

J. E. WHITTEN
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Deputy



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Office Engineer

STATE OF COLORADO
OFFICE OF STATE ENGINEER
DIVISION OF WATER RESOURCES
DENVER-2

Durango, Colo.
January 25-1959

SUBJECT:

Mr. J. E. Whitten
State Engineer
Denver, Colo.

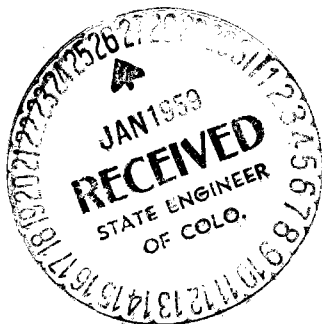
Dear Sir:

Enclosed is tabulation of water commissioners ditch
and reservoir reports for 1958.

This will supplement the preliminary report about
stream flow other details reported to you in November, 1958.

Respectfully,

J. R. Williams
Division Engineer.



ATTACH TO
WILLIAMS REPORT

PRELIMINARY ANNUAL REPORT FOR 1958

IRRIGATION DIVISION 7

Water Supply.

On April 1st. the heaviest snow pack was on the Animas River above elev. 9000 ft. Red Mtn. Pass had 117 ins. snow with 40.5 ins. water. This compared with 36.2 in. water in 1957 and 30.5 ins. average.

The Upper San Juan had 36.2 water compared with 45.2 in 1957 and average of 34.6. Dolores at Lizard Head Pass had 24.1, 25.0 in 1957 and 17.1 average.

On May 1st. Red Mountain had 102 in. snow remaining and an increase in water content to 42.2. There was 34.0 in. water on this date in 1957.

The Upper San Juan had 34.0 water, 45.0 in 1957 and 32.8 average.

Lizard Head had 23.4 water, 24.1 in 1957 and 15.9 average.

Percentages in relation to average were: Animas- 145, San Juan- 145, Dolores-146.

Extreme flood peaks were forecast by all except those who said, (let us wait and see.) They would wait & see.

Precipitation during the April-September period was less than average. Using one station as an example, at Durango the total for period was 67 percent of average.

	Month							
	April	May	June	July	Aug.	Sept.	Total	
Durango	: April	: May	: June	: July	: Aug.	: Sept.	: Total	:
Prec. Ins.:	1.15	0.36	0.66	0.85	2.07	No. Report:	5.09	:
Dep. "	- .10	- .82	- .25	- 1.09	- .28	:	- 2.54	:
% Dep.	: - 8	: 69	: 27	: 56	: 12	:	: 33	:

Stream Flow:

The extreme flood peaks forecast because of the heavy snow pack did not occur at any of the stations near the mountains, such as Dolores at Dolores and Animas at Durango. The time and rate of run-off was odd as compared with normal. The snow pack remained without thawing until the middle of April. Then it thawed out and all streams reached flood stage in a few days. It is reported that Dolores River at Bedrock had the highest water that had occurred since 1941 although there was less than three thousand second feet at Dolores at that time.

Stream Flow in Acre Feet

Stream	Month & Period							Total	
	April	May	June	3 Mos.	July	Aug.	Sept.		6 Mos.
Animas at Durango	1958	66160	258350	204700	529210	46700	21950	22730	620590
Average	1957-1957	50430	138100	171400	359930	72760	32200	23260	488150
1958 Percent of Average		131	187	119	147	64	69	98	127
1957 Flow		37040	90000	306000	433040	184400	77010	38210	732660
1958 Percent of 1957		179	287	67	122	25	29	59	85
Dolores at Dolores	1958	69930	176900	94290	341120	20380	13980	8170	383650*
Average	1937-1957	46890	109200	89770	245860	27840	14080	9280	296700
1958 Percent of Average		149	162	104	138	74	100	88	129
1957 Flow		29820	100,300	206500	336620	91620	39190	22120	489550
1958 Percent of 1957		233	177	46	101	22	36	37	78

* Total at Dolores includes 16540 acre feet in 1958 from Ground Hog Reservoir during the July September period.

Maximum discharge at Durango occurred on May 28th. with G. H. of 7;63, estimated at 7930 s.f. Max. in 1957 on June 6 was G.H. 8.12- 9330 s.f.

Maximum at Dolores on May 28 was G.H. 950, estimated flow 4440 s.f. Maximum in 1957 on June 6, G. H. 10.68, flow 6690 s.f.

Flood protection work on Dolores River was done in April by Corp of Engineers. An earth dyke about one eighth mile in length was placed on north bank of river channel about one-half mile upstream from Town of Dolores. No improvement was made of the dykes placed in 1957 by the Colo. Highway Department. The Corp of Engineers work will not be permanent unless it is protected with heavy rip-rap. It should also be raised about three feet as there was only about 18 ins. free board at maximum flow this year.

Ground water, both surface and deep, was the best or greatest that has been for a long period, I think since 1941. Excess rains in the summer and fall of 1957, heavy snowfall during the winter, and a wet period from march 10 to April 15 made the wettest condition imaginable.

Temperatures were above normal during the entire summer which made the demand for irrigation water excessive.

Account

Water Commissioners Ditch records are not yet completed but I do have some information on use of water from storage which was more than average.

Use of Water From Storage in Acre Feet.

Name of Reservoir	Capacity	Max. Amount in Reservoir	Amount Used From Storage	Amount in Reservoir Nov. 1
Jackson Gulch	10,000	9,980	Est. 5,880	4,100
Vallecito	126,280	112,500	72,000	40,800
Ground Hog	21,700	21,490	16,540	4,900
Narraguinepp	19,100	18,500	15,090	4,000
Summit	4,800	5,070	7,080	280
Red Mesa	1,200	1,200	980	700

Water supply for lands under storage reservoirs was generally adequate for all crops. The Summit area ran a trifle short in September. Other areas (such as the San Juan, Florida and La Plata) were short of water after July 1st.

Crops were generally good with the exception of spring grains. Lack of a good stand was the main cause and that was because of the wet spring which made the soils run together and then bake. Hay crops were good, particularly under storage and condition of hay was excellent.

Major Irrigation Improvements.

Webber Reservoir Dam near Mancos which is being re-built (north dike) to hold the decreed capacity is nearly complete. Earth work is up to top elevation. There was a revision of the trash rack structure which is also completed.

The Williams Creek Dam, for fishing, was progressing satisfactorily on occasion of two inspections, The last in October.

Several steel headgates, waste way structures and rating flumes were installed. Finally obtained installation of a four foot timber rating flume on Weminuche Pass Ditch on top of Continental divide. Spillways on both the North Fork and Weminuche Pass ditches and a new headgate on North Fork Ditch.

Administration.

No particularly tough experience was had in water administration, although on the La Plata, the flow dropped about the middle of June to a point where rotations between Colo. and New Mexico was necessary.

Flow to the City of Durango was restricted to the amount being used in the City from day to day. This regulation started in August and continued to first part of October. Reason for the regulation was that the City had stopped all irrigation except for two days a week in order to build up amount of water in storage.

Respectfully Submitted.

55

TABULATION OF WATER COMMISSIONERS DITCH REPORTS FOR 1958.

Dist. No.	Amount in S.F.	Capacity in S.F.	First Day	Last Day	Number of Days	Average Daily Amount Used	Number of Acre Feet Used	Number of Acres Irrigated
29	589	639	*				*45,000	*15,000
30	591	819	Apr. 1	Nov. 15	229	208	95,260	23,374
31	741	915	May 5	Oct. 31	179	321	114,980	47,411
33	273	462	Apr. 28	Oct. 31	162	62	20,260	13,192
34	819	1019	Apr. 16	Oct. 31	199	319	127,660	51,035
69	88	71	May 1	Oct. 18	62	25	3,060	865
Total	3101	3925	Apr. 1	Nov. 15	229	887	406,220	150,877

Note: * No Report from Water Dist. 29. Totals estimated by Division Engineer.

67

TABULATION OF WATER COMMISSIONERS ANNUAL RESERVOIR REPORTS FOR 1958.

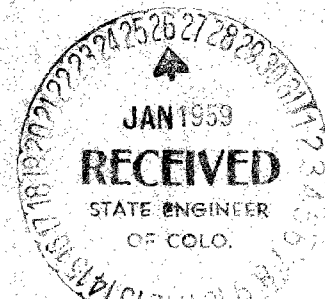
Dist. No.	Number of Reservoirs	Area of High Water Line in Acres	Capacity in Acre Feet	Amount in Storage May 1 A.F.	Amount in Storage Nov. 1 A.F.	First Day	Last Day	No. of Days	Average Daily Amount Used	No. of Acre Feet Used	Total No. of Acres Irrigated
29	5	* 670	* 1500	* 1500						*1500	*1500
30	5	938	25310	5420	19290	July 20	Aug. 15	20	7.5	300	225
31	3	3093	128240	70870	40900	May 29	Oct. 30	120	299	71840	35168
33	1	50	1200	1200	700	June 20	Sept. 12	71	7.0	1000	525
34	9	1407	36470	34420	6200	May 15	Sept. 23	123	199	48740	48490
69	4	700	22210	20540	5020	July 18	Oct. 18	93	1.4	350	160
Total	27	6858	214930	133950	72110	May 15	Oct. 30	134	462	123730	86068

Note: * No Report. Estimated by Division Engineer

a - Includes capacity and amounts in storage at Electra Lake which is used for power only.

b - Includes Ground Hog Reservoir from which water is used in Water Dist. 34.

c - Reservoir water used for irrigation only.



M. C. HINDERLIDER
STATE ENGINEER
C. C. HEZMALHALCH
DEPUTY



L. T. BURGESS
CHIEF HYDROGRAPHER
W. T. BLIGHT
CHIEF CLERK & DRAFTSMAN

STATE OF COLORADO
ENGINEERING DEPARTMENT
DENVER

Durango, Colo.
Irrigation Division No. 7.

SUBJECT:

COMPILED LAWS OF COLORADO- 1921

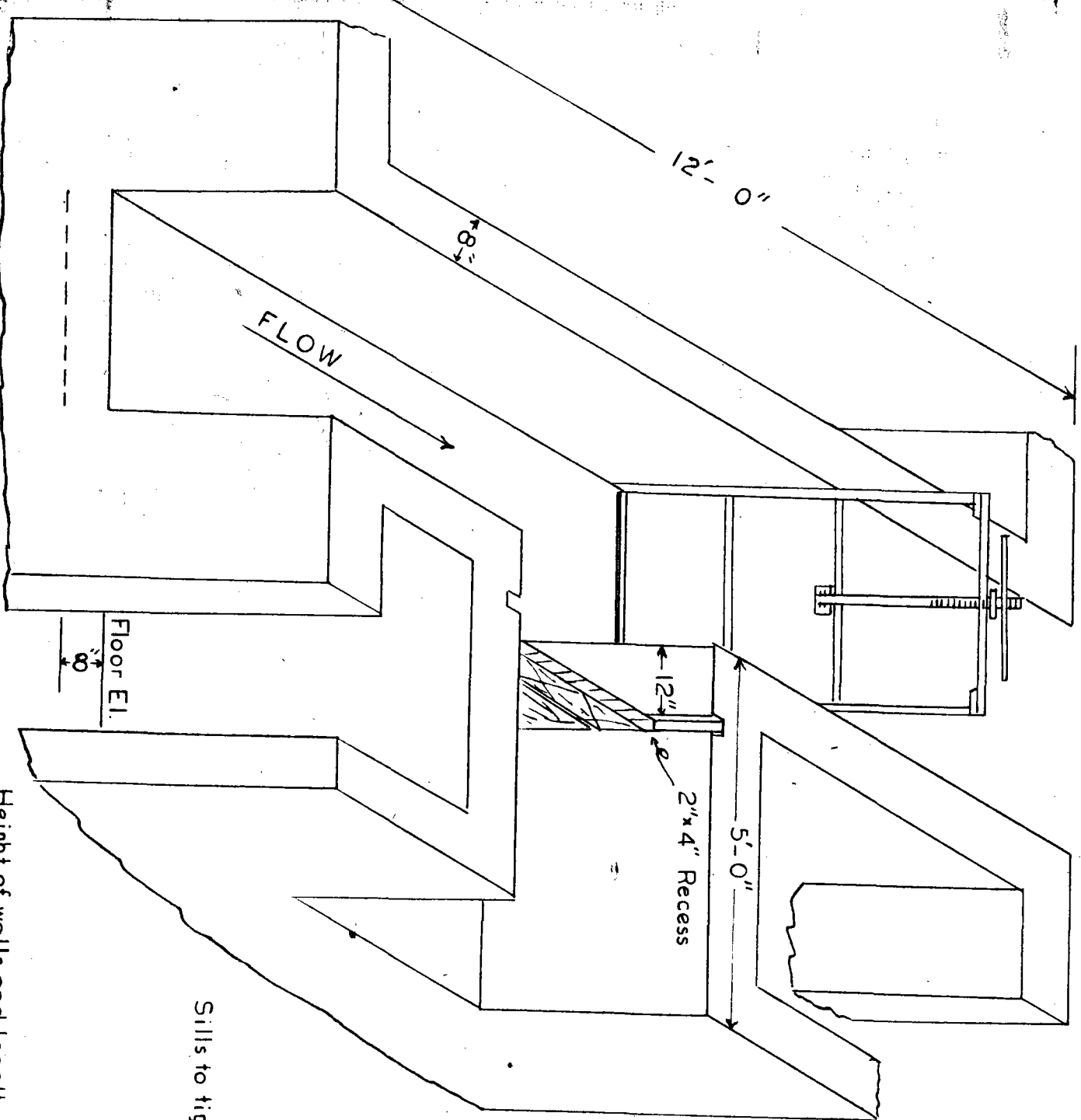
SECTION 1727.

"The owner or owners of any irrigation ditch, canal, flume or reservoir in this state, taking water from any stream, shall erect and maintain in good repair, at the point of intake of such ditch, canal, flume or reservoir, suitable and proper headgate or headgates -- and suitable or proper measuring flume, weirs and devices in connection with such ditch, canal, flume or reservoir."

"If the owner or owners of any such canal, flume or reservoir, shall fail or neglect to maintain in good repair, said headgate, measuring flume, weir or devices, in the manner and form herein provided, then the state engineer, division engineer or water commissioner, upon ten days previous notice in writing, duly served upon such owner or owners, or upon any agent or employee representing it or them or controlling such ditch, canal flume or reservoir, shall refuse to deliver any water from such stream to such owner or owners, or to such ditch, canal, flume or reservoir, until such owner or owners shall cause to be erected or repaired the headgate, measuring flume, weirs and devices of such ditch, canal, flume or reservoir. The owner or owners of all such ditches, canals, flumes or reservoirs shall be liable for all damages resulting from their neglect to comply with provisions of this act, and any such owner or owners who shall divert water from any such stream and into any such ditch, canal, flume or reservoir, contrary to the orders of the state engineer, division engineer or water commissioner, as herein provided, shall be deemed guilty of a misdemeanor and, upon conviction thereof, shall be fined not to exceed five hundred dollars, and each day of violation shall be deemed a separate offense."

STATE OF COLORADO
 STATE ENGINEER
 PLAN FOR CONCRETE
 STRUCTURE WITH STEEL
 HEADGATE AND WITH
 SPILLWAY.

CAPACITY OF DITCH	SIZE OF GATE	
	WIDTH	HEIGHT
1-10 SF.	24 "	24 "
11-20 "	30	30
21-30 "	36	36
31-40 "	48	36



Sills to tight or solid formation.

Height of walls and length
 of wingwalls to be determined
 by field conditions.

STATE OF COLORADO

ENGINEERING DEPARTMENT -- IRRIGATION DIVISION NO. 7

DURANGO, COLORADO.

_____ 194 .

Mr. _____ A.

Dear Sir:

In accordance with Section 1727 of the Compiled Laws of Colorado which provide in part that " The owner or owners of any irrigation ditch, canal, flume or reservoir in the state, taking water from any stream, shall erect and maintain in good repair suitable and proper headgate or headgates, measuring flumes, weirs and devices and wastegates in connection with such ditch, canal, flume or reservoir"; it is directed that there shall be installed on the _____ Ditch the necessary structures as follows and marked (x):

Headgate _____ . Wastegate _____ . Meas. Flume _____ .
Size _____ . _____ . _____ .

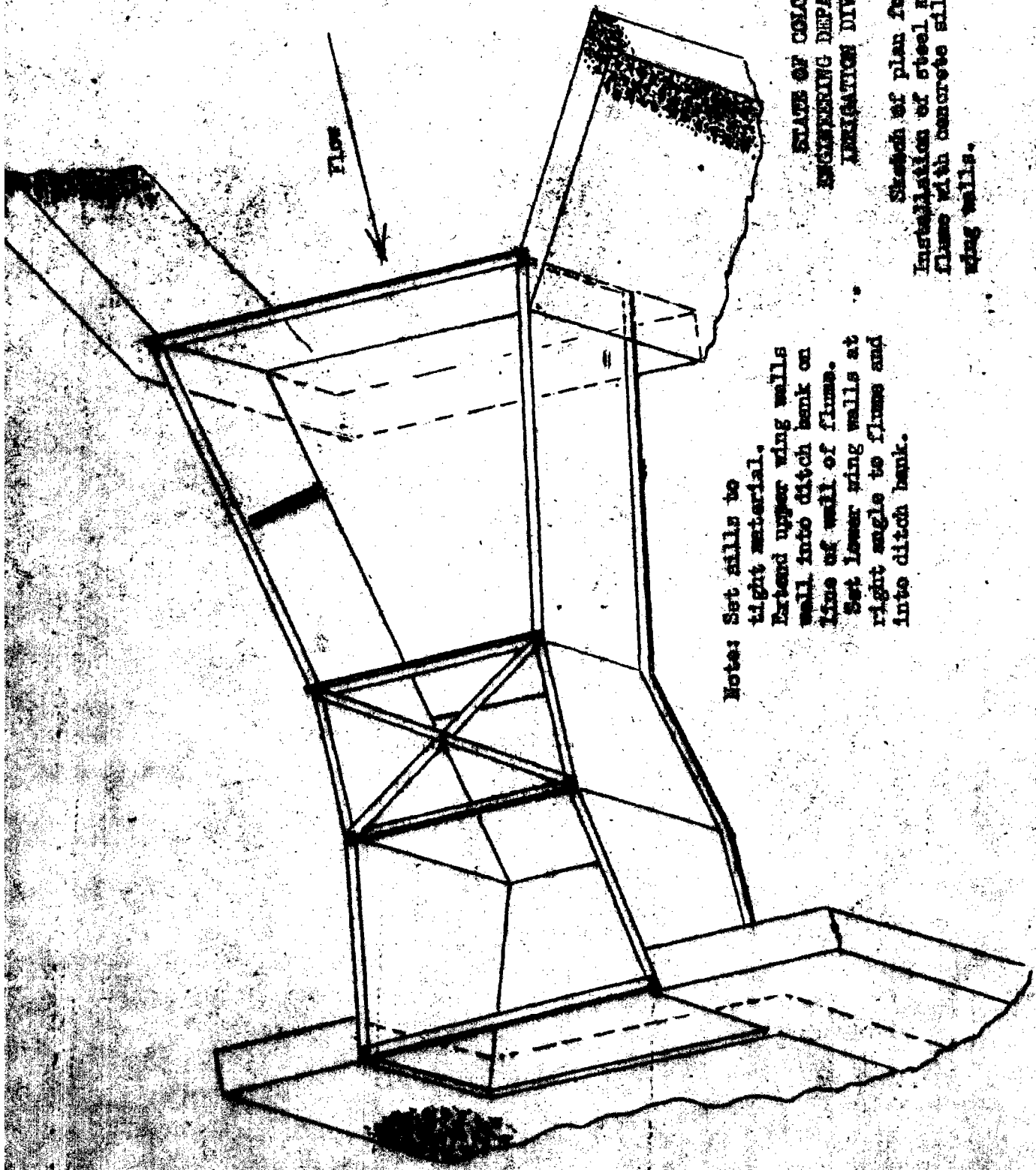
Because of the temporary nature of timber structures it is desired that steel headgates be installed in concrete structures and that Farshall Type measuring flumes of steel be installed with concrete footings and wing walls.

The Division Engineer or Water Commissioner will supervise the placing of headgates, wastegates, concrete structures and measuring flumes. Plans and specifications will be furnished by the Division Engineer.

Manufacturers of standard steel headgates and flumes are: The Thompson Pipe and Steel Company, 50th. & Larimer Sts. Denver, Colo.; The Armco Drainage & Metal Products Inc., Hardesty Division, P. O. Box 2170, Denver 1, Colo.

Very truly yours,

J. R. Williams.
Irr. Division Engineer.



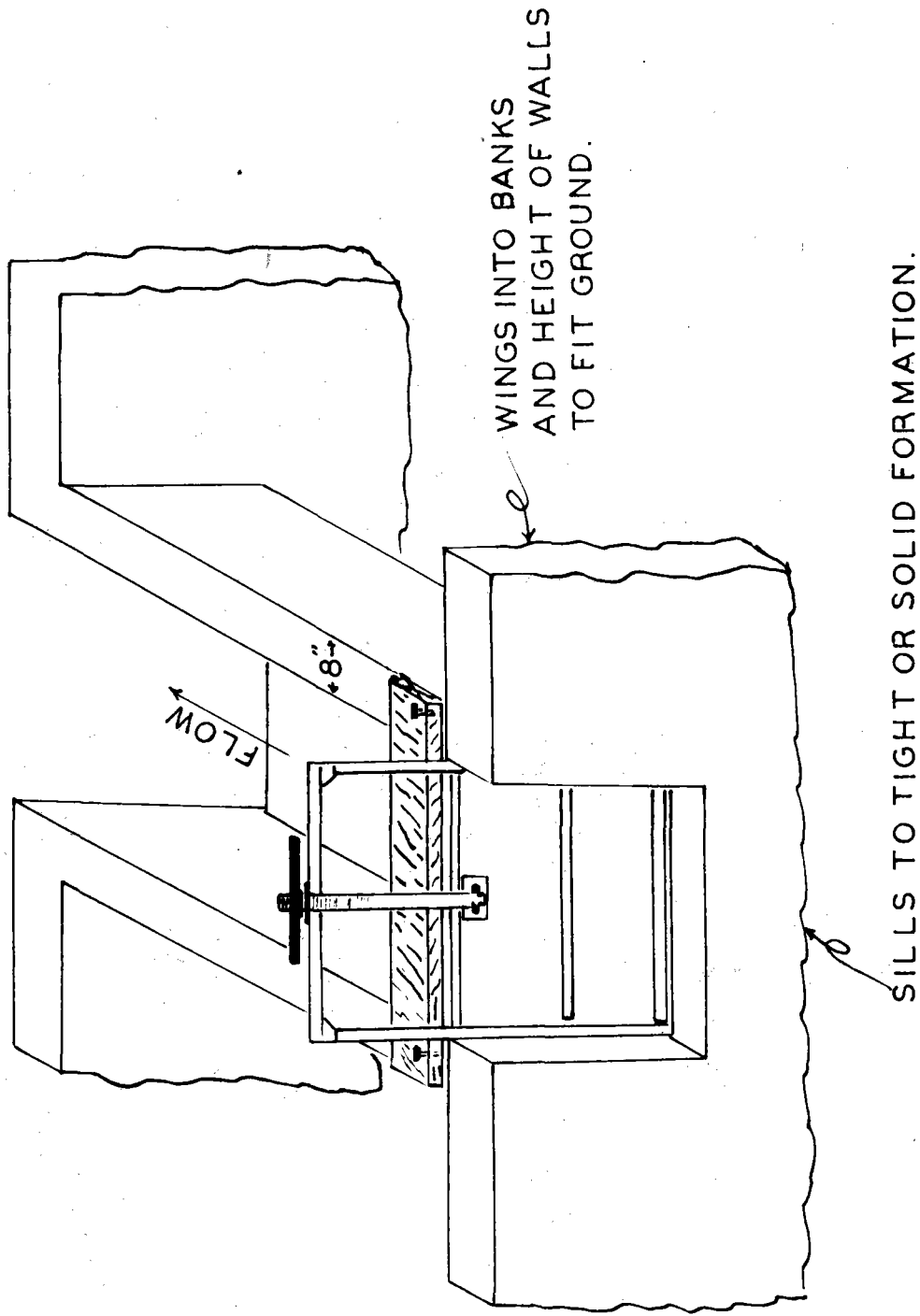
Notes: Set sills to tight material.
 Extend upper wing walls well into ditch bank on line of wall of flume.
 Set lower wing walls at right angle to flume and into ditch bank.

STATE OF COLORADO
 ENGINEERING DEPARTMENT
 INVESTIGATION DIVISION 7

Sketch of plan for the installation of steel measuring flume with concrete sills and wing walls.

Feb. 1952.

PLAN OF
STEEL HEADGATE
IN
CONCRETE BOX



57

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