
26	.....	.....	.....	420	995	1490	1670	540	420	420	395	310	.....
27	.....	.....	.....	420	1130	1280	1670	575	395	420	420	310	.....
28	.....	.....	.....	420	1280	1380	1860	680	370	395	395	310	.....
29	.....	.....	.....	450	1440	1440	1860	610	370	420	330	290	.....
30	.....	.....	.....	420	1080	1670	1670	610	395	420	330	290	.....
31	.....	.....	.....	395	.....	1990	.....	610	395	.....	330	.....	.....
Total	.....	.....	.....	8605	18575	44962	62440	25017	16020	12820	15775	10205	.....
Mean	.....	.....	.....	410	619	1450	2080	807	517	427	509	340	.....
Max.	.....	.....	.....	.....	1440	2680	2680	1440	750	645	790	395	.....
Min.	.....	.....	.....	.....	370	830	1670	540	370	370	330	290	.....
Acre-ft.	.....	.....	.....	17100	36800	89200	124000	49600	31800	25400	31300	20200	.....

Unless otherwise noted, all discharges are in cubic feet per second.

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