SUMMARY FOR THE UNITED STATES.

INTRODUCTION.

This summary presents the statistics of irrigation collected at the census of 1920 for the 17 arid and semiarid states of the United States, comprising the states of Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington, and Wyoming and for the states of Arkansas and Louisiana, in which, together with the eastern part of Texas, irrigation is confined largely to rice growing. In the eastern states there are small areas irrigated for the growing of fruit and truck crops, but statistics for these states are not included in the general tables presented. Statistics of acreage irrigated, of acreage, yield, and value of crops grown on irrigated land, and of cost of operation and maintenance relate to the year 1919; other items relate to the year 1920. Throughout this summary figures for the census of 1910 are given for purposes of comparison; and, for the purpose of showing the historical development of irrigation, items which have been reported in censuses previous to 1910 are presented.

Statistics of number of farms irrigated and of acreage, yield, and value of crops grown on irrigated land were collected in the general census of agriculture. All other statistics were obtained in a special canvass of irrigation enterprises.

TABLE 1.—SUMMARY: 1920 AND 1910.

ITEM.	CENSUS OF—		INCREASE.[1]	
	1920	1910	Amount.	Per cent.
Number of all farms	1,916,391	1,776,046	140,345	7.9
Approximate land area of states included ... acres	1,223,989,120	1,224,063,360	[2]−74,240	([3])
All land in farms in states included ... acres	505,440,954	416,462,547	88,978,407	21.4
Improved land in farms in states included ... acres	214,689,819	186,786,227	27,903,592	14.9
Number of farms irrigated	241,941	162,723	68,818	42.3
Area irrigated ... acres	19,191,716	14,433,285	4,758,431	33.0
Area enterprises were capable of irrigating ... acres	26,020,477	20,285,403	5,735,074	28.3
Area included in enterprises ... acres	35,890,821	32,245,464	3,645,357	11.3
Per cent irrigated:				
Number of all farms	12.1	9.2	2.9	.....
Approximate land area	1.6	1.2	0.4	.....
Land in farms	3.8	3.5	0.3	.....
Improved land in farms	8.9	7.7	1.2	.....
Excess of area enterprises were capable of irrigating over area irrigated ... acres	6,828,761	5,852,118	976,643	16.7
Excess of area included in enterprises over area irrigated ... acres	16,699,105	17,812,179	−1,113,074	−6.2
Area of irrigated land reported as available for settlement ... acres	2,257,981	([4])	2,257,981	.....
Capital invested	$697,657,328	$321,454,008	$376,203,320	117.0
Average per acre enterprises were capable of irrigating	$26.81	$15.85	$10.96	69.1
Estimated final cost of existing enterprises	$819,778,005	$437,948,825	$381,829,180	87.2
Average per acre included in enterprises	$22.84	$13.58	$9.26	68.2
Average cost of operation and maintenance per acre	$2.43	[5]$1.07	$1.36	127.1
IRRIGATION WORKS.				
Number of enterprises	63,298	56,858	6,440	11.3
Number of main ditches	51,621	46,677	4,944	10.6
Length of main ditches ... miles	103,177	88,927	14,250	16.0
Capacity of main ditches ... second-feet	631,079	618,097	12,982	2.1
Number of lateral ditches	57,553	36,513	21,040	57.6
Length of lateral ditches ... miles	56,687	30,003	26,684	88.9
Number of reservoirs	7,538	6,956	582	8.4
Capacity of reservoirs ... acre-feet	21,246,436	12,602,924	8,643,512	68.6
Number of flowing wells	4,606	5,071	−465	−9.2
Capacity of flowing wells ... gallons per minute	935,057	1,345,676	−410,619	−30.5
Number of pumped wells	32,094	15,971	16,123	101.0
Capacity of pumped wells ... gallons per minute	16,396,549	7,248,699	9,147,850	126.2
Number of pumping plants	29,458	15,803	13,655	86.4
Engine capacity ... horsepower	748,971	361,480	387,491	107.2
Pump capacity ... gallons per minute	36,275,005	19,355,864	16,919,141	87.4
Average lift ... feet	41	.....	.....	.....

[1] A minus sign (−) denotes decrease.
[2] Decrease due to the building of several reservoirs in connection with irrigation projects.
[3] Less than one-tenth of 1 per cent decrease.
[4] Not reported in 1910.
[5] Does not include cost of operation and maintenance for rice growing districts in Gulf states; consequently figures for 1919 and 1909 are not comparable.

CLIMATIC CONDITIONS.

The climatic conditions having the largest influence in determining the necessity for irrigation are the amount and seasonable distribution of precipitation, particularly rainfall, while wind movement and relative humidity also have an influence.

In that part of the United States lying east of the arid and semiarid states named in the introduction to this summary the normal annual precipitation exceeds 25 inches and is so distributed throughout the year as to provide sufficient moisture for the growing of general farm crops. In this section short periods of drought occur sufficiently often to make irrigation desirable for such crops as truck and small fruits, which may be damaged to a large extent by lack of moisture for even short periods, although the irrigation of these crops is not general. Seasons with too little rainfall for the proper growth of general crops occur, but not sufficiently often to justify making provision for irrigation.

Arkansas, Louisiana, and eastern Texas have a normal annual precipitation of from 40 to 50 inches, which is ample for all crops except rice. It is necessary to keep water standing on rice fields during most of the growing period of this crop, and for this the rainfall is not sufficient. Irrigation in this section is practically confined to the rice fields.

The states of North and South Dakota, Nebraska, Kansas, Oklahoma, and western Texas lie in the so-called semiarid region, and have a normal annual precipitation varying from about 15 inches at their western boundaries to about 25 or more inches at their eastern boundaries. In this section success in growing crops without irrigation varies from year to year according to the amount and distribution of the rainfall, and the practice of irrigation advances eastward and recedes to the west with periods of deficient or excessive rainfall.

The same condition exists on the plains in the eastern parts of Montana, Wyoming, Colorado, and New Mexico. Here crops are grown on the high plains without irrigation, with varying success, while irrigation is generally practiced in the stream valleys.

The main ranges of the Rocky Mountains extend through Montana, Wyoming, Colorado, and New Mexico. On the high mountains the precipitation, particularly snowfall, is heavy, while in the valleys between the ranges the precipitation is light and irrigation is necessary for the growing of most crops.

West of the Rocky Mountains and between them and the Sierra Nevada and Cascade Mountains and extending from the Mexican boundary to central Idaho is the real arid region of the United States. Here the normal annual precipitation varies from about 2 inches in southwestern Arizona and southeastern California to about 8 inches in southern Idaho. In this section, comprising the larger parts of Arizona, Nevada, and Utah, and considerable parts of California, Oregon, Washington and Idaho, almost no crops can be grown in the valleys without irrigation. On the higher lands in Arizona, Utah, Idaho, Oregon, and Washington the precipitation is greater and grain and forage crops are grown without irrigation. Northern Idaho, northwestern Montana, and northeastern Washington receive sufficient precipitation for growing crops without irrigation.

West of the Sierra Nevada and Cascade Mountains there is a great variation in rainfall. The western coast of Washington and Oregon receives the heaviest precipitation of any part of the United States, but there is a dry period in the late summer, during which irrigation is desirable for crops which make their growth during this period. Irrigation is practiced to a limited extent for pastures, vegetables, and fruits.

Throughout California there is a well-defined wet season in the winter months, and an equally well-defined dry season in summer. Most of the northern part of the state receives sufficient rainfall to mature crops if it were distributed throughout the year, but the growing of crops in late summer requires irrigation. On the other hand, most of the southern part of the state receives less moisture than is usually considered necessary for crop growing, but the concentration of the year's precipitation in the winter and spring makes it possible to mature crops where it would not be possible were the rainfall more widely distributed throughout the year.

Climatic conditions during the year 1919 were abnormal in many places. In eastern Montana and Wyoming and western North Dakota and South Dakota, 1919 was the third year in succession in which the precipitation was below normal. The condition not only damaged crops grown without irrigation but greatly decreased the supply of water available for irrigation, and much land was not irrigated in 1919 that would have been if water had been available. On the other hand, at the southern end of the semiarid region, in Oklahoma, Texas, and New Mexico, the precipitation in 1919 was far above normal and much land that is irrigated ordinarily was not watered in 1919 because of the heavy rainfall.

In the inter-mountain region, in Arizona, Nevada, Utah, Idaho, Oregon, and Washington, the precipitation in 1919 was far below normal, and the same condition existed in the central valleys of California. It is probable that in all of the states named in this paragraph the acreage irrigated in 1919 was smaller than it would have been had water been more plentiful.

WATER SUPPLY FOR IRRIGATION.

Streams supply the water used on by far the greater part of the land irrigated in the United States, 83 per cent of the acreage receiving its entire supply from this source in 1919, and 2 per cent additional receiving part of its supply from streams. The streams in the western states have one common characteristic—they are subject to heavy floods in the spring and early summer and become very low in late summer. This condition makes it necessary to store a part of the flood flow for use in the late summer if the largest use of the water supply is to be made.

Both flowing and pumped wells supply water to considerable areas. The use of water from these sources in most sections comes only after the supply from streams is exhausted, or nearly so, and represents a later and usually more expensive stage of development than the use of stream water. Wells furnished the entire water supply for 7 per cent of the acreage irrigated in 1919, and a part of the supply to 2 per cent of this acreage. Streams and wells combined supplied 92 per cent of the total acreage irrigated in 1919. The other sources are, therefore, almost negligible.

The water supply in the several states is discussed in detail in the state bulletins.

The northern half of the Great Plains, extending from the Rocky Mountains toward Mississippi River, is drained by Missouri River and its tributaries. In most of this area some crops can be grown without irrigation, and the irrigated land is confined almost exclusively to the stream valleys. The Missouri itself is not very largely utilized, and many of its tributaries are in the same condition. Storage has been provided for only a small part of the flood flow of the main stream and its tributaries north of the Platte, and there is in these streams a large supply of water available for future development in Wyoming, Montana, and the Dakotas.

The North Platte supplies large areas in Colorado, Wyoming, and Nebraska. Its low-water flow is largely utilized and storage has been provided in the Pathfinder Reservoir in central Wyoming for a large part of the flood water of this stream, but there is a considerable supply for additional storage, which would make it possible to extend the area irrigated considerably.

The South Platte waters a large area of land in Colorado and a small area in Nebraska. Its low-water flow is fully utilized. On this stream the flood water and winter flow is stored in many small reservoirs rather than in one large reservoir. While most of the flood water is stored there is some water available for further development of the same kind on the lower part of the stream.

Water stored on the North Platte can be used on the main Platte in Nebraska and there is water from floods, winter flow, and return seepage that could be stored on the main stream if the demand for water justified the expense. Uncertainty as to the need for irrigation and as to the water supply have retarded development in this section.

The central part of the Great Plains is drained by Arkansas River and its tributaries. The Arkansas waters a large area in Colorado and a small area in Kansas. The low-water flow of the Arkansas is all used, and a large part of the flood water is stored in small reservoirs, but there is still some water available for storage on the main stream and its tributaries.

Practically all of the land used for rice-growing in Arkansas and a considerable part of that in Louisiana and Texas is watered from wells. There is nothing to indicate that the water supply is not sufficient for a large expansion of the rice-growing area, if other conditions justify it.

The rice grown along the Gulf coast in Louisiana and Texas is supplied principally by pumping from streams entering the Gulf, which are so nearly at the Gulf level that heavy pumping at times causes the salt water of the Gulf to enter the streams. The supply of fresh water is limited unless storage is provided. This has not been done. In Texas water for rice is taken from streams at higher levels, and here the supply is insufficient in some seasons. There is ample water for storage.

Streams flowing to the Gulf of Mexico supply scattered areas throughout central Texas with water, and in northern Texas wells supply a considerable area. The water supply is sufficient for a large extension of irrigation from both sources, if other conditions justify it.

The Rio Grande and its tributaries drain south central Colorado, most of central and eastern New Mexico, and the southwestern part of Texas. Large areas are irrigated in Colorado, considerable areas in New Mexico, and a large area in Texas. The Rio Grande is subject to heavy floods and at times is dry or nearly so, and storage is necessary for permanently successful irrigation. The Elephant Butte Reservoir in south central New Mexico has sufficient capacity to store the flood water and to regulate the flow of the stream below. Water from this reservoir supplies land along the stream in New Mexico, in Texas, and in Mexico. There is little opportunity to use water from the Rio Grande below the El Paso Valley in Texas, except near the mouth of the river, where a large area is irrigated. The lower part of the river receives much of its water from tributaries in Mexico below El Paso and is not dependent on storage in Elephant Butte Reservoir. Most of the water used

for irrigation in this section is pumped from the river. At times the supply is low, but there is a good supply for storage, although reservoirs have not been built. The question of providing storage on this part of the Rio Grande is complicated by the fact that the river forms the boundary between the United States and Mexico, and until some agreement is reached between the two republics for the equitable division of the water supply, the extent of safe irrigation development on either side of the river can not be determined.

The Pecos, a tributary of the Rio Grande, drains a large part of southeastern New Mexico. It is subject to heavy floods and periods of very low discharge. Storage has been provided for a part of the flood flow, but there is opportunity for additional storage. There are many flowing wells in the valley of the Pecos in New Mexico.

The Colorado River system drains all the land west of the Rio Grande drainage area to the California boundary, and extends northward to northern Wyoming. It supplies water to land in Wyoming, Colorado, Utah, New Mexico, Nevada, Arizona, and California. In the upper states the areas of tillable land in the valleys of the tributaries of the Colorado are limited and much of the low-water flow of these streams is not yet utilized, while there is very little storage. Near the mouth of the stream very large areas are irrigated in Arizona, California, and Mexico. The low-water flow reaching this portion of the river is just about sufficient for the land now irrigated. Any considerable extension of the area watered will necessitate storage. A very large volume of flood water is available for storage, and Federal and local agencies are studying the possibilities of storing these flood waters. A compact between the states interested for the control of the river has been provided for by state and Federal legislation. Gila River, which is a tributary of Colorado River, and its tributaries drain a considerable part of western New Mexico and most of southern Arizona. All of these streams are subject to heavy floods and to periods with practically no discharge; consequently storage is necessary to make them reliable sources of water for irrigation. Little storage has been provided except on Salt River, where the Roosevelt Reservoir has sufficient capacity to store the entire flow of the stream above the reservoir. Tributaries reaching the stream below the reservoir are subject to violent floods, but no storage has been provided for these floods. In the irrigated section of the Salt River Valley ground water has come near the surface, making drainage necessary. Both wells and open ditches have been installed for the purpose of lowering the ground water and supplying additional water for irrigation. There is opportunity for more work of this kind.

North and west of the Colorado River basin lies the Great Basin, which has no outlet to the sea. This basin includes small parts of Wyoming, Idaho, California, and Oregon, and most of Utah and Nevada. It really consists of several independent drainage basins, one with the Great Salt Lake as its low point, another centering in the "sinks" in western Nevada, and a third consisting of the Sevier River drainage in southwestern Utah. There are also small basins in northern California and southern Oregon.

The Great Salt Lake receives almost its entire inflow from the mountains lying to the east of its basin. Jordan River, carrying the discharge of Utah Lake, enters at the south end, Bear River enters at the north end, and between these there are several short streams entering the lake. These are typical mountain streams with large flow when the snow melts in the spring and a small flow during the summer. Water is stored in Utah Lake for use in the Jordan Valley and in Bear Lake for use in the Bear River Valley. Water stored in Strawberry Reservoir, in the Colorado River drainage basin, is brought into this basin through a tunnel discharging into Spanish Fork River, a tributary of Utah Lake. The low-water flow of all the streams in this drainage basin is used, but there is opportunity for much additional storage.

The sinks in western Nevada receive water from both east and west. Humboldt River and its tributaries drain most of the eastern slope of this basin. The Humboldt has a flood period in spring and most of the irrigation along this stream consists in damming the stream so that it will overflow natural meadows on its bottom lands during its flood. A much larger use of the stream could be made if a part of the flood water were stored for use in the late summer.

Walker, Carson, and Truckee Rivers flow into the sinks from the west. These streams rise in California in the Sierra Nevada Mountains. Carson and Walker Rivers water considerable areas in both states. Truckee River is the outlet of Lake Tahoe, which lies on the border between California and Nevada. Plans for using Lake Tahoe for a storage reservoir have been made, but litigation has prevented this use to any large extent. Water from both Truckee and Carson Rivers is stored in Lahontan Reservoir in Nevada. There is opportunity for additional storage on all these streams.

Throughout the Great Basin there are large valleys which have no surface water supply. In some of these a good supply of ground water has been found. It is probable that large areas can be supplied from wells, when this becomes economically feasible.

North of the Great Basin and extending from western Montana and Wyoming to the Pacific Ocean is the Columbia River drainage basin. The Columbia and its tributaries water large areas in Montana, Idaho, Oregon, and Washington.

Clark Fork of the Columbia and its tributaries, the Bitterroot and Flathead, water lands in western Mon-

tana. Water is stored in Flathead Lake for lands near the lake. There is opportunity for storage on the other tributaries.

Snake River rises near the headwaters of the Missouri and Colorado in northwestern Wyoming and waters land in Idaho, Oregon, and Washington. Its low-water flow is all used, and storage has been provided for much of the flood water in Jackson Lake in Wyoming and in reservoirs in Idaho. There is still a large volume of flood water available for storage and plans are being made to provide reservoirs to store this water.

The Columbia itself is not extensively used for irrigation. Throughout its course it is so far below the level of the adjoining lands that extensive gravity diversions have not been made but some water is pumped from the river. It carries large volumes of water that could be used if its use were feasible.

The tributaries of the Columbia coming from the Cascade Mountains in Washington supply water to most of the land irrigated in that state. Their low-water flow is used, and storage has been provided for a part of the flood water. There is opportunity for additional storage.

The tributaries of the Columbia in Oregon supply a large part of the irrigated land in that state. Irrigation development in this part of Oregon has not reached the stage where flood water is stored. The water supply is sufficient for the irrigation of a much larger area than is now watered.

West of the Cascade Mountains in Washington and Oregon there is an abundant supply of water and very little irrigation because of the heavy rainfall. However, there is a dry period in the late summer when some land is irrigated. The water supply is sufficient for a very large extension of the irrigated area.

In northern California the dry season in summer is more pronounced than it is in Oregon and Washington, and at that time there is little water in the streams. There is a large supply available for storage, but little storage has been provided. Sacramento River waters a large area, and the summer flow is fully utilized. The stream is subject to very heavy floods, and almost no storage has been provided. Both Federal and state agencies are working on plans for storing the flood water of the Sacramento and its tributaries.

The San Joaquin and its tributaries supply water to the larger part of the irrigated land in California. The low-water discharge of these streams is all used, but very little provision for storing flood water has been made. State and private agencies are working on plans for large storage projects, which will provide water for a large additional area. In the San Joaquin Valley irrigation has brought the ground water near the surface and a great many wells and pumps have been put in, in some instances to furnish a supplemental supply of water when the streams are low, and in others to provide the entire water supply.

The coast streams south of San Francisco Bay are torrential in character. On some of these streams reservoirs have been built to store flood waters, but on many reservoir sites do not exist and large quantities of flood water waste to the ocean. In the valleys of these streams there are many wells, both flowing and pumped, and the heavy draft on the ground water has lowered its level. In the absence of reservoir sites, the flood waters are spread over the gravelly soil where the streams emerge from the mountains in order that they may enter the soil and replenish the ground-water supply. There is a large supply of flood water in southern California for which there is a large demand. If some practicable way of conserving these flood waters can be found the irrigated area can be extended greatly.

Taking the western part of the United States as a whole, with few exceptions, the low-water flow of the streams is exhausted, but there is a very large supply of flood water available for storage. There is no lack of tillable land on which this water can be used. Future extension of irrigation depends on whether economic conditions are such that the value of the crops which can be produced will justify the expense of storing the flood waters. The same may be said of the use of ground water. The extent of the supply of ground water is not so well known as the amount of flood water, but there are many places where water can be obtained from wells when the expense of pumping is justified.

FARMS AND ACREAGE IRRIGATED.

TABLE 2.—NUMBER OF FARMS AND ACREAGE IRRIGATED: 1890 TO 1920.

CENSUS YEAR.	FARMS IRRIGATED.			AREA IRRIGATED.				
	Number.	Per cent of increase.	Per cent of all farms.	Acres.	Per cent of increase.	Per cent of total land area.	Per cent of land in farms.	Per cent of improved land in farms.
1920	[illegible]	42.2	12.1	19,191,716	33.0	1.6	3.8	8.9
1910	152,723	49.9	9.3	14,433,285	96.4	1.2	3.3	7.7
1900	115,829	110.5	6.3	7,344,497	108.4	0.7	2.2	6.2
1890	54,726	.....	3.8	3,715,758	.....	0.3	2.1	3.6

TABLE 3.—ACREAGE, CLASSIFIED BY DATE OF BEGINNING OF ENTERPRISES SUPPLYING WATER FOR IRRIGATION.

DATE OF BEGINNING.	Number of enterprises.	Area included in enterprises, 1920 (acres).	AREA IRRIGATED IN 1919.		Area enterprises were capable of irrigating in 1920 (acres).
			Acres.	Per cent of acreage in enterprises.	
Total	63,298	35,890,821	19,191,716	53.5	26,020,477
Before 1890	696	469,006	293,784	63.0	350,573
1890-1899	2,179	1,948,572	1,202,793	61.9	1,422,991
1880-1879	3,662	4,248,248	2,588,414	61.0	3,378,758
1900-1909	7,854	6,336,080	4,043,321	64.0	4,889,959
1890-1899	6,186	4,504,293	2,528,913	55.6	3,900,026
1880-1904	4,808	3,849,247	2,211,749	57.6	2,983,840
1905-1909	5,588	3,963,374	2,549,927	43.5	3,815,217
1910-1914	11,600	3,398,999	1,538,644	39.1	2,405,615
1915-1919	12,542	3,226,554	1,165,360	35.8	1,965,204
Not reported	8,191	1,539,944	972,629	63.2	1,198,112

TABLE 4.—ACREAGE, CLASSIFIED BY SOURCE OF WATER SUPPLY: 1919 AND 1909.

CLASS.	AREA IRRIGATED (ACRES).				Area enterprises were capable of irrigating in 1920 (acres).	Area included in enterprises, 1920 (acres).
	1919	1909	Increase.[1]			
			Amount.	Per cent.		
Total	19,191,716	14,433,285	4,758,431	33.0	26,020,477	35,890,821
Streams, gravity	14,327,060	12,767,351	1,559,709	12.8	19,269,130	26,040,237
Streams, pumped	1,296,519	608,639	687,851	101.3	2,118,942	2,985,498
Streams, pumped and gravity	320,563	(2)	320,563	.....	227,709	264,353
Wells, pumped	1,293,096	466,341	773,737	128.1	1,674,819	2,376,748
Wells, flowing	65,530	144,426	−78,896	−54.4	72,777	121,137
Wells, flowing and pumped	35,682	(2)	35,682	.....	42,783	84,370
Lakes, pumped	35,736	17,930	17,806	100.4	59,760	93,564
Lakes, gravity	160,646	59,631	41,015	68.8	149,377	212,160
Springs	196,008	196,183	1,825	0.9	231,793	402,539
Stored storm water	98,872	105,793	−6,919	−6.5	223,434	312,972
City water	990	(2)	990	.....	1,491	1,056
Sewage	2,578	(2)	2,578	.....	2,801	5,340
Streams, gravity, and pumped wells	344,713	(2)	344,713	.....	369,799	465,268
Streams, gravity, and flowing wells	82,965	(2)	82,965	.....	104,569	208,121
Other mixed	996,621	44,079	952,542	.....	1,398,604	2,260,950
Other and not reported	13,148	(2)	13,148	.....	13,972	17,260

[1] A minus sign (−) denotes decrease. Per cent not shown when more than 1,000.
[2] Not included in classification.

ACREAGE, BY CHARACTER OF ENTERPRISE.

The dates on which the different states enacted laws accepting the conditions of the Federal Carey Act (act of Aug. 18, 1894) and the dates on which they enacted their original irrigation district laws are given in the following table:

DATES OF ACCEPTING CAREY ACT AND OF ENACTING IRRIGATION DISTRICT LAWS.

STATE.	Date of accepting Carey Act.	Date of original irrigation district laws.	STATE.	Date of accepting Carey Act.	Date of original irrigation district laws.
Arizona	1912	1912	New Mexico	1909	1907
Arkansas	(1)	(2)	North Dakota	(1)	1917
California	1915	1887	Oklahoma	(1)	1915
Colorado	1895	1905	Oregon	1901	1895
Idaho	1895	1895	South Dakota	1909	1917
Kansas	(1)	1891	Texas	(1)	1905
Louisiana	(1)	(2)	Utah	1897	1865
Montana	1895	1907	Washington	1895	1890
Nebraska	(1)	1895	Wyoming	1895	1909
Nevada	1895	1891			

[1] Carey Act does not apply.
[2] Has no district law.
[3] Has not accepted Carey Act.

The United States Reclamation Act (act of June 17, 1902) applies to all of the states included in the irrigation census except Arkansas and Louisiana, and this service supplies water to some land in all of the states to which it applies except Kansas and Oklahoma. One small project was established in Kansas but it has been disposed of. No project has been undertaken in Oklahoma.

TABLE 5.—ACREAGE, CLASSIFIED BY CHARACTER OF ENTERPRISE: 1920 AND 1910.

ITEM AND CLASS.	CENSUS OF—		INCREASE.[1]	
	1920	1910	Amount.	Per cent.
ACREAGE IRRIGATED.				
Total	19,191,716	14,433,285	4,758,431	33.0
Individual and partnership	6,848,807	6,594,614	254,193	3.9
Cooperative	5,581,400	4,643,539	1,937,861	41.7
Irrigation district	1,822,887	528,642	1,294,245	244.8
Carey Act	523,929	288,553	235,376	81.6
Commercial	1,822,001	1,809,379	12,622	0.7
U. S. Reclamation Service	1,254,569	395,646	858,923	217.1
U. S. Indian Service	284,551	172,912	111,639	64.6
State	5,620	(2)	5,620	.....
City	40,146	(2)	40,146	.....
Other and mixed	7,236	(2)	7,236	.....
Not reported	570	(2)	570	.....
ACREAGE ENTERPRISES WERE CAPABLE OF IRRIGATING.				
Total	26,020,477	20,285,403	5,735,074	28.3
Individual and partnership	9,255,756	8,086,766	1,168,990	14.5
Cooperative	8,403,298	6,191,577	2,211,721	35.7
Irrigation district	2,831,425	800,451	1,730,974	216.2
Carey Act	804,298	1,089,677	−285,379	−26.2
Commercial	2,799,553	2,964,166	−154,603	−5.2
U. S. Reclamation Service	1,680,643	786,190	894,453	113.8
U. S. Indian Service	484,486	376,576	107,910	28.7
State	7,379	(2)	7,379	.....
City	44,458	(2)	44,458	.....
Other and mixed	8,546	(2)	8,546	.....
Not reported	625	(2)	625	.....
ACREAGE INCLUDED IN ENTERPRISES.				
Total	35,890,821	32,245,464	3,645,357	11.3
Individual and partnership	13,008,415	10,621,067	2,387,348	22.5
Cooperative	10,628,543	8,830,197	1,798,346	20.4
Irrigation district	3,432,109	1,581,465	1,850,644	117.0
Carey Act	1,188,937	2,573,874	−1,384,937	−53.8
Commercial	3,999,581	5,786,777	−1,787,196	−30.9
U. S. Reclamation Service	2,627,176	1,973,016	654,160	33.2
U. S. Indian Service	932,985	879,068	53,917	6.1
State	9,581	(2)	9,581	.....
City	49,650	(2)	49,650	.....
Other and mixed	13,144	(2)	13,144	.....
Not reported	700	(2)	700	.....

[1] A minus sign (−) denotes decrease.
[2] Not included in classification in 1910.

In addition to supplying water to land within its own projects the Reclamation Service, under the Warren Act (act of Feb. 21, 1911), furnishes, in most cases, stored water in bulk to supplement the supply of private systems otherwise dependent on unregulated stream flow. The area receiving such supplemental supply from the Reclamation Service varies from time to time, and was somewhat in excess of 900,000 acres in 1919. This area is not included in that credited to the Reclamation Service in any of the tables in this summary.

ACREAGE, BY CHARACTER OF WATER RIGHTS.

In the United States all laws relating to the character of rights and to the use of water are enacted by the several states. In 1866 Congress passed an act providing that rights "recognized and acknowledged by local customs, laws, and the decisions of courts" shall be maintained and protected (R. S., sec. 2339), and the United States Reclamation Act (act of June 17, 1902) recognizes state control over water. The Supreme Court of the United States also has upheld the exclusive right of the states to control the waters within their boundaries, subject only to the right of Congress to preserve and improve navigation. (Kansas *v.* Colorado, 206 U. S. 46).

Every one of the states in which irrigation is generally practiced, except Arkansas and Louisiana, where irrigation is limited almost exclusively to rice growing, has assumed some measure of public control over irrigation and rights to water. In Table 6 the acreage irrigated is classified with reference to the degree to which rights under which water is received are defined and controlled by public authority, and the nature of the control exercised.

TABLE 6.—ACREAGE IRRIGATED, CLASSIFIED BY CHARACTER OF RIGHTS UNDER WHICH WATER IS RECEIVED: 1919 AND 1909.

CLASS.	1919		1909 [1]
	Acres.	Per cent of total.	Per cent of total.
Total	19,191,716	100.0	100.0
Appropriation and use	2,521,682	13.1	34.0
Notice filed and posted	2,765,636	14.4	16.2
Adjudicated by court	7,159,954	37.3	35.3
Permit from state	1,960,924	10.2	6.7
Certificate or license from state	1,288,124	6.7	5.7
Riparian rights	370,896	1.9	2.1
Underground	1,067,606	5.6	.....
Other and mixed	494,564	2.6	.....
Not reported	[2] 1,562,330	8.1	.....

[1] Acreage irrigated for rice growing in Louisiana, Arkansas, and Texas not included.
[2] Acreage for Arkansas and Louisiana included.

The laws of the states relating to water rights are summarized in the following paragraphs. The areas served under rights of the different kinds for the United States as a whole are given in Table 6, and for the several states on page 36.

Appropriation and use.—In every one of the arid states the laws recognize the right of persons needing water for irrigation or other beneficial purposes to "appropriate" water from streams and other sources. This right is limited in various ways, and all of the states prescribe some procedure which shall be followed by those appropriating water. However, all of these states have in the past recognized rights acquired by merely taking and using water, in the absence of laws, or without conforming to the laws, when there are such. All rights acquired in this way that have not been passed upon by the courts or by some official body to which has been given the right to adjudicate water rights, are reported in this class in Table 6.

Notice filed and posted.—The first step in the public regulation of the appropriation of water was the enacting of laws requiring those intending to take water from streams or other sources to post notices at the points of intended diversion and to file copies of these notices with some public official, usually the county clerk or county recorder. In some cases notices were filed only. The names of the states in which such laws were enacted with the dates of enactment and the dates at which they were superseded by other laws are shown in the following table. The practice of posting and filing notices was so general that many notices were filed in states where there was no legislation on the subject.

DATES OF LAWS REQUIRING POSTING OR FILING OF NOTICES OF APPROPRIATION.

STATE.	Date of enactment of law.	Date when law was superseded.	STATE.	Date of enactment of law.	Date when law was superseded.
Arizona	1871	1919	New Mexico	1891	1907
California	1872	1913	North Dakota	[2] 1881	1905
Colorado	1881	(1)	Oklahoma	1897	1905
Idaho	1881	1903	South Dakota	[2] 1881	1905
Kansas	1886	(1)	Texas	1895	1913
Montana	1885	(1)	Utah	1897	1903
Nebraska	1889	1895	Washington	1889	1917
Nevada	1889	1893	Wyoming	1886	1890

[1] Still in force. [2] Territory of Dakota.

Defining of rights.—The fact that many rights to water have been acquired without public supervision and consequently are not defined as to date or extent when they are acquired has created the necessity for the defining of such rights by some public authority. Originally rights were defined in ordinary suits between water users whose claims conflicted, but this led to such a multiplicity of suits that most of the states in which irrigation is generally practiced have enacted laws providing either some special procedure in the courts for the adjudication of rights or for adjudication by some board or official, or for a combination of the two systems in which testimony is taken, surveys

are made, and decrees are prepared by boards or officials, but the decrees are issued by the courts. In all of the states, rights were defined by the courts before any other system was adopted, and some of the states have changed their systems more than once.

The laws of the various states and the periods during which they were in force are shown in the following table:

METHODS OF DEFINING RIGHTS TO WATER AND PERIODS OF TIME DURING WHICH THEY HAVE BEEN IN FORCE.

STATE.	Defined by courts without the aid of state officials or boards.	Defined by courts on basis of information collected by state officials or boards.	Defined by state boards or officials.
Arizona	Until 1919.	1919 to date.	
Arkansas	To date.		
California	Until 1913.	1913 to date.	
Colorado	To date.		
Idaho	To date. [1]		
Kansas	To date.		
Louisiana	To date.		
Montana	To date.		
Nebraska	Until 1895.		1895 to date.
Nevada	Until 1903.	1913 to date.	1903–1913.
New Mexico	Until 1907.	1907 to date.	
North Dakota	Until 1905.	1905 to date.	
Oklahoma	Until 1905.	1905 to date.	
Oregon	Until 1909.	1909 to date.	
South Dakota	To date. [1]		
Texas	Until 1917.	1917 to date.	
Utah	Until 1903.	1903 to date.	
Washington	Until 1917.	1917 to date.	
Wyoming	Until 1890.		1890 to date.

[1] Law providing otherwise declared unconstitutional.

Permits, certificates, and licenses from state.—The names of the states requiring a party wishing to acquire rights to water to apply to some state board or official for a permit and providing for the issuing of a certificate or license setting forth the rights acquired, with the dates of the laws, are given in the following table:

STATE.	Date of law.	STATE.	Date of law.
Arizona	1919	Oklahoma	1905
California	1913	Oregon	1909
Idaho	1903	South Dakota	1905
Nebraska	1895	Texas	1913
Nevada	1903	Utah	1903
New Mexico	1907	Washington	1917
North Dakota	1905	Wyoming	1890

Riparian rights.—The states that recognize riparian rights to some extent are as follows: California, Kansas, Montana, Oregon, South Dakota, Texas, and Washington.

ACREAGE, BY DRAINAGE BASIN.

The report of a special census taken in 1902 presented all data by drainage basins rather than by counties. The results of the census of 1920 have been tabulated on the same basis, and the data for 1902 are presented for purposes of comparison. For no other census have the results been tabulated in this form. The acreage reported for each drainage basin in 1919 comprises all the irrigated land in that drainage basin, including that watered from springs and wells. In the 1902 results the acreages irrigated from springs and wells were not reported for the smaller tributary streams, but the acreages for the tributaries were included in those reported for the main streams. This area is so small, however, that the comparison of the areas reported for the tributary streams is not seriously affected.

TABLE 7.—ACREAGE IRRIGATED, CLASSIFIED BY DRAINAGE BASIN: 1919 AND 1902.

DRAINAGE BASIN.	AREA IRRIGATED (ACRES). 1919	1902	Per cent of increase.[1]	Area included in enterprises, 1920 (acres).	Area enterprises were capable of irrigating in 1920 (acres).
Total	19,249,726	8,874,408	116.3	25,890,921	26,020,477
Missouri River and tributaries	4,147,278	2,563,297	61.7	5,492,171	5,805,630
Missouri River direct	27,797	20,554	35.0	92,270	62,549
Jefferson River and tributaries	435,665	235,788	85.7	631,895	574,672
Jefferson River direct	21,275	15,751	35.2	46,527	34,894
Beaverhead River	145,972	99,014	47.1	226,979	199,797
Big Hole River	184,653	67,422	175.9	308,885	227,909
Boulder River	7,365	9,553	−22.9	46,677	13,297
Pennsauer River	34,474	21,161	62.4	76,127	48,630
Other tributaries of Jefferson River	32,942	[2] 19,197	68.5	71,802	50,726
Madison River	34,425	20,358	69.2	88,524	69,195
Gallatin River	95,083	58,598	62.3	235,424	152,515
Smith River	16,861	18,577	−9.7	26,360	20,691
Sun River	31,783	32,427	−2.0	244,071	85,522
Teton River	44,945	34,981	28.6	146,498	92,241
Marias River	63,724	22,158	187.4	306,158	122,481
Judith River	13,173	44,672	−68.0	49,992	35,480
Musselshell River	43,539	67,233	−47.8	141,362	112,964
Milk River and tributaries	108,555	56,797	91.1	249,716	179,063
Milk River direct	19,769	24,365	−18.7	26,338	23,447
Sage Creek		4,947		2,850	1,730
Snake River	919	2,135	−57.4	2,189	2,275
Other tributaries of Milk River	87,872	[2] 25,210	248.6	217,378	151,535
Missouri River and tributaries—Continued.					
Yellowstone River and tributaries	869,025	427,539	107.9	1,826,870	1,322,304
Yellowstone River direct	189,453	40,015	373.5	279,211	262,801
Clark Fork and tributaries	77,736	69,195	12.3	141,007	130,627
Clark Fork direct	72,525	67,488	7.5	130,736	121,818
Tributaries of Clark Fork	5,211	1,707	205.3	10,271	8,809
Shields River	25,940	19,836	30.8	94,238	53,062
Stillwater River	35,561	13,872	73.6	34,278	29,664
Big Horn River and tributaries	358,949	115,520	210.7	842,297	534,404
Big Horn River direct	93,902	4,147		162,331	123,151
Popo Agie River	22,073	14,340	53.9	34,723	34,375
Wind River	43,030	3,787		228,338	77,122
Poison Creek	5	2,690	−99.8	10	10
Owl Creek	11,610	6,558	77.0	14,546	12,951
No Wood River	18,416	10,099	82.4	26,193	22,080
Greybull River	49,231	35,552	38.5	93,543	79,134
Shell Creek	11,935	4,319	176.8	24,005	22,406
Shoshone River	98,091	26,311	261.4	217,998	134,431
Little Horn River	1,408	4,751	−70.4	11,353	4,340
Other tributaries of Big Horn River	11,638	2,956	293.7	29,257	24,404
Rosebud River	365	13,618	−97.3	1,365	1,305
Tongue River and tributaries	54,195	48,245	12.3	100,563	80,693

[1] A minus sign (−) denotes decrease. Per cent not shown when more than 1,000.

[2] Includes springs and wells.

TABLE 7.—ACREAGE IRRIGATED, CLASSIFIED BY DRAINAGE BASIN: 1919 AND 1902—Continued.

DRAINAGE BASIN.	AREA IRRIGATED (ACRES). 1919	1902	Per cent of increase.[1]	Area included in enterprises, 1920 (acres).	Area enterprises were capable of irrigating in 1920 (acres).
Missouri River, etc.—Con.					
Yellowstone River, etc.—Con.					
Tongue River—Con.					
Tongue River direct	20,975	19,907	5.4	43,075	32,174
Goose Creek	27,627	20,653	33.8	43,817	37,749
Other tributaries of Tongue River	5,593	7,685	−27.2	13,671	10,770
Powder River and tributaries	89,631	66,747	34.3	138,856	117,181
Powder River direct	3,193	2,390	33.6	10,846	9,802
Red Fork Creek	3,341	2,610	28.0	4,271	3,385
Crazy Woman Creek	21,965	6,950	216.0	29,684	24,151
Clear Creek	50,648	47,801	6.0	71,560	63,735
Other tributaries of Powder River	10,484	6,996	49.9	22,495	16,107
Other tributaries of Yellowstone River	69,195	[2] 40,811	69.5	125,055	112,567
Little Missouri River	1,080	3,730	−71.0	7,398	4,863
Moreau River	305	335	−9.0	3,094	1,721
Cheyenne River and tributaries	110,143	66,487	65.7	197,288	159,083
Cheyenne River direct	99,383	49,547	100.5	176,715	143,847
North Fork (Belle Fourche)	1,966	6,173	−68.2	5,054	3,621
South Fork and tributaries	8,844	10,555	−16.2	15,519	11,615
South Fork direct	5,906	7,906	−25.3	11,764	7,910
Hat Creek	2,938	2,649	10.9	3,755	3,705
Other tributaries of Cheyenne River	.....	212	.....	.....	.....
White River	8,008	9,706	−17.5	21,922	16,939
Niobrara River	6,138	8,185	−25.0	28,956	10,265
Platte River and tributaries	2,136,402	1,286,343	66.1	3,431,037	2,579,720
Platte River direct	37,532	30,887	21.6	151,377	68,732
North Platte River and tributaries	872,140	[3] 548,781	58.9	1,603,805	1,172,858
North Platte River direct	351,050	170,470	105.9	579,728	429,252
Beaver Creek	2,621	7,370	−64.4	3,666	3,186
Grand Encampment Creek	7,053	6,622	6.5	10,173	7,293
Spring Creek	13,123	7,679	70.9	18,792	13,177
Sage Creek	375	1,634	−77.1	570	570
Pass Creek	8,557	8,390	2.0	12,500	11,373
Medicine Bow River	54,500	40,661	34.0	139,599	67,103
Sweetwater River	5,448	11,403	−52.2	14,166	10,593
Muddy Creek	657	1,525	−56.9	1,112	677
Box Elder Creek	4,648	4,740	−1.9	7,916	7,696
La Prele Creek	9,103	4,524	101.2	21,697	15,690
Laramie River and tributaries	156,159	138,176	13.0	373,353	298,153
Laramie River direct	78,560	57,335	37.0	177,979	129,116
Little Laramie River	30,860	53,105	−41.9	42,852	33,144
Sybille Creek	6,183	7,234	−14.5	9,519	8,044
North Laramie River	6,858	5,721	19.9	20,144	11,749
Chugwater Creek	5,914	3,907	51.4	9,853	9,258
Other tributaries of Laramie River	27,784	10,874	155.5	113,006	106,842
Rawhide Creek	2,045	4,187	−51.2	3,651	2,481
Horse Creek	28,389	15,524	82.7	71,188	39,702
Blue River	7,376	4,929	49.6	7,391	7,391
Pumpkin Creek	7,273	2,314	214.3	10,554	9,168
Other tributaries of North Platte River	209,407	49,250	325.2	320,814	238,697
South Platte River and tributaries	1,224,974	691,342	77.2	1,671,199	1,335,109
South Platte River direct	362,191	229,388	57.9	519,835	398,310
Bear Creek	8,778	11,174	−21.4	12,093	10,373
Clear Creek	79,172	76,259	3.8	84,450	79,940
St. Vrain Creek	244,831	96,583	153.5	281,467	265,731
Big Thompson Creek	96,678	68,806	40.5	105,673	98,711
Cache la Poudre River	267,197	146,280	82.7	291,702	282,307
Lone Tree Creek	4,928	1,444	241.3	134,806	7,327
Crow Creek	4,525	3,643	24.2	13,040	7,117
Big Beaver Creek	6,429	17,100	−62.4	11,825	10,699
Lodgepole Creek	20,004	12,306	62.6	33,823	25,646
Other tributaries of South Platte River	130,241	28,359	359.3	193,085	148,948
Loup River	1,177	12,872	−90.9	4,512	2,377
Other tributaries of Platte River	579	2,461	−76.5	644	644
Kansas River and tributaries	34,672	22,344	55.2	53,644	44,402
Republican River	34,360	21,022	63.4	52,080	43,022
Smoky Hill River	278	770	−63.9	1,450	1,266
Big Blue River	19	(4)	.....	44	44
Other tributaries of Kansas River	15	552	−97.3	70	70
Other tributaries of Missouri River	51,989	80,329	−35.3	403,076	156,151

DRAINAGE BASIN.	AREA IRRIGATED (ACRES). 1919	1902	Per cent of increase.[1]	Area included in enterprises, 1920 (acres).	Area enterprises were capable of irrigating in 1920 (acres).
Mississippi River and tributaries exclusive of Missouri River	958,493	393,687	143.5	1,543,064	1,152,261
Mississippi River direct	17,416	.....	.....	24,070	23,755
Arkansas River and tributaries	851,150	393,065	116.5	1,344,646	1,022,921
Arkansas River direct	514,702	234,594	119.4	622,499	553,690
South Fork	10,491	5,422	93.8	12,374	10,430
Fountain River	29,465	13,870	47.5	39,224	24,964
St. Charles River	11,855	3,432	245.4	22,310	13,791
Huerfano River	55,528	14,078	294.4	103,554	64,474
Apishapa River	8,292	4,089	102.8	65,615	11,430
Purgatoire or Las Animas River and tributaries	43,922	20,363	115.4	52,083	47,870
Purgatoire or Las Animas River direct	42,533	19,702	121.0	51,172	47,402
Trinchera River	389	691	−43.7	911	468
Canadian River and tributaries	90,876	57,412	58.3	186,804	137,882
Canadian River direct	2,371	2,365	0.3	2,022	2,615
Cimarron River	31,967	8,122	293.6	76,318	45,628
Vermejo River	23,678	4,110	476.1	23,978	23,878
Ocate Creek	4,861	1,360	222.2	13,908	13,095
Mora River	17,057	32,796	−48.0	36,670	29,528
Ute Creek	77	4,061	−98.1	709	519
Other tributaries of Canadian River	10,865	[2] 4,578	137.3	32,199	22,619
Cimarron River	8,345	[2] 10,427	−20.0	25,312	21,472
Other tributaries of Arkansas River	86,764	[2] 29,368	195.4	213,961	123,918
St. Francis River	4,965	(4)	.....	14,198	5,920
White River	74,918	(4)	.....	131,346	95,709
Ouachita River	42	(4)	.....	149	105
Red River and tributaries	7,149	282	.....	23,306	13,378
Other tributaries of Mississippi River	2,853	[2] 320	791.6	5,358	3,473
Gulf streams other than Mississippi River and Rio Grande	698,077	21,833	.....	1,603,169	1,157,529
Atchafalaya River and tributaries	23,342	(4)	.....	31,920	30,885
Vermilion River and tributaries	74,024	(4)	.....	138,066	126,649
Mermentau River and tributaries	268,840	(4)	.....	458,463	352,755
Calcasieu Lake, River and tributaries	54,318	(4)	.....	169,193	137,178
Sabine River and tributaries	25,857	(4)	.....	45,318	41,358
Neches River	64,900	(4)	.....	149,900	82,000
Trinity River	42,770	(4)	.....	96,220	52,720
Brazos River	7,535	448	.....	22,896	19,560
Colorado River	71,278	10,492	585.2	277,268	125,066
San Antonio River	13,179	2,955	346.0	61,789	60,177
Nueces River	13,753	2,653	416.4	59,006	31,977
Other Gulf streams	38,271	[2] 5,365	613.3	101,130	66,604
Rio Grande and tributaries	1,293,863	496,587	160.6	2,594,127	1,887,433
Rio Grande direct	684,718	246,106	178.2	1,336,144	1,099,355
Sagauche River	35,032	11,730	224.2	41,447	39,363
San Luis River	51,329	3,679	.....	175,871	68,309
Alamosa River	35,601	15,753	126.0	72,528	40,551
La Jara River	10,627	(4)	.....	15,424	12,005
Conejos River	88,676	44,035	101.4	115,887	95,680
Trinchera River	12,485	3,768	231.3	59,699	19,319
Rio Costilla River	4,417	2,115	108.8	7,355	4,803
Pueblo River	11,780	7,075	66.5	12,443	11,791
Rio Chama	26,166	8,549	206.1	42,235	30,237
Rio Santa Cruz	9,171	3,086	197.2	9,863	9,221
Tesuque Creek	3,012	4,744	−36.5	3,411	3,183
Rio Puerco	14,309	2,927	388.9	42,877	25,991
Pecos River and tributaries	176,458	78,855	123.8	397,443	281,150
Pecos River direct	119,848	34,691	245.5	274,243	198,286
Gallinas River	4,097	6,281	−34.8	41,810	24,201
Hondo River	26,561	24,698	−16.4	33,118	23,525
Penasco River	13,375	5,102	162.2	19,889	13,733
Other tributaries of Pecos River	18,577	[2] 8,173	127.3	28,383	21,405
Los Moras Creek	1,469	680	116.0	1,534	1,519
Other tributaries of Rio Grande	125,613	[2] 63,485	97.9	209,936	144,946
Independent streams in Rio Grande drainage basin	18,992	8,355	127.3	34,026	26,852
Rio Mimbres	12,587	[2] 6,546	91.8	24,243	19,554
Fresno River	1,798	200	799.0	3,508	2,231
Rio Tularosa	4,547	1,568	190.0	6,096	4,577
Other independent streams	90	[2] 41	.....	90	90

[1] A minus sign (−) denotes decrease. Per cent not shown when more than 1,000.
[2] Includes springs and wells.
[3] Includes 65,744 acres in Colorado for which main stream was not reported.
[4] Not reported separately in 1902.

TABLE 7.—ACREAGE IRRIGATED, CLASSIFIED BY DRAINAGE BASIN: 1919 AND 1902—Continued.

DRAINAGE BASIN	AREA IRRIGATED (ACRES). 1919	1902	Per cent of increase.[1]	Area included in enterprises, 1920 (acres).	Area enterprises were capable of irrigating in 1920 (acres).
Colorado River and tributaries	3,312,647	327,193	148.4	4,064,492	2,966,937
Colorado River direct	495,719	18,711	.....	728,728	571,506
Green River and tributaries	386,387	364,951	159.9	1,148,621	855,264
Green River direct	22,926	12,723	79.4	28,120	21,072
New Fork	27,743	10,973	152.8	53,918	43,614
Horse Creek	15,520	6,569	136.3	21,679	17,453
Cottonwood Creek	17,437	4,673	273.1	22,317	29,283
South Piney Creek	11,028	18,179	−26.3	30,234	26,937
La Barge Creek	8,439	5,055	8.0	11,730	7,725
Fontenelle Creek	4,428	3,241	35.6	5,538	5,013
Ritter Creek	2,396	1,405	70.5	12,495	11,447
Blacks Creek	63,040	28,139	124.5	175,979	134,305
Henrys Fork	8,298	6,843	21.8	23,940	23,694
Ashley Fork River	26,757	15,534	69.2	44,087	44,087
Duchesne River	138,449	(2)	.....	322,589	217,809
Price River	23,811	6,621	259.6	37,131	24,848
San Rafael River	77,290	21,548	258.7	85,628	80,628
Yampa River and tributaries	81,061	[3] 76,472	6.0	142,638	102,861
Yampa River direct	18,629	(2)	.....	28,221	18,832
Little Snake River	29,080	17,963	32.9	34,280	28,807
Other tributaries of Yampa River	49,352	(2)	.....	80,135	55,222
White River	20,625	22,752	12.6	40,441	29,238
Other tributaries of Green River	20,759	[4] 10,804	92.2	60,936	54,379
Grand River and tributaries	595,641	304,471	95.4	1,096,252	722,134
Grand River direct	81,698	41,721	95.8	159,037	119,778
Fraser River	9,331	2,676	248.7	27,910	10,735
Muddy Creek	3,800	4,195	22.6	7,253	5,975
Blue River	10,341	2,794	277.3	16,297	11,771
Eagle River	13,113	10,854	20.1	28,453	13,586
Roaring Fork	33,738	21,950	48.6	47,305	34,104
Plateau Creek	39,268	13,390	96.3	40,757	25,616
Gunnison River and tributaries	250,913	150,254	67.0	499,994	329,756
Gunnison River direct	19,813	9,160	88.8	21,449	19,909
Taylor River	3,600	12,018	−95.5	639	620
Tomichi Creek	21,732	10,152	114.2	39,298	23,068
North Fork	21,005	17,174	60.5	57,189	33,591
South Fork River	15,314	5,984	157.2	31,340	23,600
Uncompahgre River	80,119	56,399	32.7	139,756	137,756
Other tributaries of Gunnison River	79,349	39,367	100.6	129,082	88,912
Rio Dolores	74,918	21,560	247.5	196,611	84,973
Other tributaries of Grand River	93,476	38,009	158.8	158,611	114,880
Fremont River	26,363	15,701	68.9	42,905	34,005
Virgin River	33,250	15,031	120.9	100,212	65,558
San Juan River and tributaries	149,607	58,224	154.6	251,198	167,488
San Juan River direct	21,031	8,232	173.8	51,021	28,443
Mancos River	9,040	5,115	78.7	18,149	9,494
Los Pinos River	30,022	6,589	355.4	55,290	42,003
Animas River	41,174	17,391	136.8	73,423	47,974
La Plata River	19,604	9,977	130.6	29,018	22,795
Other tributaries of San Juan River	14,236	7,916	81.1	23,101	15,779
Kanab Wash	450	200	−35.7	730	610
William River	1,632	1,256	31.6	2,232	1,899
Little Colorado River and tributaries	17,028	11,855	43.7	35,458	21,880
Little Colorado River direct	10,260	7,270	41.1	20,821	14,131
Nutrioso Creek	630	320	96.8	1,224	952
Concho Creek	244	163	49.7	300	250
Other tributaries of Little Colorado River	5,896	4,102	43.7	12,613	6,547
Gila River and tributaries	401,400	233,113	72.2	658,416	544,014
Gila River direct	82,408	60,020	37.6	210,531	171,229
San Francisco River	3,501	4,967	−28.8	11,134	3,459
San Pedro River	7,773	10,912	−28.8	18,950	10,861
Santa Cruz River	33,612	10,806	211.1	79,647	45,115
Salt River and tributaries	247,260	140,642	75.8	277,034	288,644
Salt River direct	253,825	135,007	88.0	283,993	293,308
Tonto Creek	302	1,329	−72.6	2,028	720
Rio Verde	6,344	11,302	−42.9	9,978	7,470
Other tributaries of Salt River	4,302	2,304	89.6	10,125	7,149
Agua Fria River	18,824	984	.....	38,600	35,000
Hassayampa River	955	1,091	−12.4	3,057	1,773
Other tributaries of Gila River	6,371	3,451	90.4	21,785	9,533
Other tributaries of Colorado River	11,900	13,545	−22.4	29,942	12,409
Whitewater, Draw and tributaries	3,871	394	.....	18,625	9,950

DRAINAGE BASIN	AREA IRRIGATED (ACRES). 1919	1902	Per cent of increase.[1]	Area included in enterprises, 1920 (acres).	Area enterprises were capable of irrigating in 1920 (acres).
Great Basin Drainage	2,313,153	1,639,473	41.1	4,238,028	2,860,858
Tributaries of Great Salt Lake	848,639	534,881	58.7	1,219,721	989,919
Bear River and tributaries	480,452	274,071	75.3	685,746	517,673
Bear River direct	249,100	89,632	177.9	360,256	290,577
Little Bear River	46,541	38,592	20.6	48,358	46,890
Malad River	1,189	(2)	.....	1,935	1,189
Thomas Fork	8,905	6,116	45.6	8,929	8,905
Mill Creek	2,973	6,561	−54.7	10,028	5,238
Little Malad Creek	16,679	9,024	84.8	43,404	17,128
Other tributaries of Bear River	155,065	124,146	24.9	212,836	177,746
Weber River and tributaries	97,589	80,355	21.4	149,081	112,981
Weber River direct	44,726	41,967	6.6	83,796	49,341
Ogden River	21,884	22,373	−2.2	27,097	26,852
East Canyon Creek	6,202	4,414	40.5	6,538	6,468
Other tributaries of Weber River	24,777	11,601	113.6	31,650	30,320
Jordan River and tributaries and Utah Lake	270,598	180,435	50.0	414,894	329,265
Jordan River direct	48,052	32,401	48.3	90,495	55,720
Spanish Fork River	61,434	23,778	158.4	96,176	83,142
Hobble Creek	5,620	18,424	−69.5	6,589	5,446
Provo River	54,782	36,939	48.3	62,703	56,672
American Fork River	19,146	20,446	−6.4	20,371	20,241
Little Cottonwood Creek	12,144	7,673	58.3	16,698	16,691
Big Cottonwood Creek	10,991	8,813	24.7	13,207	12,271
Other tributaries of Jordan River	58,429	[4] 31,961	82.8	108,655	78,582
Independent streams	1,464,524	1,104,612	32.6	2,988,307	1,879,939
Sevier River and tributaries	325,718	131,048	148.5	630,484	402,387
Sevier River direct	153,651	59,257	159.3	351,553	226,199
San Pitch River	77,616	42,502	82.6	105,519	78,348
Otter Creek	7,289	5,260	38.6	7,845	7,289
South Fork	18,325	3,495	424.3	32,620	19,170
Other tributaries of Sevier River	68,837	20,534	235.2	132,947	71,381
Beaver River	28,732	15,599	84.2	53,729	46,469
Coal Creek	27,206	2,845	856.3	60,891	33,893
Deep Creek (Utah)	1,983	1,515	30.9	4,326	3,446
Grouse Creek	3,469	990	250.4	4,599	3,639
Humboldt River and tributaries	197,778	219,767	−10.0	348,573	231,251
Humboldt River direct	69,186	97,742	−29.2	84,049	77,726
East Fork of Humboldt River	33,473	11,680	186.6	74,264	43,649
La Moille Creek	22,278	7,765	186.9	40,610	26,065
North Fork of Humboldt River	7,940	3,960	100.5	28,897	10,470
South Fork of Humboldt River	33,052	26,733	23.6	48,338	41,261
Pine Creek	3,250	1,010	221.8	3,530	3,250
Reese	11,178	14,906	−25.0	40,769	10,898
Little Humboldt River	6,350	31,562	−79.9	6,790	6,350
Other tributaries of Humboldt River	11,071	[4] 24,409	−54.6	21,526	11,582
Truckee River and tributaries	20,002	40,541	−50.7	34,659	20,920
Truckee River direct	14,606	32,743	−55.4	28,040	15,486
Steamboat Creek	3,152	7,000	−55.0	3,298	3,218
Other tributaries of Truckee River	2,244	[4] 793	183.0	3,321	2,266
Carson River and tributaries	75,439	74,950	0.7	233,668	104,464
Carson River direct	27,810	70,838	−60.7	35,413	30,670
Other tributaries of Carson River	47,629	[4] 4,112	.....	198,255	73,794
Walker River and tributaries	152,625	107,030	42.6	400,232	179,562
Walker River direct	152,055	106,960	42.2	397,772	175,212
Other tributaries of Walker River	570	[4] 70	.....	2,460	1,350
Duck Creek	6,252	4,109	52.2	13,855	7,872
Steptoe Creek	3,708	6,705	−44.7	12,069	3,628
Long Valley Creek	12,543	4,060	208.9	18,840	15,951
Mono Lake and tributaries	4,190	3,818	9.7	70,377	45,760
Susan River	31,784	25,533	35.1	36,225	33,313
Mohave River	4,608	540	753.3	21,523	6,510
Owens River	144,024	51,902	177.5	200,147	182,748
San Jacinto River	20,359	5,040	314.1	34,974	22,263
Whitewater River	14,643	(2)	.....	37,604	22,282
Quinn River	9,935	38,150	−74.0	19,685	13,452
Deep Creek (Oregon)	1,906	2,155	−12.0	2,118	2,088
Donner and Blitzen River	21,356	34,701	−38.5	54,931	27,956
Silver Creek	16,819	13,609	23.6	42,779	17,394

[1] A minus sign (−) denotes decrease. Per cent not shown when base is less than 100 or when per cent is more than 1,000.
[2] Not reported separately in 1902.
[3] Includes 31,632 acres in Colorado for which main stream was not reported.
[4] Includes springs and wells.

TABLE 7.—ACREAGE IRRIGATED, CLASSIFIED BY DRAINAGE BASIN: 1919 AND 1902—Continued.

DRAINAGE BASIN.	AREA IRRIGATED (ACRES). 1919	1902	Per cent of increase.[1]	Area included in enterprises, 1920 (acres).	Area enterprises were capable of irrigating in 1920 (acres).
Great Basin drainage—Con.					
Independent streams—Con.					
Silvies River	64,842	26,041	149.0	102,258	95,867
Thomas Creek	5,386	1,980	172.0	5,866	5,466
Other independent streams	268,707	[2] 293,974	−8.6	543,945	351,358
Columbia River and tributaries	3,873,245	1,297,437	198.5	6,336,801	4,966,518
Columbia River direct	24,563	782	.....	49,432	32,615
Kootenai River	5,982	2,600	130.1	14,423	9,724
Clark Fork and tributaries	286,290	229,851	24.6	603,088	444,928
Clark Fork direct	3,188	8,808	−63.8	15,834	5,786
Missoula River and tributaries	238,769	221,043	8.0	433,021	325,992
Missoula River direct	2,550	1,181	115.9	8,322	5,777
Hellgate River	77,381	78,139	−1.0	165,391	108,161
Big Blackfoot River	40,604	36,622	10.9	83,716	61,476
Bitter Root River	112,622	98,965	13.8	158,241	139,481
Other tributaries of Missoula River	5,612	[2] 6,136	−8.5	17,351	11,097
Flathead River	44,333	(3)	.....	154,233	113,150
Colville River	6,960	310	.....	18,200	13,993
Spokane River and tributaries	20,614	210	.....	50,860	27,356
Spokane River direct	16,453	210	.....	40,391	21,675
Coeur d'Alene Lake and River	4,161	(3)	.....	10,469	5,681
Okanogan River and tributaries	20,583	2,257	812.0	42,042	30,261
Okanogan River direct	2,357	14	.....	3,708	2,899
Salmon Creek	6,729	1,095	514.5	11,478	11,238
Other tributaries of Okanogan River	11,497	[2] 1,148	901.5	26,856	16,124
Methow River	12,579	1,675	651.0	24,017	16,529
Entiat River	2,054	2,919	−29.6	2,652	2,251
Wenatchee River	23,734	3,285	622.5	39,288	34,568
Crab Creek	6,088	1,937	214.3	10,400	8,048
Yakima River and tributaries	337,293	121,705	177.1	436,797	353,644
Yakima River direct	254,262	66,371	283.1	345,373	269,163
Wilson Creek	11,297	6,613	70.8	12,042	11,807
Naches River	19,864	20,232	−1.8	21,656	20,284
Ahtanum River	9,287	3,849	141.3	9,982	9,342
Other tributaries of Yakima River	42,583	[2] 24,640	72.8	47,744	42,048
Snake River and tributaries	2,712,618	807,044	236.1	4,057,747	3,376,146
Snake River direct	744,066	66,397	.....	948,252	897,088
Gros Ventre River	6,718	3,523	90.7	9,866	7,493
Little Gros Ventre River	6,243	3,599	73.5	9,157	6,997
Salt River	34,338	22,570	52.1	57,288	46,234
Pierre River and tributaries	.....	5,372	−100.0	.....	.....
Henrys Fork	208,534	85,793	143.1	325,114	296,514
South Fork of Snake River	151,597	52,326	189.7	207,292	192,473
Blackfoot River	53,910	9,035	496.7	77,255	60,225
Port Neuf River	37,996	18,528	105.1	75,923	59,270
Raft River	23,620	23,793	−0.7	42,906	26,436
Goose Creek	25,000	2,000	.....	50,000	50,000
Salmon Falls River	41,330	(3)	.....	87,260	49,920
Little Wood River	30,153	(3)	.....	97,867	55,475
Big Wood River	112,748	33,961	248.7	203,795	178,497
Bruneau River	22,598	13,930	62.2	37,751	25,636
Owyhee River	104,830	21,840	380.0	239,242	116,238
Boise River	328,395	84,428	288.9	388,313	368,854
Malheur River	52,850	40,686	29.9	117,688	79,618
Payette River	123,072	50,893	141.8	155,142	117,011
Weiser River	58,869	26,769	119.9	79,925	69,718
Burnt River	34,287	16,042	113.7	54,467	37,506
Powder River	146,036	58,482	149.7	188,463	165,836
Pine Creek	12,635	10,149	24.5	40,637	39,321
Imnaha River	4,828	3,781	27.7	10,146	6,069
Salmon River	115,108	58,403	97.1	224,527	163,036
Grande Ronde River	79,257	22,628	250.3	98,912	87,317
Clearwater River	4,623	1,944	137.8	5,777	5,545
Asotin Creek	3,051	3,225	−5.4	4,051	4,051
Palouse River	1,480	619	139.1	2,362	2,209
Palouse River	1,735	508	241.5	3,645	2,020
Other tributaries of Snake River	137,711	65,810	109.3	204,724	169,549
Independent streams in Snake River Basin	109,913	44,011	149.7	353,251	182,811
Camas Creek	17,490	4,107	325.9	95,199	46,196
Beaver Creek	1,502	2,330	−35.5	2,590	1,970
Medicine Lodge	5,019	3,225	55.6	12,445	8,996
Little Lost River	11,552	6,825	69.3	31,452	18,732
Big Lost River	72,788	23,547	209.1	204,845	105,727
Columbia River, etc.—Con.					
Independent streams, etc.—Con.					
Other independent streams	1,562	[2] 3,977	−60.7	6,720	1,502
Walla Walla River	39,784	9,649	312.3	54,614	47,745
Klickitat River	12,332	372	.....	19,241	13,440
White Salmon River	6,247	912	585.0	11,958	7,277
Umatilla River	43,571	4,485	871.5	99,612	83,341
Willow Creek	5,553	3,013	84.3	7,159	6,619
John Day River	36,141	27,604	30.9	48,191	41,492
Deschutes River	111,916	21,108	430.2	291,014	174,790
Hood River	19,765	2,837	596.7	36,660	21,161
Willamette River	2,892	448	545.5	4,656	4,302
Other tributaries of Columbia River	25,773	8,423	206.0	59,699	35,538
Pacific Ocean streams other than the Colorado and Columbia Rivers	3,370,687	1,556,232	120.4	6,978,320	5,155,509
Dungeness River	6,160	685	799.3	12,660	9,860
McDowell Creek	.....	200	−100.0	.....	.....
Rogue River and tributaries	38,569	13,900	177.5	131,131	52,816
Rogue River direct	3,256	538	505.2	14,166	4,673
Little Butte Creek	6,706	1,208	455.1	54,283	8,417
Bear Creek	8,319	2,902	186.7	28,275	14,573
Evans Creek	1,333	225	492.4	2,740	1,614
Applegate River	10,639	4,239	151.5	17,335	13,012
Illinois River	4,961	2,804	76.9	8,705	6,328
Other tributaries of Rogue River	3,335	1,984	68.1	5,521	4,204
Klamath River and tributaries	153,105	80,433	90.4	362,793	205,374
Klamath River direct	65,720	52,814	24.4	128,763	76,075
Lost River	58,568	1,180	.....	194,748	95,304
Sprague River	7,800	3,690	111.4	10,150	9,980
Other tributaries of Klamath River	21,017	[2] 22,749	−7.6	29,132	24,015
Russian River	3,045	314	869.7	12,475	4,200
Sacramento River and tributaries	640,950	206,312	210.7	1,204,769	864,605
Sacramento River direct	194,397	10,942	.....	430,109	296,748
Pit River	89,984	72,072	24.9	128,984	107,478
Cow Creek	6,068	2,321	161.4	12,488	7,446
Cottonwood Creek	2,972	1,858	60.0	21,616	4,112
Battle Creek	2,966	2,642	12.3	6,590	5,108
Stony Creek	23,559	4,110	473.2	45,143	36,191
Feather River	142,841	67,111	112.8	186,756	167,463
Yuba River	19,473	(3)	.....	49,074	23,492
Cache Creek	24,541	3,756	553.4	56,498	31,212
American River	47,156	10,112	366.3	82,695	52,842
Other tributaries of Sacramento River	86,993	[2] 31,358	177.2	155,336	132,513
San Joaquin River and tributaries	2,163,694	932,931	125.5	4,294,966	2,248,919
San Joaquin River direct	642,261	129,647	395.4	1,083,862	873,300
Kern River	200,641	116,189	72.7	432,481	299,665
Tulare Lake	70,124	(3)	.....	204,860	147,444
Tule River	61,223	(3)	.....	175,777	109,412
Kaweah River	149,932	(3)	.....	356,703	299,474
Kings River	552,601	596,091	−7.3	1,052,406	895,263
Fresno River	12,414	10,729	15.7	30,004	14,016
Merced River	65,151	19,636	231.8	222,715	71,709
Tuolumne River	165,533	(3)	.....	296,418	260,425
Stanislaus River	75,380	13,840	444.5	155,483	111,192
Calaveras River	13,323	(3)	.....	21,598	16,480
Mokelumne River	36,848	5,558	563.0	155,480	72,144
Cosumnes River	3,269	(3)	.....	9,011	6,405
Other tributaries of San Joaquin River	55,015	[2] 41,241	33.4	96,198	81,981
Tributaries of San Francisco Bay other than the Sacramento and San Joaquin Rivers	76,947	38,549	99.6	100,730	86,779
Coyote Creek	25,092	8,483	195.8	30,979	26,526
Guadalupe River	29,248	6,547	346.7	34,549	31,008
Other tributaries	22,607	23,519	−3.9	35,202	29,245
Pajaro River	19,771	14,157	39.7	33,620	25,769
Salinas River	48,097	10,604	353.6	60,989	57,456
Santa Maria River	9,623	1,544	522.3	22,903	20,460
Santa Ynez River	3,491	1,493	133.8	10,082	9,645
Santa Clara River	28,270	14,214	98.9	43,206	30,216
Los Angeles River	39,072	5,310	.....	82,657	73,606
San Gabriel River	127,146	33,766	276.6	161,737	145,022
Santa Ana River	185,508	70,492	163.2	281,630	218,735
San Diego River	8,812	5,130	71.8	14,039	10,739
Other Pacific Ocean streams	58,427	126,198	−53.7	147,934	91,286

[1] A minus sign (−) denotes decrease. Per cent not shown when base is less than 100 or when per cent is more than 1,000.
[2] Includes springs and wells.
[3] Not reported separately in 1902.

CAPITAL INVESTED AND COST OF OPERATION AND MAINTENANCE.

TABLE 8.—CAPITAL INVESTED IN IRRIGATION ENTERPRISES: 1890 TO 1920.

CENSUS YEAR.	Amount.	Per cent of increase.	Average per acre. Amount.	Average per acre. Per cent of increase.
1920	$997,657,328	117.6	$26.81	69.1
1910	321,454,008	350.2	15.85	75.3
1900	70,946,564	137.1	9.04	13.6
1890	29,933,921		7.96	

TABLE 9.—CAPITAL INVESTED, CLASSIFIED BY DATE OF BEGINNING.

DATE OF BEGINNING.	Amount.	Per cent of total.	Average per acre.
Total	$997,657,328	100.0	$26.81
Before 1880	9,227,597	1.4	26.72
1880–1889	24,130,638	3.5	16.84
1890–1899	37,723,364	5.4	11.16
1900–1909	79,427,544	11.6	15.63
1910–1919	77,443,017	11.1	21.75
1920	95,749,105	13.7	32.31
1915–1919	181,280,169	26.4	48.22
1910–1914	102,567,009	14.7	41.67
1905–1909	67,813,693	9.7	34.41
Not reported	22,557,052	3.2	18.83

TABLE 10.—CAPITAL INVESTED, 1920, AND COST OF OPERATION AND MAINTENANCE, 1919, CLASSIFIED BY SOURCE OF WATER SUPPLY.

[When water is pumped, cost of operation and maintenance includes cost of fuel and attendance.]

CLASS.	Capital invested, 1920. Amount.	Capital invested, 1920. Per cent of total.	Capital invested, 1920. Average per acre.	Operation and maintenance, 1919. Area for which cost is reported (acres).	Operation and maintenance, 1919. Average cost per acre.[1]
Total	$997,657,328	100.0	$26.81	16,200,750	$2.43
Streams, gravity	433,370,623	43.4	22.01	12,193,097	1.25
Streams, pumped	39,715,289	3.5	23.01	1,151,313	6.50
Streams, pumped and gravity	3,512,907	2.4	44.02	198,656	2.33
Wells, pumped	76,787,254	11.0	45.83	1,064,238	14.07
Wells, flowing	3,944,059	0.4	38.92	27,543	2.77
Wells, flowing and pumped	4,494,672	0.4	58.41	29,600	8.04
Lakes, pumped	3,954,601	0.3	86.06	45,558	5.20
Lakes, gravity	3,904,619	0.4	19.44	78,586	1.30
Springs	3,785,958	0.8	26.01	139,244	1.63
Stored storm water	15,075,592	2.2	67.47	87,666	2.39
City water	219,763	(2)	156.83	361	20.73
Sewage	174,444	(2)	32.85	1,631	9.06
Streams, gravity, and pumped wells	38,947,435	4.1	72.73	315,640	5.97
Streams, gravity, and flowing wells	2,668,194	0.4	27.38	79,354	1.36
Other mixed	48,407,251	6.9	34.67	838,622	2.71
Other and not reported	876,916	0.1	54.86	11,941	10.75

[1] Based on area irrigated in 1919.
[2] Less than one-tenth of 1 per cent.

TABLE 11.—CAPITAL INVESTED, CLASSIFIED BY DRAINAGE BASIN: 1920 AND 1902.

DRAINAGE BASIN.	1920	1902	Increase.[1] Amount.	Increase.[1] Per cent.
Total	$997,657,328	$382,531,665	$615,125,663	745.3
Missouri River and tributaries	131,555,196	16,176,277	115,378,919	713.2
Missouri River direct	2,300,975	121,537	2,179,438	.....
Jefferson River and tributaries	5,320,434	769,328	4,551,106	591.8
Jefferson River direct	587,395	115,995	471,300	406.4
Beaverhead River	1,721,746	255,779	1,465,967	572.9
Big Hole River	1,669,787	135,629	1,534,158	.....
Boulder River	149,656	43,519	106,145	244.0
Prairie River	555,000	122,658	432,342	352.7
Other tributaries of Jefferson River	636,829	[2] 66,777	594,121	890.7
Madison River	487,323	92,966	394,357	424.6
Gallatin River	977,796	434,843	542,953	124.8
Smith River	190,936	44,772	146,164	194.8
Sun River	4,789,303	172,369	4,616,934	.....
Teton River	1,254,139	111,990	1,142,149	.....
Marias River	5,502,770	142,443	5,360,327	.....
Judith River	284,843	124,513	160,330	128.4
Musselshell River	958,733	268,958	689,775	256.2
Milk River and tributaries	7,271,499	363,698	6,907,801	.....
Milk River direct	134,208	119,210	14,998	12.4
Sage Creek	2,406,249	16,127	2,390,122	.....
Snake River	8,660	9,855	−1,195	−12.1
Other tributaries of Milk River	4,722,382	[2] 118,430	4,603,952	.....
Yellowstone River and tributaries	30,182,555	2,770,235	27,411,315	989.5
Yellowstone River direct	7,508,360	203,988	7,304,372	.....
Clark Fork and tributaries	1,225,484	356,777	868,707	243.6
Clark Fork direct	1,193,563	321,422	872,141	272.6
Tributaries of Clark Fork	61,809	34,355	27,454	79.9
Shoshone River	424,103	109,074	315,029	288.8
Bighorn River	398,379	51,303	347,076	676.7
Big Horn River and tributaries	16,476,257	922,858	15,747,399	.....
Big Horn River direct	3,653,023	25,421	3,628,602	.....
Paper Agie River	349,548	72,284	277,264	383.7
Wind River	2,121,819	17,904	2,103,915	.....
Poison Creek	1,005	18,789	−17,780	−94.7
Owl Creek	52,915	40,134	12,781	31.8
No Wood River	101,546	41,978	59,568	97.1
Greybull River	362,194	284,694	77,500	146.9
Shell Creek	385,420	37,730	347,690	.....
Southern River	8,702,490	374,276	8,328,212	.....
Little Horn River	33,000	31,895	1,105	3.4
Other tributaries of Big Horn River	747,272	[2] 18,120	729,152	.....
Missouri River, etc.—Con.				
Yellowstone River, etc.—Con.				
Rosebud River	39,303	361,708	−322,405	−84.9
Tongue River and tributaries	1,419,629	430,275	989,354	229.9
Tongue River direct	734,059	262,620	471,439	179.5
Goose Creek	563,518	127,100	436,418	343.4
Other tributaries of Tongue River	122,052	[3] 40,555	81,497	201.0
Powder River and tributaries	1,195,398	297,584	897,814	301.7
Powder River direct	187,502	12,500	175,002	.....
Red Fork Creek	78,500	12,800	65,700	513.3
Crazy Woman Creek	127,791	22,275	105,516	473.7
Clear Creek	553,465	189,375	364,090	192.3
Other tributaries of Powder River	248,140	[3] 60,634	187,506	309.2
Other tributaries of Yellowstone River	1,430,417	[3] 257,569	1,172,848	455.4
Little Missouri River	71,608	[3] 38,437	33,171	86.3
Moreau River	40,927	3,731	37,196	996.9
Cheyenne River and tributaries	5,605,911	447,624	5,158,287	.....
Cheyenne River direct	5,277,782	325,657	4,952,125	.....
North Fork (Belle Fourche)	76,066	50,165	25,901	51.6
South Fork and tributaries	282,053	83,352	198,701	238.7
South Fork direct	166,820	49,272	117,548	238.6
Hat Creek	85,243	[3] 19,090	66,153	346.5
Other tributaries of Cheyenne River	.....	[3] 3,440	−3,440	−100.0
White River	183,349	[3] 155,924	27,425	17.6
Niobrara River	360,439	[3] 77,100	283,339	367.5
Platte River and tributaries	62,893,983	9,241,861	53,652,122	580.5
Platte River direct	485,642	562,470	−76,828	−13.6
North Platte River and tributaries	25,702,212	3,337,627	22,364,585	670.1
North Platte River direct	17,634,060	[3] 1,197,959	16,436,101	.....
Beaver Creek	37,497	51,168	−13,671	−26.7
Grand Encampment Creek	72,602	50,828	21,864	43.0
Spring Creek	184,290	38,496	145,794	378.7
Sage Creek	4,206	13,790	−9,584	−69.5
Pass Creek	50,051	41,877	8,174	19.5
Medicine Bow River	346,664	244,287	102,377	41.9
Sweetwater River	87,322	54,701	32,621	59.6
Muddy Creek	7,770	6,546	1,224	18.7
Bear Elder Creek	194,676	37,655	157,021	173.0
La Prele Creek	327,451	37,540	289,911	773.1
Laramie Creek	71,836	32,640	39,196	120.1

[1] A minus sign (−) denotes decrease. Per cent not shown when more than 1,000.
[2] Includes springs and wells.
[3] Includes 11,42,356 in Colorado for which main stream was not reported.

TABLE 11.—CAPITAL INVESTED, CLASSIFIED BY DRAINAGE BASIN: 1920 AND 1902—Continued.

DRAINAGE BASIN.	1920	1902	INCREASE.[1] Amount.	INCREASE.[1] Per cent.
Missouri River, etc.—Con.				
Platte River, etc.—Con.				
North Platte River, etc.—Con.				
Laramie River and tributaries	$4,386,696	$888,096	$3,498,600	393.9
Laramie River direct	974,841	661,206	313,635	47.4
Little Laramie River	48,753	119,122	−70,369	−59.1
Sybille Creek	65,041	32,200	32,841	102.0
North Laramie River	396,708	13,886	382,822	.....
Chugwater Creek	83,155	30,945	52,210	168.7
Other tributaries of Laramie River	2,818,198	[2] 30,737	2,787,461	.....
Rawhide Creek	27,330	49,445	−22,115	−44.7
Horse Creek	536,475	132,847	403,628	303.8
Blue River	31,050	22,620	8,430	37.3
Pumpkin Creek	92,060	19,925	72,135	362.0
Other tributaries of North Platte River	1,710,136	[2] 273,947	1,436,189	524.3
South Platte River and tributaries	36,676,829	4,990,435	31,686,394	634.9
South Platte River direct	9,199,612	2,057,210	7,142,402	347.2
Bear Creek	137,240	76,635	60,605	79.1
Clear Creek	862,209	404,775	457,434	113.0
St. Vrain Creek	9,298,122	398,650	8,899,472	.....
Big Thompson Creek	1,102,316	600,166	502,150	83.7
Cache la Poudre River	7,946,409	1,067,354	6,879,055	644.5
Lone Tree Creek	2,767,273	17,380	2,749,893	.....
Crow Creek	100,619	43,925	56,694	129.1
Big Beaver Creek	52,600	98,000	−45,400	−46.3
Lodgepole Creek	445,738	87,140	358,598	411.5
Other tributaries of South Platte River	4,764,691	[2] 139,200	4,625,491	.....
Loup River	21,300	320,615	−299,315	−93.4
Other tributaries of Platte River	5,000	[2] 27,714	−22,714	−82.0
Kansas River and tributaries	537,605	437,209	100,396	23.0
Republican River	500,285	404,917	95,368	23.6
Smoky Hill River	34,953	3,410	31,543	925.0
Big Blue River	1,625	(3)	1,625	.....
Other tributaries of Kansas River	742	28,882	−28,140	−97.4
Other tributaries of Missouri River	2,373,962	407,772	1,966,190	482.2
Mississippi River and tributaries, exclusive of Missouri River	35,183,789	4,619,814	30,563,975	661.6
Mississippi River direct	302,385	(3)	302,385	.....
Arkansas River and tributaries	30,241,390	4,586,655	25,654,735	559.3
Arkansas River direct	15,092,972	3,320,325	11,772,647	354.6
South Fork	69,000	24,785	44,215	178.4
Fountain River	965,287	106,240	859,047	808.6
St. Charles River	241,884	22,060	219,824	996.5
Huerfano River	3,204,519	72,690	3,131,829	.....
Apishapa River	1,190,695	4,970	1,185,725	.....
Purgatoire or Las Animas River and tributaries	494,963	152,423	342,540	224.7
Purgatoire or Las Animas River direct	491,450	151,413	340,037	224.6
Trinchera River	3,513	1,010	2,503	247.8
Canadian River and tributaries	5,155,486	435,860	4,719,626	.....
Canadian River direct	148,331	22,108	126,223	570.9
Cimarron River	2,188,908	130,580	2,058,328	.....
Vermejo River	1,248,537	131,020	1,117,517	852.9
Ocate Creek	319,529	9,400	310,129	.....
Mora River	262,575	99,475	163,100	164.0
Ute Creek	7,000	10,000	−3,000	−30.0
Other tributaries of Canadian River	980,606	[2] 33,277	947,329	.....
Cimarron River	416,304	83,277	333,027	399.9
Other tributaries of Arkansas River	3,410,280	[2] 364,025	3,046,255	836.8
St. Francis River	218,727	(3)	218,727	.....
White River	3,992,967	(3)	3,992,967	.....
Ouachita River	1,100	(3)	1,100	.....
Red River and tributaries	398,534	3,218	395,316	.....
Other tributaries of Mississippi River	28,686	[2] 29,941	−1,255	−4.2
Gulf streams other than Mississippi River and Rio Grande	29,439,808	501,272	28,938,536	.....
Atchafalaya River and tributaries	407,956	(3)	407,956	.....
Vermilion River and tributaries	3,355,327	(3)	3,355,327	.....
Mermentau River and tributaries	7,713,797	(3)	7,713,797	.....
Calcasieu Lake and River and tributaries	1,816,380	(3)	1,816,380	.....
Sabine River and tributaries	673,935	(3)	673,935	.....
Neches River	1,596,770	(3)	1,596,770	.....
Trinity River	1,743,621	(3)	1,743,621	.....
Brazos River	569,543	25,443	544,100	.....
Colorado River	3,560,916	154,529	3,406,387	.....
San Antonio River	5,087,542	63,765	5,023,777	.....
Nueces River	1,326,555	56,808	1,269,747	.....
Other Gulf streams	1,587,466	200,727	1,386,739	690.9
Rio Grande and tributaries	34,172,940	26,367,065	27,805,875	436.7
Rio Grande direct	21,340,536	2,481,393	18,859,143	760.0
Saguache River	103,048	16,165	86,883	537.5
San Luis River	184,312	4,220	180,092	.....
Alamosa River	556,909	27,080	529,829	.....
La Jara River	30,275	(3)	30,275	.....
Conejos River	564,739	68,242	496,497	727.6
Trinchera River	659,890	23,650	636,240	.....
Rio Costilla	11,471	4,697	6,774	144.2
Pueblo River	19,982	11,560	8,422	72.9
Rio Chama	141,891	29,849	112,042	375.4
Rio Santa Cruz	18,281	12,862	5,419	42.1
Tesuque Creek	16,864	22,680	−5,816	−25.6
Rio Puerco	88,109	53,523	34,586	64.6
Pecos River and tributaries	7,482,049	3,185,855	4,297,194	134.9
Pecos River direct	5,514,099	2,735,221	2,778,878	101.6
Gallinas River	519,566	30,931	488,635	.....
Hondo River	578,094	261,863	316,231	120.8
Penasco River	222,693	50,363	172,330	342.2
Other tributaries of Pecos River	648,597	[2] 107,477	541,120	503.5
Las Moras Creek	192,566	7,925	184,641	.....
Other tributaries of Rio Grande	2,761,018	[2] 417,364	2,343,654	561.5
Independent streams in Rio Grande drainage basin	651,171	126,550	524,621	414.6
Rio Mimbres	318,062	[2] 112,192	205,870	183.5
Fresno River	297,724	2,440	295,284	.....
Rio Tularosa	33,900	5,868	28,032	477.7
Other independent streams	1,485	[2] 6,050	−4,565	−75.5
Colorado River and tributaries	86,696,940	11,298,671	75,398,269	667.3
Colorado River direct	22,214,932	753,973	21,460,959	.....
Green River and tributaries	8,592,346	1,470,459	7,121,887	484.3
Green River direct	547,166	57,900	489,266	845.0
New Fork	293,043	27,253	265,790	975.3
Horse Creek	51,163	13,350	37,813	283.2
Cottonwood Creek	456,827	11,000	445,827	.....
South Piney Creek	85,728	38,761	46,967	121.2
La Barge Creek	39,150	20,365	18,785	92.2
Fontenelle Creek	33,000	9,777	23,223	237.5
Bitter Creek	93,158	4,500	88,658	.....
Blacks Creek	566,776	68,296	498,480	729.9
Henrys Fork	77,320	11,291	66,029	584.8
Ashley Fork River	374,140	57,835	316,305	546.9
Duchesne River	2,428,174	(3)	2,428,174	.....
Price River	458,725	41,719	417,006	999.6
San Rafael River	288,100	295,850	−7,750	−2.6
Yampa River and tributaries	1,197,975	[4] 569,892	628,083	110.2
Yampa River direct	162,768	(3)	162,768	.....
Little Snake River	511,556	325,107	186,449	57.4
Other tributaries of Yampa River	523,651	(3)	523,651	.....
White River	447,141	137,005	310,136	226.4
Other tributaries of Green River	1,154,760	[2] 105,665	1,049,095	992.9
Grand River and tributaries	24,591,211	3,661,457	20,929,754	588.0
Grand River direct	6,142,951	491,710	5,651,241	.....
Fraser River	55,860	5,235	50,625	967.0
Muddy Creek	33,122	8,650	24,472	282.9
Blue River	116,608	21,359	95,249	445.9
Eagle River	109,012	75,570	33,442	44.3
Roaring Fork	407,266	163,170	244,096	149.6
Plateau Creek	341,755	60,035	281,720	469.3
Gunnison River and tributaries	10,745,767	1,351,966	9,393,861	694.9
Gunnison River direct	1,031,819	85,380	946,439	.....
Taylor River	6,900	64,985	−58,085	−89.4
Tomichi Creek	129,243	28,350	100,893	355.9
North Fork Creek	622,647	272,705	349,942	128.3
Smith Fork River	396,075	21,600	374,475	.....
Uncompahgre River	6,945,702	643,121	6,302,581	980.0
Other tributaries of Gunnison River	1,642,381	[2] 265,765	1,377,616	518.4
Rio Dolores	4,847,569	1,156,793	3,690,776	319.1
Other tributaries of Grand River	1,701,301	[2] 227,029	1,474,272	649.4
Fremont River	567,050	189,380	377,670	199.4
Virgin River	1,622,997	171,355	1,451,642	847.2
San Juan River and tributaries	3,088,495	534,288	2,554,207	478.1
San Juan River direct	1,039,358	179,919	859,439	477.7
Mancos River	35,477	14,910	20,567	137.9
Los Pinos River	524,590	84,580	440,010	520.2
Animas River	1,148,088	157,305	990,783	629.8
La Plata River	142,588	61,329	81,259	132.5
Other tributaries of San Juan River	198,394	36,245	162,149	447.4
Kanab Wash	20,500	4,700	15,800	336.2
Williams River	55,504	15,636	39,868	255.0
Little Colorado River and tributaries	460,206	265,701	194,505	73.2
Little Colorado River direct	146,913	218,900	−71,987	−32.9
Nutrioso Creek	16,500	2,600	13,900	534.6
Concho Creek	49,228	850	48,378	.....
Other tributaries of Little Colorado River	247,565	[2] 43,351	204,214	471.1

[1] A minus sign (−) denotes decrease. Per cent not shown when more than 1,000.
[2] Includes springs and wells.
[3] Not reported separately in 1902.
[4] Includes $244,785 in Colorado for which main stream was not reported.

TABLE 11.—CAPITAL INVESTED, CLASSIFIED BY DRAINAGE BASIN: 1920 AND 1902—Continued.

DRAINAGE BASIN.	1920	1902	INCREASE.[1] Amount.	INCREASE.[1] Per cent.
Colorado River, etc.—Con.				
Gila River and tributaries	625,296,257	84,205,619	221,090,638	500.1
Gila River direct	2,888,708	1,249,896	1,638,812	131.1
San Francisco River	25,224	35,040	−9,816	−28.0
San Pedro River	359,134	40,135	319,018	794.9
Santa Cruz River	5,168,524	79,696	5,088,828	.....
Salt River and tributaries	14,689,094	2,697,149	12,241,945	453.9
Salt River direct	14,299,874	2,364,160	11,935,714	496.5
Tonto Creek	9,498	15,115	−5,617	−37.2
Rio Verde	209,482	250,813	−41,331	−16.5
Other tributaries of Salt River	269,210	[2] 27,131	242,079	.....
Agua Fria River	1,428,077	28,998	1,397,079	.....
Hassayampa River	51,299	11,160	40,139	359.7
Other tributaries of Gila River	376,218	[2] 71,515	304,703	426.1
Other tributaries of Colorado River	337,462	[2] 126,103	211,359	167.6
Whitewater Draw and tributaries	299,368	6,735	292,633	.....
Great Basin Drainage	66,599,376	10,909,199	55,690,177	511.5
Tributaries of Great Salt Lake	18,199,935	5,649,938	12,459,997	221.1
Bear River and tributaries	7,498,075	3,020,489	4,427,586	146.3
Bear River direct	4,512,182	2,247,689	2,264,493	100.7
Little Bear River	724,363	166,170	557,193	341.5
Malad River	18,097	(3)	18,097	.....
Thomas Fork	25,389	16,210	9,179	56.6
Mill Creek	21,012	18,640	2,372	12.7
Little Malad Creek	332,175	30,945	301,230	973.4
Other tributaries of Bear River	1,908,857	549,635	1,359,222	232.6
Weber River and tributaries	2,196,048	796,837	1,399,211	164.3
Weber River direct	1,362,223	569,492	792,731	146.3
Ogden River	423,735	168,406	255,329	151.6
East Canyon Creek	74,020	22,890	51,130	223.3
Other tributaries of Weber River	254,990	56,109	198,881	354.4
Jordan River and Utah Lake and tributaries	8,595,082	1,822,982	6,772,100	369.9
Jordan River direct	746,895	753,100	−6,204	−0.8
Spanish Fork River	4,126,999	123,959	4,003,040	.....
Hobble Creek	41,024	32,588	8,436	25.9
Provo River	985,979	328,691	657,288	200.0
American Fork River	302,449	162,130	140,319	86.5
Little Cottonwood Creek	236,221	25,825	210,396	776.0
Big Cottonwood Creek	315,563	45,590	269,973	592.2
Other tributaries of Jordan River and Utah Lake	1,840,611	351,128	1,489,483	418.5
Independent streams	48,679,571	5,249,991	43,229,580	823.5
Sevier River and tributaries	9,592,836	808,872	8,700,964	.....
Sevier River direct	7,002,349	443,032	6,559,317	.....
San Pitch River	1,142,510	228,536	913,974	399.9
Otter Creek	151,850	18,355	133,495	727.3
South Fork	372,629	15,650	356,979	.....
Other tributaries of Sevier River	940,301	103,299	737,202	713.7
Beaver River	842,305	65,325	776,980	.....
Coal Creek	179,171	7,076	172,095	.....
Deep Creek (Utah)	8,844	6,692	2,152	32.2
Grouse Creek	28,338	2,850	25,488	894.3
Humboldt River and tributaries	1,731,596	768,119	963,476	125.5
Humboldt River direct	726,995	486,730	236,265	52.0
East Fork of Humboldt River	202,071	7,610	194,461	.....
La Moille Creek	91,290	14,840	76,449	515.1
North Fork of Humboldt River	57,403	10,045	47,358	471.5
South Fork of Humboldt River	253,192	53,370	199,822	434.9
Pine Creek	2,809	2,450	359	14.7
Reese River	79,120	36,815	42,305	114.9
Little Humboldt River	2,544	53,590	−51,046	−95.3
Other tributaries of Humboldt River	258,182	67,170	191,012	196.6
Truckee River and tributaries	594,187	296,435	297,752	100.4
Truckee River direct	485,900	233,470	252,430	91.7
Steamboat Creek	42,679	39,679	2,490	6.0
Other tributaries of Truckee River	65,217	3,295	62,922	.....
Carson River and tributaries	8,065,685	165,742	7,899,943	.....
Carson River direct	164,395	147,167	17,228	11.7
Other tributaries of Carson River	7,900,290	18,575	7,881,715	.....
Walker River and tributaries	1,696,950	376,449	1,320,519	351.3
Walker River direct	1,489,651	378,790	1,110,861	347.2
Other tributaries of Walker River	18,408	650	17,758	.....
Duck Creek	272,851	30,700	242,151	.....
Steptoe Creek	189,956	19,940	170,016	852.8
Long Valley Creek	171,442	16,345	155,097	950.1
Mono Lake and tributaries	5,363,858	15,200	5,348,658	.....
Susan River	242,420	220,201	22,221	10.3
Mohave River	616,769	114,800	501,969	437.3
Owens River	5,785,132	808,875	4,976,257	.....
San Jacinto River	2,130,257	775,000	1,355,257	176.0
Great Basin Drainage—Con.				
Independent streams—Con.				
Whitewater River	$2,242,944	(3)	$2,242,944	.....
Quinn River	50,548	361,100	−10,552	−17.3
Deep Creek (Oregon)	6,829	6,100	729	12.0
Donner and Blitzen River	131,750	35,400	96,350	272.2
Silver Creek	26,016	21,845	4,171	19.1
Silvies River	1,005,862	74,310	931,552	.....
Thomas Creek	6,506	5,360	1,146	21.4
Other independent streams	7,569,204	989,269	6,579,935	.....
Columbia River and tributaries	145,672,382	10,851,415	134,820,967	.....
Columbia River direct	2,240,216	8,700	2,231,516	.....
Kootenai River	221,976	13,539	208,437	.....
Clark Fork and tributaries	8,421,384	1,308,486	7,112,898	543.6
Clark Fork direct	209,549	64,591	144,958	224.4
Missoula River and tributaries	3,474,524	1,243,895	2,230,629	179.3
Missoula River direct	159,771	27,367	132,404	483.8
Hellgate River	1,349,403	392,065	957,338	244.2
Big Blackfoot River	624,291	114,450	509,841	445.5
Bitter Root River	1,138,329	674,130	464,199	68.9
Other tributaries of Missoula River	202,730	35,883	166,847	465.0
Flathead River	4,737,311	(3)	4,737,311	.....
Colville River	486,747	938	485,809	.....
Spokane River and tributaries	2,214,417	2,994	2,211,423	.....
Spokane River direct	1,637,743	2,994	1,634,749	.....
Coeur d'Alene Lake and River	576,674	(3)	576,674	.....
Okanogan River and tributaries	2,259,018	12,374	2,246,644	.....
Okanogan River direct	227,290	360	226,930	.....
Salmon Creek	1,069,972	5,085	1,064,887	.....
Other tributaries of Okanogan River	961,756	6,929	954,827	.....
Methow River	483,809	20,825	462,984	.....
Entiat River	73,889	17,150	56,739	330.8
Wenatchee River	1,868,541	95,755	1,772,786	.....
Crab Creek	859,050	5,415	853,635	.....
Yakima River and tributaries	14,849,689	1,968,555	12,881,134	654.3
Yakima River direct	13,912,727	1,580,195	12,332,532	780.4
Wilson Creek	45,875	17,925	27,950	155.9
Naches River	458,027	276,223	181,804	65.8
Ahtanum River	88,443	14,950	73,493	491.6
Other tributaries of Yakima River	344,617	79,262	265,355	334.8
Snake River and tributaries	93,625,117	6,749,247	86,875,870	.....
Snake River direct	37,728,943	578,600	37,150,343	.....
Gros Ventre River	31,225	14,802	16,423	111.0
Little Gros Ventre River	18,746	13,330	5,416	40.6
Salt River	149,207	41,724	107,483	257.6
Pierre River and tributaries	.....	12,595	−12,595	−100.0
Henrys Fork	2,001,841	428,430	1,573,411	367.3
South Fork of Snake River	6,193,701	633,698	5,560,003	877.4
Blackfoot River	1,022,276	43,690	978,586	.....
Port Neuf River	1,141,528	58,255	1,083,273	.....
Raft River	109,928	46,635	54,293	116.4
Goose Creek	393,755	3,000	390,755	.....
Salmon Falls River	4,152,745	(3)	4,152,745	.....
Little Wood River	1,016,699	(3)	1,016,699	.....
Big Wood River	5,995,133	239,228	5,155,905	.....
Bruneau River	574,955	238,140	336,815	141.4
Owyhee River	1,411,424	206,881	1,204,543	582.2
Boise River	16,013,734	1,674,583	14,339,151	856.3
Malheur River	2,027,683	282,898	1,744,785	616.8
Payette River	2,915,780	685,232	2,230,548	325.5
Weiser River	2,018,450	116,601	1,901,849	.....
Burnt River	639,491	65,691	573,800	873.5
Powder River	1,552,987	268,101	1,284,886	479.3
Pine Creek	97,522	36,595	60,927	166.5
Imnaha River	206,378	10,885	195,493	.....
Salmon River	1,175,362	227,508	947,854	416.6
Grande Ronde River	476,998	82,011	394,987	481.6
Clearwater River	298,755	90,585	208,170	229.8
Asotin Creek	606,084	94,100	511,984	544.1
Pataha River	47,085	1,905	45,180	.....
Palouse River	175,100	2,810	172,290	.....
Other tributaries of Snake River	4,040,602	550,734	3,489,868	633.7
Independent streams in Snake River Basin	3,828,606	151,160	3,677,446	.....
Camas Creek	578,627	6,263	572,364	.....
Beaver Creek	7,259	4,290	2,969	69.2
Medicine Lodge	31,690	3,800	27,890	733.9
Little Lost River	474,465	32,710	441,755	.....
Big Lost River	2,709,698	79,717	2,629,981	.....
Other independent streams	26,867	24,380	2,487	10.2
Walla Walla River	1,171,914	31,907	1,140,007	.....
Klickitat River	64,423	1,882	62,541	.....
White Salmon River	91,786	6,700	85,086	.....
Umatilla River	4,308,892	61,430	4,247,462	.....
Willow Creek	60,139	20,375	39,764	195.2
John Day River	510,248	120,060	390,188	325.0
Deschutes River	5,078,636	138,755	4,939,881	.....
Hood River	807,269	54,000	753,269	.....
Willamette River	100,561	3,240	97,321	.....
Other tributaries of Columbia River	2,046,055	57,928	1,988,127	.....

[1] A minus sign (−) denotes decrease. Per cent not shown when more than 1,000.
[2] Includes springs and wells.
[3] Not reported separately in 1902.

TABLE 11.—CAPITAL INVESTED, CLASSIFIED BY DRAINAGE BASIN: 1920 AND 1902—Continued.

DRAINAGE BASIN.	1920	1902	INCREASE.[1] Amount.	INCREASE.[1] Per cent.
Pacific Ocean streams other than the Colorado and Columbia Rivers	$167,398,448	$21,693,667	$145,704,781	671.6
Dungeness River	94,010	8,000	86,010	.....
McDowell Creek	.....	2,000	−2,000	−100.0
Rogue River and tributaries	1,783,989	147,223	1,636,766	.....
Rogue River direct	165,665	7,540	158,125	.....
Little Butte Creek	604,794	10,490	594,304	.....
Bear Creek	615,878	20,895	594,983	.....
Evans Creek	40,836	2,675	38,161	.....
Applegate River	180,894	60,325	120,569	199.9
Illinois River	87,966	27,748	60,218	217.0
Other tributaries of Rogue River	87,956	17,550	70,406	401.2
Klamath River and tributaries	5,502,890	529,456	4,973,434	939.3
Klamath River direct	1,734,099	282,996	1,451,103	512.8
Lost River	3,451,383	17,550	3,433,833	.....
Sprague River	32,368	26,560	5,808	21.9
Other tributaries of Klamath River	285,040	202,350	82,690	40.9
Russian River	162,630	2,463	160,167	.....
Sacramento River and tributaries	28,833,106	1,882,227	26,950,879	.....
Sacramento River direct	11,830,374	49,368	11,781,006	.....
Pit River	799,913	274,671	525,242	191.2
Cow Creek	126,946	15,246	111,700	732.7
Cottonwood Creek	573,601	124,473	449,128	360.8
Battle Creek	95,139	34,796	60,343	173.4
Stony Creek	1,539,614	42,250	1,497,364	.....
Feather River	3,937,380	869,841	3,067,539	352.7
Yuba River	2,518,770	(2)	2,518,770	.....
Cache Creek	916,477	28,115	888,362	.....
American River	2,890,114	112,758	2,777,356	.....
Other tributaries of Sacramento River	3,604,778	330,709	3,274,069	990.0
Pacific Ocean streams other than the Colorado and Columbia Rivers—Continued.				
San Joaquin River and tributaries	$71,694,653	$9,103,242	$62,591,411	687.6
San Joaquin River direct	9,224,164	1,504,238	7,719,926	513.2
Kern River	17,573,637	796,340	16,777,297	.....
Tulare Lake	3,910,620	(2)	3,910,620	.....
Tule River	2,842,495	(2)	2,842,495	.....
Kaweah River	6,186,840	(2)	6,186,840	.....
Kings River	8,145,446	2,976,688	5,168,758	173.6
Fresno River	415,385	400,514	14,871	3.7
Merced River	3,812,325	1,542,834	2,269,491	147.1
Tuolumne River	7,173,802	(2)	7,173,802	.....
Stanislaus River	7,840,486	968,964	6,871,522	709.2
Calaveras River	818,995	(2)	818,995	.....
Mokelumne River	1,675,137	305,239	1,369,898	448.8
Cosumnes River	153,899	(2)	153,899	.....
Other tributaries of San Joaquin River	1,921,512	[3] 608,425	1,313,087	215.8
Tributaries of San Francisco Bay other than Sacramento and San Joaquin Rivers	4,940,061	487,451	4,452,610	913.4
Coyote Creek	1,453,138	43,345	1,409,793	.....
Guadalupe River	1,883,049	75,795	1,807,254	.....
Other tributaries	1,603,874	[3] 368,311	1,235,563	335.5
Pajaro River	1,248,343	168,593	1,079,750	640.4
Salinas River	2,570,331	101,960	2,468,371	.....
Santa Maria River	573,194	32,380	540,814	.....
Santa Ynez River	284,037	33,745	250,292	741.7
Santa Clara River	2,211,473	374,151	1,837,322	491.1
Los Angeles River	5,508,400	309,611	5,198,789	.....
San Gabriel River	12,862,319	772,597	12,089,722	.....
Santa Ana River	19,918,530	1,919,531	17,998,019	937.7
San Diego River	1,789,124	32,100	1,757,024	.....
Other Pacific Ocean streams	7,421,338	5,786,937	1,634,401	28.2

[1] A minus sign (−) denotes decrease. Per cent not shown when more than 1,000. [2] Not reported separately in 1902. [3] Includes springs and wells.

In classifying capital invested by type of enterprise (Table 12) the average capital invested per acre is not presented, for the reason that it is not possible to compute this correctly from census data. The United States Reclamation Service supplies stored water to enterprises controlled by agencies of most of the other classes shown in the table and a part of its expenditure is properly chargeable to those lands, but it is not possible to tell how much should be so charged or how it should be distributed among the various classes, since the area to which water is supplied varies from season to season.

TABLE 12.—CAPITAL INVESTED, 1920, AND COST OF OPERATION AND MAINTENANCE, 1919, CLASSIFIED BY CHARACTER OF ENTERPRISE.

[When water is pumped, cost of operation and maintenance includes cost of fuel and attendance.]

CLASS.	CAPITAL INVESTED, 1920. Amount.	CAPITAL INVESTED, 1920. Per cent of total.	OPERATION AND MAINTENANCE, 1919. Area for which cost is reported (acres).	OPERATION AND MAINTENANCE, 1919. Average cost per acre.[1]
Total	$697,657,328	100.0	16,260,750	$2.43
Individual and partnership	154,634,169	22.2	5,133,421	3.02
Cooperative	183,041,500	26.2	5,754,232	1.67
Irrigation district	88,573,514	12.7	1,701,231	2.59
Carey Act	32,680,695	4.7	497,611	1.34
Commercial	85,735,470	12.3	1,779,595	3.48
U. S. Reclamation Service	$129,509,819	18.6	1,098,573	$2.20
U. S. Indian Service	14,851,236	2.1	254,378	1.80
State	344,174	(3)	1,608	4.86
City	2,936,678	0.4	33,507	3.85
Other	5,310,399	0.8	6,594	3.14
Not reported	39,674	(3)	.....	.....

[1] Based on area irrigated in 1919. [3] Less than one-tenth of 1 per cent.

DRAINAGE OF IRRIGATED LAND.

The acreages reported in Table 13 relate to lands within the boundaries of irrigation projects, and do not include lands within the vicinity of these projects. "Additional acreage needing drainage" includes all lands so reported by the owners of the enterprises, and includes lands producing partial crops as well as those wholly unproductive. Data for the several states are given in County Table I at the end of this summary.

TABLE 13.—ACREAGE WITHIN IRRIGATION ENTERPRISES FOR WHICH DRAINS HAVE BEEN INSTALLED AND ADDITIONAL ACREAGE IN NEED OF DRAINAGE.

Number of enterprises reporting land drained or needing drainage	3,008
Acreage included in enterprises reporting land drained or needing drainage	8,866,766
Acreage for which drains have been installed	1,518,953
Additional acreage needing drainage	1,476,771
Per cent that acreage for which drains have been installed is of total acreage included in enterprises reporting drainage	17.2
Per cent that acreage for which drains have been installed is of total acreage included in irrigation enterprises	4.2
Per cent that acreage for which drains have been installed plus that needing drainage is of total acreage included in irrigation enterprises	8.3

QUANTITY OF WATER USED.

The quantity of water used in 1919 was reported on only part of the irrigation schedules, and the figures given vary greatly. In order that proper values may be assigned to the figures given, those representing measurements and those representing estimates are reported separately in Table 14. Although the data are incomplete, the reports represent sufficient acreages to serve as bases for reliable averages.

TABLE 14.—QUANTITY OF WATER USED IN 1919.

ITEM.	Total.	Measured.	Not measured.
Average volume of water entering canals ... second-feet	234,020	109,714	124,306
Area irrigated in 1919 ... acres	9,645,331	6,560,188	3,085,143
Average number of acres per second-foot	41	60	25
Total quantity of water entering canals ... acre-feet	60,005,556	36,626,781	23,378,775
Area irrigated in 1919 ... acres	10,879,174	7,771,979	3,107,195
Average quantity per acre ... acre-feet	5.5	4.7	7.5
Total quantity of water delivered ... acre-feet	15,339,104	8,673,341	6,665,763
Area irrigated in 1919 ... acres	6,059,953	3,980,026	2,079,927
Average quantity per acre ... acre-feet	2.5	2.2	3.2

IRRIGATION WORKS.

TABLE 15.—IRRIGATION WORKS, CLASSIFIED BY DATE OF BEGINNING.

DATE OF BEGINNING.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES. Number.	MAIN DITCHES. Capacity (second-feet).	MAIN DITCHES. Length (miles).	LATERAL DITCHES. Number.	LATERAL DITCHES. Length (miles).	RESERVOIRS. Number.	RESERVOIRS. Capacity (acre-feet).
Total	23,894	3,931	51,621	631,079	103,177	57,553	56,687	7,538	21,246,436
Before 1860	603	102	846	9,539	3,296	1,313	1,454	156	113,700
1860–1869	2,044	158	3,400	31,956	7,031	3,297	3,013	136	229,153
1870–1879	3,124	203	5,737	70,068	11,782	5,615	6,367	298	422,100
1880–1889	5,796	662	11,033	139,074	21,873	9,277	7,825	653	1,095,135
1890–1899	3,578	507	7,523	89,970	15,902	11,317	7,664	672	671,008
1900–1904	2,054	438	4,638	84,723	9,741	4,940	6,744	641	3,929,610
1905–1909	2,018	592	4,264	101,767	10,976	8,691	12,234	1,048	8,232,274
1910–1914	1,662	587	5,288	48,342	9,198	5,958	6,536	1,568	5,174,285
1915–1919	1,549	481	4,887	42,202	6,680	5,497	3,550	1,495	1,266,014
Not reported	1,466	201	4,005	22,438	6,098	2,638	1,200	871	83,135

DATE OF BEGINNING.	Pipe lines, length (miles).	FLOWING WELLS. Number.	FLOWING WELLS. Capacity (gallons per minute).	PUMPED WELLS. Number.	PUMPED WELLS. Capacity (gallons per minute).	PUMPING PLANTS. Number.	PUMPING PLANTS. Engine capacity (horse-power).	PUMPING PLANTS. Pumps. Number.	PUMPING PLANTS. Pumps. Capacity (gallons per minute).
Total	8,878.3	4,606	935,057	32,094	16,396,549	29,458	748,971	33,804	36,275,005
Before 1860	88.0	26	3,292	37	19,028	46	654	55	28,072
1860–1869	79.1	58	4,399	79	38,909	43	574	44	43,439
1870–1879	285.9	127	32,240	82	46,174	83	3,697	108	86,287
1880–1889	825.2	498	38,439	327	144,829	290	14,938	407	1,476,530
1890–1899	674.4	340	51,819	846	400,373	668	37,387	862	4,378,623
1900–1904	504.7	490	100,628	1,591	745,045	1,455	59,286	1,741	3,706,532
1905–1909	1,349.6	763	216,806	3,304	1,741,309	2,898	98,729	3,492	4,379,501
1910–1914	2,334.5	741	220,867	10,467	5,436,719	9,458	226,748	10,867	8,316,741
1915–1919	2,136.3	629	135,226	10,971	5,861,661	10,469	242,629	11,713	10,663,654
Not reported	600.6	934	131,441	4,390	1,962,502	4,038	64,299	4,515	3,195,625

TABLE 16.—IRRIGATION WORKS, CLASSIFIED BY CHARACTER OF ENTERPRISE: 1920.

CLASS.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES. Number.	MAIN DITCHES. Capacity (second-feet).	MAIN DITCHES. Length (miles).	LATERAL DITCHES. Number.	LATERAL DITCHES. Length (miles).	RESERVOIRS. Number.	RESERVOIRS. Capacity (acre-feet).
Total	23,894	3,931	51,621	631,079	103,177	57,553	56,687	7,538	21,246,436
Individual and partnership	20,360	2,836	46,418	266,448	64,990	33,947	15,174	6,283	2,365,816
Cooperative	2,904	788	3,940	198,720	22,555	11,921	16,887	834	3,544,830
Irrigation district	252	80	457	51,847	4,907	2,502	6,150	86	1,582,577
Carey Act	47	29	69	13,812	1,471	550	2,574	31	893,956
Commercial	133	117	412	54,193	6,252	4,430	7,486	202	2,356,057
U. S. Reclamation Service	57	40	92	32,903	1,234	3,205	5,802	43	9,917,803
U. S. Indian Service	54	19	152	6,809	876	739	2,358	27	249,302
State	10	5	14	158	31	74	26	11	706
City	17	12	35	757	138	140	178	25	561
Other	10	4	32	342	33	45	22	6	34,828

CLASS.	Pipe lines, length (miles).	FLOWING WELLS. Number.	FLOWING WELLS. Capacity (gallons per minute).	PUMPED WELLS. Number.	PUMPED WELLS. Capacity (gallons per minute).	PUMPING PLANTS. Number.	PUMPING PLANTS. Engine capacity (horse-power).	PUMPING PLANTS. Pumps. Number.	PUMPING PLANTS. Pumps. Capacity (gallons per minute).
Total	8,878.3	4,606	935,057	32,094	16,396,549	29,458	748,971	33,804	36,275,005
Individual and partnership	4,795.2	3,964	826,570	30,415	14,953,276	28,336	537,381	31,564	22,563,649
Cooperative	2,091.1	255	62,021	1,082	1,014,138	752	82,963	1,252	3,515,742
Irrigation district	813.7	302	12,000	100	93,770	103	42,394	312	1,837,264
Carey Act	59.3	8	5,842			1	745	25	
Commercial	345.2	58	26,135	298	235,272	188	86,409	464	6,814,220
U. S. Reclamation Service	174.4			49	48,000	15	14,433	84	973,170
U. S. Indian Service	19.4	17	2,339	72	7,268	14	733	25	87,243
State	18.7			34	9,636	16	416	21	60,510
City	53.3			23	27,619	18	2,235	40	411,722
Other	8.0	2	100	12	9,570	15	281	17	11,185

TABLE 17.—IRRIGATION WORKS, CLASSIFIED BY DRAINAGE BASIN: 1920.

DRAINAGE BASIN.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES. Number.	MAIN DITCHES. Capacity (second-feet).	MAIN DITCHES. Length (miles).	LATERAL DITCHES. Number.	LATERAL DITCHES. Length (miles).	RESERVOIRS. Number.	RESERVOIRS. Capacity (acre-feet).
Total, states included	**23,894**	**3,931**	**51,621**	**631,079**	**103,177**	**57,553**	**56,687**	**7,538**	**21,246,436**
Missouri River and tributaries	**5,973**	**1,246**	**12,784**	**167,891**	**28,144**	**13,448**	**11,455**	**1,220**	**4,860,616**
Missouri River direct	45	22	106	1,617	517	236	148	22	871,819
Jefferson River and tributaries	1,174	45	2,106	25,319	3,422	3,468	890	59	165,003
Jefferson River direct	23	2	52	1,331	189	18	39	.....	.....
Beaverhead River	516	15	805	5,346	1,120	954	253	16	130,275
Big Hole River	442	8	726	7,171	1,132	2,231	480	10	5,171
Boulder River	48	3	105	649	185	83	2	3	11
Pipestone River	54	7	184	1,456	298	101	61	18	19,676
Other tributaries of Jefferson River	91	10	234	9,372	498	81	55	12	8,870
Madison River	100	10	251	2,709	560	129	112	12	4,602
Gallatin River	88	5	410	4,243	885	146	228	2	1,200
Smith River	69	4	285	983	325	600	124	7	181
Sun River	91	14	109	2,467	313	166	199	16	854
Teton River	21	7	76	2,566	266	74	112	7	145,742
Marias River	38	15	76	2,634	227	260	719	15	22,926
Judith River	147	5	214	1,479	311	252	84	7	85
Musselshell River	192	35	443	4,277	866	806	286	16	34,479
Milk River and tributaries	291	194	301	7,416	692	895	554	94	146,041
Milk River direct	5	.....	7	200	31	9	2	1	16
Sage Creek	5	6	8	11	12	16	15	5	2,089
Snake River	13	6	17	72	23	86	38	4	158
Other tributaries of Milk River	178	92	269	7,133	626	784	499	84	143,778
Yellowstone River and tributaries	1,014	160	2,678	32,064	6,662	2,018	2,171	186	516,248
Yellowstone River direct	14	11	102	5,508	720	279	447	11	2,519
Clark Fork and tributaries	195	5	358	3,353	797	403	224	5	2,795
Clark Fork direct	101	5	304	3,177	719	399	223	1	91
Tributaries of Clark Fork	4	.....	54	176	78	4	1	4	2,704
Shields River	88	1	205	1,620	457	210	75	5	9,016
Stillwater River	5	.....	128	1,284	279	40	46	2	2
Big Horn River and tributaries	311	31	783	9,847	2,227	518	914	70	466,867
Big Horn River direct	55	2	78	2,387	341	60	265	1	2
Pope Agie River	37	.....	122	605	270	20	34	1	112
Wind River	7	1	88	1,005	233	12	13	2	2,050
Poison Creek	.....	.....	1	.....	.....	.....	.....	1	3
Owl Creek	6	.....	12	279	89	12	16	6	275
No Wood River	21	5	94	388	206	8	5	4	60
Greybull River	46	1	106	1,276	327	20	71	4	181
Shell Creek	31	5	53	433	145	10	20	5	1,637
Shoshone River	38	9	64	3,079	327	294	448	17	460,806
Little Horn River	2	.....	7	46	42	15	1	1	25
Other tributaries of Big Horn River	68	8	164	379	247	67	41	28	1,716
Rosebud River	11	2	17	73	21	6	.....	2	18
Tongue River and tributaries	153	37	260	2,508	582	191	126	36	11,377
Tongue River direct	43	12	82	1,333	231	126	35	9	150
Goose Creek	93	21	99	874	229	30	58	16	10,579
Other tributaries of Tongue River	49	4	79	301	122	35	33	11	648
Powder River and tributaries	132	32	255	2,620	679	90	125	25	4,112
Powder River direct	18	13	35	183	40	18	6	10	50
Red Fork Creek	19	.....	25	60	50	1	1	.....	.....
Crazy Woman Creek	17	2	49	525	113	18	10	4	37
Clear Creek	46	9	83	1,468	312	40	94	3	3,389
Other tributaries of Powder River	32	8	66	384	164	13	14	8	636
Other tributaries of Yellowstone River	145	41	564	5,221	900	281	214	30	19,542
Little Missouri River	21	24	46	160	51	59	26	33	3,796
Moreau River	3	55	29	33	24	26	4	19	2,262
Cheyenne River and tributaries	294	137	455	6,438	778	757	679	109	212,529
Cheyenne River direct	182	95	297	5,210	568	511	580	64	205,941
North Fork (Belle Fourche)	24	25	49	397	75	108	19	26	2,433
South Fork and tributaries	33	17	109	831	135	138	80	19	4,155
South Fork direct	47	15	69	806	91	137	79	13	4,046
Hat Creek	11	2	40	25	44	1	1	6	109
White River	63	23	81	237	131	104	66	17	1,302
Niobrara River	30	12	51	212	92	92	36	1	13,005
Platte River and tributaries	2,137	469	4,117	67,344	10,354	2,621	4,607	508	2,663,549
Platte River direct	4	1	26	1,776	207	36	137	1	1
North Platte River and tributaries	1,199	141	2,504	27,254	4,902	1,233	2,121	164	1,734,839
North Platte River direct	32	11	154	10,496	1,058	512	1,284	13	1,247,874
Beaver Creek	12	2	20	50	62	1	1	3	673
Grand Encampment Creek	13	1	31	106	82	7	7	1	150
Spring Creek	3	2	48	343	79	63	45	3	3,596
Sage Creek	2	.....	4	3	4	.....	.....	.....	.....
Pass Creek	3	.....	54	293	84	18	9	1	2,000
Medicine Bow River	112	13	283	927	414	68	58	9	7,459
Sweetwater River	42	1	85	174	141	37	20	9	2,474
Muddy Creek	1	.....	5	12	7	.....	.....	.....	.....
Box Elder Creek	13	2	33	44	68	5	16	3	36
La Prele Creek	11	3	47	326	81	13	62	2	20,012
Laramie Creek	40	.....	42	54	76	24	24	.....	.....

TABLE 17.—IRRIGATION WORKS, CLASSIFIED BY DRAINAGE BASIN: 1920—Continued.

DRAINAGE BASIN.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES. Number.	MAIN DITCHES. Capacity (second-feet).	MAIN DITCHES. Length (miles).	LATERAL DITCHES. Number.	LATERAL DITCHES. Length (miles).	RESERVOIRS. Number.	RESERVOIRS. Capacity (acre-feet).
Missouri River and tributaries—Continued.									
Platte River and tributaries—Continued.									
North Platte River and tributaries—Continued.									
Laramie River and tributaries	390	41	662	5,411	972	161	345	49	396,106
Laramie River direct	72	8	107	2,196	350	104	239	8	263,425
Little Laramie River	42	.....	98	435	141	26	15	.....	.....
Sybille Creek	98	11	122	297	119	4	3	10	260
North Laramie River	101	6	128	462	86	9	15	6	8,019
Chugwater Creek	37	10	100	152	107	10	.....	8	394
Other tributaries of Laramie River	40	6	107	2,869	169	8	73	17	124,008
Rawhide Creek	13	2	13	42	13	23	9	2	46
Horse Creek	46	26	121	774	169	32	41	26	27,335
Blue River	3	.....	5	139	27	.....	.....	.....	.....
Pumpkin Creek	13	7	43	299	71	44	23	.....	.....
Other tributaries of North Platte River	430	29	854	6,851	1,524	215	177	43	27,078
South Platte River and tributaries	930	321	1,578	28,215	5,226	1,347	2,343	238	927,789
South Platte River direct	106	14	207	13,272	1,298	381	484	22	421,292
Bear Creek	29	7	37	339	54	27	8	7	916
Clear Creek	81	5	60	1,906	177	65	94	12	6,767
St. Vrain Creek	171	83	195	5,600	1,649	219	356	69	122,395
Big Thompson Creek	33	23	42	2,810	241	64	146	20	44,617
Cache la Poudre River	107	92	267	8,382	653	313	1,016	96	287,585
Lone Tree Creek	16	5	39	62	15	1	.....	7	722
Crow Creek	14	13	59	220	55	13	9	16	4,673
Big Beaver Creek	4	1	8	226	27	1	.....	3	103
Lodgepole Creek	65	16	128	607	183	135	95	19	9,789
Other tributaries of South Platte River	306	62	541	4,871	874	128	135	67	77,930
Loup River	3	5	7	91	16	5	6	3	60
Other tributaries of Platte River	1	1	2	8	3	.....	.....	2	860
Kansas River and tributaries	58	18	87	1,333	224	116	70	9	197
Republican River	53	16	74	1,307	216	102	69	8	192
Smoky Hill River	5	2	10	20	7	14	1	1	5
Big Blue River	.....	.....	2	5	1	.....	.....	.....	.....
Other tributaries of Kansas River	.....	.....	1	1	.....	.....	.....	.....	.....
Other tributaries of Missouri River	220	82	863	4,360	1,444	623	340	81	54,796
Mississippi River and tributaries, exclusive of Missouri River	**1,704**	**259**	**2,957**	**41,974**	**4,934**	**5,364**	**3,332**	**381**	**1,143,306**
Mississippi River direct	340	.....	241	869	174	1,553	182	6	43
Arkansas River and tributaries	1,249	242	2,565	39,166	4,629	3,550	3,063	367	1,155,259
Arkansas River direct	61	32	230	11,328	1,163	1,443	1,878	44	385,182
South Fork	30	.....	65	348	122	42	25	.....	.....
Fountain River	6	9	113	1,046	219	64	21	36	13,246
St. Charles River	87	12	114	757	162	42	24	14	2,418
Huerfano River	285	22	336	4,336	561	506	350	40	111,627
Apishapa River	39	15	52	1,806	103	21	32	15	54,821
Purgatoire or Las Animas River and tributaries	110	11	156	2,635	364	52	34	19	403,099
Purgatoire or Las Animas River direct	101	9	147	2,606	356	38	30	18	403,090
Trinchera River	9	2	9	9	8	14	4	1	.....
Canadian River and tributaries	264	63	314	8,123	676	498	306	67	79,212
Canadian River direct	1	2	11	59	12	17	3	6	52
Cimarron River	60	9	63	2,035	178	87	154	7	21,235
Vermejo River	23	10	42	2,337	98	15	53	10	18,111
Ocate Creek	27	3	29	1,217	74	61	19	14	20,759
Mora River	168	12	113	1,075	231	262	41	6	277
Ute Creek	3	2	4	6	4	6	1	1	1
Other tributaries of Canadian River	42	25	52	1,374	79	50	36	23	18,777
Cimarron River	52	9	89	542	150	228	70	9	59
Other tributaries of Arkansas River	315	69	1,096	8,165	1,099	654	323	123	94,595
St. Francis River	.....	.....	1	2	.....	.....	.....	.....	.....
White River	62	14	58	1,067	49	40	11	5	.....
Ouachita River	1	.....	1	.....	.....	.....	.....	.....	.....
Red River and tributaries	13	3	54	163	53	163	75	3	8,004
Other tributaries of Mississippi River	39	.....	37	707	29	58	2	.....	.....
Gulf streams other than Mississippi River and Rio Grande	**148**	**162**	**1,632**	**20,931**	**2,209**	**3,275**	**2,677**	**360**	**305,415**
Atchafalaya River and tributaries	17	1	91	728	109	62	42	1	2,041
Vermilion River and tributaries	.....	.....	68	1,699	202	1,071	667	1	.....
Mermentau River and tributaries	14	47	771	6,067	863	1,032	568	51	5,098
Calcasieu Lake, River and tributaries	4	4	84	1,700	159	92	168	3	490
Sabine River and tributaries	.....	2	10	592	82	52	58	1	.....
Neches River	.....	.....	7	1,380	40	30	77	.....	.....
Trinity River	.....	1	6	1,022	77	47	102	1	25,000
Brazos River	.....	2	155	287	190	270	136	3	800
Colorado River	46	53	244	3,925	324	333	539	30	8,092
San Antonio River	4	10	50	1,782	60	80	82	24	260,346
Nueces River	54	29	85	163	95	139	42	222	1,987
Other Gulf streams	9	13	61	1,586	67	67	96	12	1,601

TABLE 17.—IRRIGATION WORKS, CLASSIFIED BY DRAINAGE BASIN: 1920—Continued.

DRAINAGE BASIN.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.	
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).
Rio Grande and tributaries	**1,555**	**117**	**2,769**	**34,311**	**5,709**	**3,642**	**3,754**	**333**	**3,233,019**
Rio Grande direct	106	22	304	17,935	1,517	622	1,966	66	2,718,543
Sangre de Cristo River	152		231	732	176	88	73	11	202
San Luis River	43	2	252	1,670	349	50	70	2	179
Alamosa River	39	2	89	1,321	142	32	56	2	31,750
La Jara River	30		21	300	49	9	12		
Conejos River	103	2	195	3,198	317	52	72	2	3,001
Trinchera River	27	2	25	150	182	7	4	2	25,500
Rio Costilla	48		52	139	43				
Pueblo River	49		42	434	80	7	3		
Rio Chama	187	2	183	853	208	167	80	2	150
Rio Santa Cruz	11		32	134	52	10	3		
Tesuque Creek	18		39	72	50	7	6	1	
Rio Puerco	39	9	50	215	237	41	20	11	44,068
Pecos River and tributaries	334	25	774	5,619	1,168	942	914	156	169,963
Pecos River direct	195	11	323	4,143	577	437	517	107	144,296
Gallinas River	38	5	43	276	83	60	9	8	25,619
Rondo River	99	2	196	547	232	196	161	13	18
Penasco River	18		96	245	102	152	168		
Other tributaries of Pecos River	46	7	117	408	184	97	59	28	30
Las Animas Creek	2	1	4	75	8	260	67		
Other tributaries of Rio Grande	337	40	557	3,598	1,012	338	406	78	239,063
Independent streams in Rio Grande drainage basin	**84**	**8**	**150**	**1,613**	**190**	**134**	**90**	**18**	**145**
Rio Mimbres	45	5	77	3,168	78	60	13	11	40
Fresno River	23		53	205	66	17	7	5	5
Rio Tularosa	6	3	20	240	46	57	70	2	100
Colorado River and tributaries	**2,465**	**865**	**7,696**	**86,249**	**14,052**	**5,781**	**3,485**	**798**	**1,875,988**
Colorado River direct	5	1	23	7,290	550	668	2,211		
Green River and tributaries	912	124	2,067	16,875	4,383	1,900	2,320	138	86,254
Green River direct	25	1	66	1,474	200	26	9	2	114
New Fork	9	2	78	1,011	241	133	86	1	
Horse Creek	6		41	403	82				
Cottonwood Creek	19		83	485	131	126	75		
North Piney Creek	26	1	110	221	163	333	116		
La Barge Creek	22		19	131	44	6	2		
Fontenelle Creek	26		24	73	35	8	6		
Bitter Creek	3	1	21	25	28	1	4	16	1,105
Blacks Creek	156	9	325	1,867	532	54	414	11	3,333
Henrys Fork	45	22	110	301	143	74	42	3	23
Ashley Fork River	109		18	113	75	8	15		
Duchesne River	156	8	196	2,416	543	306	771	7	41,871
Price River	13	1	54	635	161	37	34	2	1,248
San Rafael River	11	2	30	501	170	401	570	6	8,800
Yampa River and tributaries	189	57	600	2,736	1,145	192	371	66	8,318
Yampa River direct	16	4	63	498	142	19	12	4	1,569
Little Snake River	10	6	135	873	265	17	7	8	1,346
Other tributaries of Yampa River	83	47	400	1,365	738	156	352	54	5,403
White River	43	16	203	2,883	406	114	43	19	1,708
Other tributaries of Green River	147	4	117	1,509	232	82	62	5	19,739
Grand River and tributaries	837	229	2,914	25,214	5,562	1,484	2,016	295	133,742
Grand River direct	45	10	149	2,827	493	308	257	11	13,627
Fraser River	14	2	61	332	112	2	1	2	10
Muddy Creek	49	10	50	254	64			10	1,727
Blue River	40	3	143	467	172	34	7	7	39
Eagle River	13	4	122	449	202	10	10	8	106
Roaring Fork	17	4	240	1,314	413	168	58	13	804
Plateau Creek	2	41	104	700	213	127	81	45	15,972
Gunnison River and tributaries	398	118	1,210	12,419	2,257	388	601	140	47,521
Gunnison River direct	14	1	63	1,168	151	35	19	1	120
Taylor River			4	15	6				
Tomichi Creek	137	1	238	1,731	279	7	5	1	
North Fork Creek	19	17	138	1,134	305	87	76	26	11,134
South Fork River	5	9	46	562	119	21	33	9	1,265
Uncompahgre River	26	4	180	2,402	446	151	359	5	220
Other tributaries of Gunnison River	167	86	521	5,387	960	87	104	98	34,782
Rio Dolores	87	19	265	2,622	622	143	417	21	42,988
Other tributaries of Grand River	203	28	580	3,730	1,014	309	584	38	10,948
Fremont River	148	117	43	546	121	87	65	13	4,078
Virgin River	120	13	233	773	358	224	189	26	20,009
San Juan River and tributaries	132	21	521	4,510	1,242	412	282	35	5,566
San Juan River direct	27	8	67	669	176	64	89	15	1,591
Mancos River	11		38	335	87	11	12	1	150
Los Pinos River	9		67	853	200	24	69		
Animas River	45		344	1,604	384	130	52	4	
La Plata River	30	3	69	612	185	47	48	2	165
Other tributaries of San Juan River	11	12	136	397	210	136	12	13	3,660
Kanab Wash	1		1	1		4	4	4	258
Williams River	5		37	40	34	1	1	1	4
Little Colorado River and tributaries	32	14	82	341	156	43	43	45	37,098
Little Colorado River direct	19	9	36	208	78	15	22	18	30,823
Nutrino Creek	4	1	7	17	8			4	1,050
Canelo Creek			2	8	2	1	1	2	625
Other tributaries of Little Colorado River	9	4	37	113	68	27	20	21	4,600

TABLE 17.—IRRIGATION WORKS, CLASSIFIED BY DRAINAGE BASIN: 1920—Continued.

DRAINAGE BASIN.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.	
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).
Colorado River and tributaries—Continued.									
Gila River and tributaries	231	35	1,031	10,449	1,515	806	1,327	215	1,377,422
Gila River direct	31	1	112	2,819	439	230	211	2	210
San Francisco River	54	1	90	110	66	11	2	3	.....
San Pedro River	30	9	114	270	162	31	15	45	894
Santa Cruz River	31	5	237	1,196	260	147	75	26	392
Salt River and tributaries	44	3	174	5,084	299	313	911	11	1,367,307
Salt River direct	8	1	18	4,447	111	271	898	2	1,367,300
Tonto Creek	9	1	34	58	26	.....	.....	1	1
Rio Verde	22	.....	75	359	107	29	7	5	1
Other tributaries of Salt River	5	1	47	220	46	13	6	3	5
Agua Fria River	12	5	106	525	107	165	101	16	24
Hassayampa River	1	1	24	46	18	.....	.....	1	180
Other tributaries of Gila River	28	10	174	399	173	29	12	111	8,425
Other tributaries of Colorado River	14	1	116	208	131	92	27	26	11,547
Whitewater Draw and tributaries	6	51	175	553	121	92	7	76	85,071
Great Basin Drainage	3,244	460	5,545	57,717	11,292	6,381	6,486	935	2,395,379
Tributaries of Great Salt Lake	1,128	158	1,765	19,591	4,512	2,106	2,487	208	596,859
Bear River and tributaries	670	104	967	10,589	2,858	913	739	92	30,708
Bear River direct	78	7	266	5,061	737	152	280	11	3,639
Little Bear River	47	6	104	1,074	195	395	183	4	4
Malad River	2	1	3	13	10	.....	.....	1	2
Thomas Fork	25	.....	29	203	63	.....	.....	.....	.....
Mill Creek	4	.....	8	27	28	4	2	.....	.....
Little Malad Creek	190	58	12	400	788	49	49	4	12,788
Other tributaries of Bear River	324	32	605	3,811	1,027	313	225	72	14,235
Weber River and tributaries	256	18	391	2,823	570	146	106	52	30,794
Weber River direct	72	1	101	1,417	181	53	46	5	22
Ogden River	27	.....	73	480	109	57	29	4	4
East Canyon Creek	38	1	40	179	49	5	5	2	28,004
Other tributaries of Weber River	119	16	177	747	231	31	26	41	2,764
Jordan River and Utah Lake and tributaries	202	36	347	6,089	1,084	1,047	1,642	64	535,357
Jordan River direct	14	4	20	1,151	296	101	26	3	600
Spanish Fork River	12	6	46	1,358	93	95	202	8	502,116
Hobble Creek	1	.....	13	31	9	10	4	1	2
Provo River	31	11	99	1,752	304	416	262	21	6,681
American Fork River	27	.....	23	70	43	63	130	4	.....
Little Cottonwood Creek	21	1	36	650	60	50	45	1	750
Big Cottonwood Creek	32	3	27	228	58	160	31	4	300
Other tributaries of Jordan River and Utah Lake	64	11	83	849	221	152	942	22	24,908
Independent streams	2,116	302	3,840	38,216	6,780	4,275	3,999	727	1,798,520
Sevier River and tributaries	95	50	321	7,762	1,391	903	1,195	63	869,405
Sevier River direct	23	13	44	4,693	458	330	503	14	741,900
San Pitch River	26	20	80	970	372	254	401	21	30,698
Otter Creek	2	3	12	86	42	24	9	3	3,900
South Fork	9	.....	32	381	114	65	42	2	24,015
Other tributaries of Sevier River	35	14	153	1,632	395	230	235	23	68,892
Beaver River	36	14	128	775	210	196	229	9	40,555
Coal Creek	22	2	58	1,158	136	97	63	63	967
Deep Creek (Utah)	3	.....	21	50	36	.....	.....	2	.....
Grouse Creek	14	3	29	35	45	.....	.....	1	10
Humboldt River and tributaries	715	12	1,040	1,204	1,292	965	281	27	42,791
Humboldt River direct	55	3	51	384	147	303	119	5	32,025
East Fork of Humboldt River	195	2	226	75	188	241	44	4	688
La Moille Creek	173	.....	196	90	193	128	41	.....	.....
North Fork of Humboldt River	47	.....	62	48	109	86	22	.....	.....
South Fork of Humboldt River	161	.....	281	297	354	96	29	4	7,974
Pine Creek	.....	.....	1	.....	.....	2	1	.....	.....
Reese River	47	.....	170	155	237	13	4	.....	.....
Little Humboldt River	6	.....	4	.....	4	.....	.....	.....	.....
Other tributaries of Humboldt River	31	7	49	155	60	96	21	14	2,104
Truckee River and tributaries	54	5	40	2,465	158	21	14	8	201
Truckee River direct	23	2	26	426	134	17	11	1	2
Steamboat Creek	6	1	8	2,001	14	4	3	1	.....
Other tributaries of Truckee River	25	2	6	38	10	.....	.....	6	199
Carson River and tributaries	143	13	113	3,905	190	193	341	16	400,064
Carson River direct	80	9	97	688	114	50	16	9	4
Tributaries of Carson River	63	4	16	3,217	76	143	325	7	400,060
Walker River and tributaries	77	14	184	2,192	659	99	162	9	11,503
Walker River direct	57	1	164	2,177	645	75	160	7	11,503
Tributaries of Walker River	10	13	20	15	14	24	2	2	.....
Duck Creek	14	.....	21	45	36	17	12	1	50
Steptoe Creek	14	1	17	47	48	26	13	3	4,000
Long Valley Creek	59	2	102	585	131	90	44	6	857
Mono Lake and tributaries	4	3	21	325	26	11	8	3	34,700
Susan River	93	7	82	1,861	215	114	45	15	83,949
Mohave River	2	.....	21	189	23	9	4	18	27
Owens River	6	4	53	1,598	138	5	4	20	26,006
San Jacinto River	7	11	32	251	50	28	14	94	105,688
Whitewater River	3	.....	12	57	47	15	2	41	50
Quinn River	5	1	14	98	22	20	16	2	.....
Deep Creek (Oregon)	1	.....	10	18	11	.....	.....	.....	.....
Donner and Blitzen River	44	6	30	239	74	122	84	6	57,580
Silver Creek	24	1	24	398	39	31	2	.....	.....
Silvies River	206	72	187	876	220	115	54	17	360
Thomas Creek	.....	.....	10	10	28	.....	.....	1	.....
Other independent streams	475	81	1,270	11,873	1,555	1,204	1,412	302	139,757

TABLE 17.—IRRIGATION WORKS, CLASSIFIED BY DRAINAGE BASIN: 1920—Continued.

DRAINAGE BASIN.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.	
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).
Columbia River and tributaries	**4,494**	**653**	**12,614**	**134,534**	**22,700**	**11,986**	**10,099**	**646**	**5,711,783**
Columbia River direct	9	18	90	632	185	174	44	41	1,530
Kootenai River	30	7	64	1,095	93	41	26	13	324
Clark Fork and tributaries	715	103	2,196	14,618	3,136	1,747	1,103	62	93,705
Clark Fork direct	6	1	87	1,399	85	10	1	3	50
Missoula River and tributaries	609	79	1,963	11,998	2,655	1,217	367	46	8,640
Missoula River direct	5	1	15	200	116	11	.....	1	.....
Hellgate River	246	27	777	4,623	1,195	455	142	24	527
Big Blackfoot River	137	19	310	2,378	364	193	48	3	200
Bitter Root River	173	27	644	4,673	870	424	158	10	7,634
Other tributaries of Missoula River	48	4	117	724	110	134	19	8	279
Flathead River	100	23	156	1,221	396	520	735	13	85,015
Colville River	43	1	101	293	174	131	21	3	.....
Spokane River and tributaries	34	11	76	912	120	92	156	36	6,262
Spokane River direct	15	8	61	802	101	74	134	31	5,662
Coeur d'Alene Lake and River	19	3	15	110	19	18	22	5	600
Okanogan River and tributaries	12	11	124	552	158	69	132	19	24,136
Okanogan River direct	1	3	30	45	24	25	4	8	2,211
Salmon Creek	1	3	15	143	32	3	67	5	16,550
Other tributaries of Okanogan River	10	5	70	364	102	41	61	6	5,375
Methow River	52	11	166	1,230	231	59	45	19	209
Entiat River	5	1	32	83	41	.....	.....	.....	.....
Wenatchee River	41	6	87	553	195	66	18	8	2,000
Crab Creek	24	9	67	100	34	18	9	10	4,501
Yakima River and tributaries	195	19	459	7,486	1,070	477	1,156	10	423,810
Yakima River direct	12	7	88	4,823	473	446	1,079	7	423,800
Wilson Creek	29	.....	90	163	62	6	5	1	10
Naches River	2	.....	63	724	113	7	21	.....	.....
Ahtanum River	19	.....	49	180	82	3	1	.....	.....
Other tributaries of Yakima River	64	3	209	1,596	340	15	50	2	.....
Snake River and tributaries	3,598	394	6,510	82,418	12,728	5,722	6,188	321	4,832,921
Snake River direct	66	11	206	19,056	998	1,459	2,443	12	2,641,746
Gros Ventre River	29	.....	29	118	64	1	1	.....	.....
Little Gros Ventre	14	.....	32	103	50	.....	.....	.....	.....
Salt River	50	2	160	1,353	297	116	54	1	80
Henrys Fork	236	25	274	12,693	750	340	437	20	8,462
South Fork of Snake River	112	7	146	8,609	431	161	620	7	15,332
Blackfoot River	43	3	45	1,214	182	136	172	3	200,060
Port Neuf River	101	7	149	1,274	345	58	76	10	59,226
Raft River	161	2	99	642	133	42	30	.....	.....
Goose Creek	35	.....	3	100	100	35	70	3	30,000
Salmon Falls River	40	6	48	1,857	102	56	250	6	206,600
Little Wood River	84	9	107	1,893	224	22	7	2	40,000
Big Wood River	198	15	234	4,705	421	108	443	13	191,993
Bruneau River	141	18	171	826	204	140	58	12	10,772
Owyhee River	348	27	432	2,508	573	188	106	25	27,295
Boise River	76	14	198	6,669	801	744	191	18	573,203
Malheur River	256	34	350	2,022	540	92	84	31	368,446
Payette River	51	12	267	4,450	645	63	140	17	63,284
Weiser River	39	9	134	1,522	389	81	89	10	95,796
Burnt River	213	8	318	781	400	20	14	14	12,331
Powder River	291	19	651	3,764	1,133	287	202	37	13,484
Pine Creek	31	4	63	176	107	7	18	3	10,350
Imnaha River	24	1	46	103	73	16	13	1	200
Salmon River	303	12	980	4,747	1,423	898	270	14	2,183
Grande Ronde River	207	19	482	1,894	491	329	138	6	205,230
Clearwater River	2	2	13	69	23	8	1	6	4
Asotin Creek	2	1	1	1	.....	1	.....	1	100
Palouse River	10	.....	33	377	24	31	1	1	.....
Palouse River	13	5	21	219	31	42	11	2	4
Other tributaries of Snake River	443	32	749	5,332	1,764	241	249	46	56,740
Independent streams in Snake River Basin	303	17	420	6,426	867	490	288	14	144,312
Camas Creek	81	6	97	2,042	165	159	112	5	65,179
Beaver Creek	27	1	34	72	23	2	4	1	35
Medicine Lodge	62	1	72	266	61	127	44	2	412
Little Lost River	33	2	59	774	101	15	7	2	22,000
Big Lost River	98	7	160	2,237	491	183	119	4	56,686
Other independent streams	2	.....	7	37	26	4	2	.....	.....
Walla Walla River	238	14	412	1,453	1,205	1,905	159	8	15,000
Klickitat River	19	.....	30	352	66	17	4	.....	.....
White Salmon River	19	3	28	478	99	21	15	3	.....
Umatilla River	139	10	229	2,007	318	201	143	4	54,700
Willow Creek	71	2	94	110	94	18	11	.....	.....
John Day River	504	3	670	1,052	655	151	52	10	39,236
Deschutes River	361	25	390	4,023	768	226	333	8	52,927
Hood River	34	5	72	435	88	86	132	5	13
Willamette River	14	.....	40	148	53	15	5	2	.....
Other tributaries of Columbia River	128	22	229	976	352	260	59	50	16,197

TABLE 17.—IRRIGATION WORKS, CLASSIFIED BY DRAINAGE BASIN: 1920—Continued.

DRAINAGE BASIN.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.	
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).
Pacific Ocean streams, other than the Colorado and Columbia Rivers	**2,221**	**460**	**5,926**	**190,894**	**13,835**	**8,450**	**10,304**	**2,771**	**1,815,714**
Dungeness River	6	.....	7	570	36	75	32	.....	.....
McDowell Creek	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rogue River and tributaries	257	18	645	1,978	837	169	117	47	35,882
Rogue River direct	8	.....	26	149	38	2	3	9	1
Little Butte Creek	13	2	58	161	108	86	50	3	5,350
Bear Creek	29	6	99	512	159	18	37	10	30,307
Evans Creek	22	.....	34	66	41	11	3	.....	.....
Applegate River	55	4	164	434	241	17	8	15	16
Illinois River	37	3	135	400	127	19	10	4	1
Other tributaries of Rogue River	43	3	129	256	123	16	6	6	7
Klamath River and tributaries	505	41	1,046	8,878	1,289	543	437	90	1,022,365
Klamath River direct	452	23	947	5,778	1,101	287	113	70	95,054
Lost River	8	13	39	1,889	71	113	232	14	925,923
Sprague River	9	5	15	212	34	6	8	6	1,388
Other tributaries of Klamath River	36	.....	45	999	83	137	84	.....	.....
Russian River	9	10	18	23	8	25	364	10	142
Sacramento River and tributaries	859	209	1,821	23,514	4,574	1,743	1,955	226	348,435
Sacramento River direct	6	3	192	5,803	585	559	623	24	285
Pit River	322	63	489	5,160	730	150	78	63	202,877
Cow Creek	40	.....	64	367	118	30	23	1	.....
Cottonwood Creek	16	1	41	147	78	19	30	8	6,300
Battle Creek	26	.....	71	358	114	17	4	.....	.....
Stony Creek	44	5	63	1,590	81	22	130	4	51,001
Feather River	221	52	382	4,399	455	424	130	12	243
Yuba River	41	33	136	1,235	481	65	96	32	56,672
Cache Creek	6	3	29	1,197	87	30	115	4	181
American River	51	31	109	1,264	1,498	135	374	53	30,682
Other tributaries of Sacramento River	86	9	304	1,994	347	292	282	19	194
San Joaquin River and tributaries	269	85	1,452	56,628	5,995	4,394	6,904	1,419	329,522
San Joaquin River direct	23	2	176	11,431	1,237	1,293	2,103	120	1,937
Kern River	17	11	142	6,273	427	156	140	188	60,469
Tulare Lake	26	.....	67	562	101	290	601	671	110,553
Tule River	44	2	115	2,465	426	209	155	118	523
Kaweah River	19	1	95	5,133	239	271	497	72	2,348
Kings River	27	5	128	17,194	892	465	981	67	6,116
Fresno River	5	.....	7	314	5	6	107	19	263
Merced River	17	1	159	2,171	476	597	290	9	8,019
Tuolumne River	17	15	110	5,834	626	835	907	12	86,607
Stanislaus River	12	13	59	1,444	190	142	813	17	42,526
Calaveras River	22	8	129	224	86	33	12	25	17
Mokelumne River	31	25	126	1,598	1,024	62	153	33	678
Cosumnes River	6	.....	13	103	55	2	15	2	.....
Other tributaries of San Joaquin River	3	2	126	882	111	213	130	66	10,066
Tributaries of San Francisco Bay other than Sacramento and San Joaquin Rivers	26	9	78	381	45	149	40	44	235
Coyote Creek	6	.....	6	24	5	.....	.....	3	1
Guadalupe River	8	.....	12	271	21	4	20	.....	.....
Other tributaries	12	9	60	86	19	145	20	41	234
Pajaro River	29	9	94	278	66	81	29	19	5,995
Salinas River	7	4	140	553	117	403	98	21	73
Santa Maria River	1	1	16	69	13	25	3	8	36
Santa Ynez River	9	8	18	227	10	10	4	16	2,502
Santa Clara River	15	3	38	191	49	56	30	30	2,741
Los Angeles River	11	3	79	266	81	191	78	164	4,950
San Gabriel River	18	1	54	3,940	89	61	47	129	7,168
Santa Ana River	39	12	123	2,096	302	139	34	139	3,514
San Diego River	4	2	11	.....	.....	5	4	63	18,904
Other Pacific Ocean streams	157	54	286	2,212	324	381	128	352	33,250

TABLE 17.—IRRIGATION WORKS, CLASSIFIED BY DRAINAGE BASIN: 1920—Continued.

DRAINAGE BASIN.	Pipe lines, length (miles).	FLOWING WELLS. Number.	FLOWING WELLS. Capacity (gallons per minute).	PUMPED WELLS. Number.	PUMPED WELLS. Capacity (gallons per minute).	PUMPING PLANTS. Number.	PUMPING PLANTS. Engine capacity (horsepower).	PUMPING PLANTS. Pumps. Number.	PUMPING PLANTS. Pumps. Capacity (gallons per minute).	PUMPING PLANTS. Average lift (feet).
Total, states included	**3,278.3**	**4,686**	**935,957**	**32,094**	**16,296,549**	**29,458**	**748,971**	**33,804**	**36,275,005**	**41**
Missouri River and tributaries	**89.5**	**61**	**4,271**	**365**	**171,464**	**593**	**18,329**	**689**	**800,218**	**22**
Missouri River direct	4.3					31	6,602	45	168,725	32
Jefferson River and tributaries	0.1	2	2			3	135	4	4,968	24
Jefferson River direct	0.1					2	25	2	1,968	24
Beaverhead River		1								
Boulder River						1	110	2	3,000	24
Other tributaries of Jefferson River		1	2							
Gallatin River	0.5					4	70	4	5,329	16
Smith River						1	18	1	6,000	9
Sun River	1.2					15	326	20	20,210	15
Teton River	0.5	3	1,900	1	10	8	130	8	13,410	17
Marias River	1.6			3	8,000	22	623	22	37,165	15
Judith River	2.4			1	1,500	8	72	16	10,600	11
Musselshell River						10	178	12	16,250	19
Milk River and tributaries	1.2	1	50			22	377	23	24,345	16
Milk River direct						4	70	4	2,570	18
Other tributaries of Milk River	1.2	1	50			18	307	19	21,775	16
Yellowstone River and tributaries	13.1	21	194	6	1,005	101	3,965	120	182,508	25
Yellowstone River direct	2.0	3	69			35	2,501	45	127,602	24
Clark Fork						2	10	2	470	8
Shields River				1	40					
Big Horn River and tributaries	10.0	1		1	950	20	406	25	11,800	38
Big Horn River direct	4.5			1	950	16	357	20	8,840	40
Popo Agie River	2.0					1	3	1	175	12
Owl Creek	0.1									
No Wood River	0.2					1	26	1	1,200	58
Shell Creek	0.2									
Shoshone River	2.5									
Little Horn River	0.5									
Other tributaries of Big Horn River		1				2	20	3	1,585	10
Tongue River and tributaries	0.3			2		18	361	18	19,275	18
Tongue River direct	0.1					16	286	16	14,575	15
Goose Creek						1	50	1	3,000	38
Other tributaries of Tongue River	0.2			2		1	25	1	1,700	22
Powder River and tributaries	0.3	17	125	2	15	15	570	19	14,670	30
Powder River direct		15	119	1	10	11	245	15	14,265	16
Clear Creek	0.3					2	298	2	200	54
Other tributaries of Powder River		2	6	1	5	2	27	2	205	70
Other tributaries of Yellowstone River	0.5					11	117	11	8,631	12
Little Missouri River	0.1					4	175	4	8,000	32
Marias River	0.3					3	60	3	1,800	30
Cheyenne River and tributaries	7.0	4	2,730	2	2,800	19	292	19	14,041	
Cheyenne River direct	6.8	4	2,750	1	800	14	173	14	9,550	16
North Fork (Belle Fourche)				1	2,000	4	103	4	3,391	20
South Fork	0.2					1	16	1	1,100	10
White River	0.4			2	2,200	3	53	3	4,000	35
Niobrara River	0.1					1	8	1	480	8
Platte River and tributaries	50.8	6	270	313	143,904	282	3,889	307	220,040	22
Platte River direct				14	10,551	13	180	14	14,580	31
North Platte River and tributaries	3.6	2	60	9	4,330	26	410	34	24,039	21
North Platte River direct	6.7			2	3,180	15	311	16	21,002	22
Grand Encampment Creek	0.1									
Spring Creek		1		2		1		1		
Medicine Bow River	1.0			3		5	33	12	787	18
Muddy Creek	0.5									
Box Elder Creek		1	40							
Laramie River and tributaries	0.4			2	1,150	3	6	3	1,650	13
Laramie River direct	0.3					1		1	500	10
North Laramie River				1	700	1		1	700	16
Chugwater Creek				1	450	1	6	1	450	
Other tributaries of Laramie River	0.1									
Horse Creek	0.1									
Other tributaries of North Platte River	0.8					2	60	2	600	28
South Platte River and tributaries	40.9	4	250	290	129,023	233	3,229	248	176,680	21
South Platte River direct	8.8	3	170	94	44,302	78	1,132	80	52,662	22
Bear Creek	1.0					1	7	5		40
Clear Creek	0.1									
St. Vrain Creek	12.7			1		4	100	4	1,000	22
Big Thompson Creek	1.9			1	1,200	6	106	6	5,831	17
Cache la Poudre River	17.2	1	60	123	52,643	107	1,386	107	74,943	21
Lone Tree Creek	0.3			20	6,968	13	172	20	10,160	24
Big Beaver Creek				7	15,250	4	65	6	15,250	26
Lodgepole Creek				3	2,835	5	90	5	8,567	11
Other tributaries of South Platte River	3.4			41	4,825	15	171	15	8,267	26
Loup River	0.3					7	49	7	4,280	17
Other tributaries of Platte River						3	21	4	461	30
Kansas River and tributaries	2.5			45	10,600	22	844	37	39,903	30
Republican River	2.0			14	8,500	13	491	13	32,703	33
Smoky Hill River	0.1			31	2,100	6	303	21	5,350	29
Big Blue River	0.4					2	30	2	1,000	18
Other tributaries of Kansas River						1	20	1	850	25
Other tributaries of Missouri River	3.4	4	5	12	1,445	34	512	49	22,444	18

TABLE 17.—IRRIGATION WORKS, CLASSIFIED BY DRAINAGE BASIN: 1920—Continued.

DRAINAGE BASIN.	Pipe lines, length (miles).	FLOWING WELLS.		PUMPED WELLS.		PUMPING PLANTS.				
		Number.	Capacity (gallons per minute).	Number.	Capacity (gallons per minute).	Number.	Engine capacity (horsepower).	Pumps.		Average lift (feet).
								Number.	Capacity (gallons per minute).	
Mississippi River and tributaries, exclusive of Missouri River	148.3	27	6,240	2,085	1,876,840	1,539	73,739	1,715	2,237,441	45
Mississippi River direct	6.2					67	2,846	74	102,500	12
Arkansas River and tributaries	140.9	24	3,640	1,354	934,452	768	34,404	872	1,119,743	42
Arkansas River direct	13.8	2	315	572	641,744	503	27,146	526	798,295	47
Fountain River	11.7	3	30	19	7,700	8	126	8	8,200	21
St. Charles River	0.4			3	515	2	16	2	475	32
Huerfano River	4.5			11	2,070	6	36	6	2,045	40
Apishapa River	0.3			1	144	1	29	1	144	14
Purgatoire or Las Animas River	0.1					1	7	1	500	7
Canadian River and tributaries	19.0			20	6,417	21	259	26	6,663	79
Canadian River direct	4.2			15	3,106	15	193	19	5,141	88
Cimarron River	4.8					1	10	1	1,500	22
Vermejo River	1.1			2		1	50	2		100
Ocate Creek	1.5									
Mora River				1	3,300	2	5	2	10	35
Other tributaries of Canadian River	7.4			2	11	2	1	2	12	72
Cimarron River	0.2	6	500	12	5,321	10	221	11	4,817	26
Other tributaries of Arkansas River	90.9	13	2,795	716	270,541	216	6,573	291	298,604	29
Red River and tributaries		3	2,660	49	48,950	63	3,444	67	55,760	70
St. Francis River				56	72,050	52	2,223	64	78,450	31
White River				626	820,388	584	30,537	633	858,698	50
Ouachita River	0.4									
Other tributaries of Mississippi River	0.8					5	285	5	22,300	15
Gulf streams, other than Mississippi River and Rio Grande	158.9	127	57,009	1,615	2,072,580	2,335	126,953	3,208	3,202,748	37
Atchafalaya River and tributaries	42.2	1		42	59,980	105	4,070	171	230,675	19
Vermilion River and tributaries		2	425	82	67,007	136	7,052	223	694,044	29
Mermentau River and tributaries	0.1			594	1,209,750	800	56,300	1,293	2,927,213	35
Calcasieu Lake, River, and tributaries	0.4	5	5,800	92	243,400	128	13,833	161	337,294	30
Sabine River and tributaries				2	27,500	12	2,905	22	241,500	20
Neches River						6	5,850	23	1,929,500	24
Trinity River	1.5					11	7,688	20	445,100	34
Brazos River	2.2	3	3,500	150	136,332	166	6,276	175	153,585	63
Colorado River	8.5	3	5,400	57	30,667	311	13,500	359	912,048	30
San Antonio River	10.9	25	15,465	43	12,864	77	1,438	80	31,039	39
Nueces River	92.6	81	26,065	273	72,937	321	6,533	342	160,472	47
Other Gulf streams	0.5	7	354	278	212,143	262	11,408	340	540,278	42
Rio Grande and tributaries	81.5	1,015	401,081	416	239,199	522	28,867	617	2,070,157	39
Rio Grande direct	42.8	329	13,595	31	13,281	134	22,115	202	2,398,079	46
Saguache River		83	2,672	1		1		1		
San Luis River	0.2	22	175							
Alamosa River	0.1	8	267							
Conejos River	0.1	1	20							
Trinchera River	4.0									
Rio Santa Cruz	0.1									
Rio Puerco						1		1		96
Pecos River and tributaries	18.8	563	384,325	287	174,938	282	5,174	309	221,289	31
Pecos River direct	6.1	300	207,465	158	92,107	144	3,098	159	124,701	34
Gallinas River	0.5			1	3	1		1	3	75
Hondo River	11.0	176	125,606	79	46,565	74	1,041	79	57,275	21
Penasco River	0.5	51	30,132	10	7,210	11	216	11	9,000	29
Other tributaries of Pecos River	0.7	36	21,122	59	29,033	52	819	59	30,310	36
Las Moras Creek						1	6	1	250	20
Other tributaries of Rio Grande	15.4	9	87	97	50,880	103	1,572	103	50,539	53
Independent streams in Rio Grande drainage basin	8.8	1	75	87	46,944	89	2,074	92	48,779	57
Rio Mimbres	1.1	1	75	85	46,825	86	2,065	90	46,660	57
Fresno River	7.7									
Rio Tularosa				2	119	3	9	2	119	68
Colorado River and tributaries	168.5	370	34,057	803	974,258	621	24,194	881	1,069,324	43
Colorado River direct	0.4			4	1,650	9	487	12	82,200	23
Green River and tributaries	1.8	2		1	1,350	18	647	23	44,920	16
Green River direct	0.4			1	1,350	10	559	14	13,085	29
Bitter Creek		2								
Duchesne River						1		2	27,000	70
Price River	0.6									
Yampa River and tributaries	0.3					4	48	4	3,200	15
Yampa River direct						4	48	4	3,200	15
Little Snake River	0.1									
Other tributaries of Yampa River	0.2									
White River	0.2					1	10	1	900	10
Other tributaries of Green River						2	30	2	735	17
Grand River and tributaries	45.9	1				38	3,728	46	40,688	27
Grand River direct	12.5					18	2,872	24	32,882	29
Muddy Creek	0.1									
Blue River	1.2									
Eagle River	5.2					2	33	2	1,000	58
Roaring Fork	0.3									
Plateau Creek	0.1									

TABLE 17.—IRRIGATION WORKS, CLASSIFIED BY DRAINAGE BASIN: 1920—Continued.

DRAINAGE BASIN.	Pipe lines, length (miles).	FLOWING WELLS.		PUMPED WELLS.		PUMPING PLANTS.				
		Number.	Capacity (gallons per minute).	Number.	Capacity (gallons per minute).	Number.	Engine capacity (horsepower).	Pumps.		Average lift (feet).
								Number.	Capacity (gallons per minute).	
Colorado River and tributaries—Continued.										
Grand River and tributaries—Continued.										
Gunnison River and tributaries	13.1					17	822	19	6,806	22
Gunnison River direct	1.0					13	759	15	5,706	20
Tomichi Creek	0.4									
North Fork River	2.8					1	8	1	300	14
South Fork River	5.1									
Uncompahgre River	4.5					1	40	1		53
Other tributaries of Gunnison River	4.3					2	15	2	800	16
Rio Dolores	1.2					1	1	1		15
Other tributaries of Grand River	7.2	1								
Fremont River	1.0									
Virgin River	7.6	4	100	8	1,730	9	75	10	3,145	39
San Juan River and tributaries	7.2	10	1,033	1		4	27	4	1,200	128
San Juan River direct	7.1	2	90			2	22	2	1,200	85
Los Pinos River	0.1									
Animas River		4	190							
Other tributaries of San Juan River		4	843	1		2	5	2		170
Kanab Wash	1.3									
Williams River	10.1			5	2,015	6	39	8	2,590	20
Little Colorado River and tributaries		2		2	1,000	1	1	2	1,000	30
Little Colorado River direct		2								
Tributaries of Little Colorado River				2	1,000	1	1	2	1,000	30
Gila River and tributaries	90.4	298	14,044	774	965,338	527	19,091	767	890,248	45
Gila River direct	1.3			78	78,531	80	2,382	84	92,581	34
San Francisco River	1.4			4	225	12	70	13	6,110	19
San Pedro River	5.1	155	5,195	25	11,474	27	285	29	12,949	30
Santa Cruz River	35.6			305	576,234	241	8,073	366	528,649	44
Salt River and tributaries	4.3	1		132	150,874	75	2,653	124	153,184	68
Salt River direct	1.5			72	75,319	14	629	60	75,719	54
Tonto Creek				1	500	2	25	2	1,500	16
Rio Verde	1.8	1		3		11	96	11	1,070	63
Other tributaries of Salt River	1.0			56	75,055	48	1,903	51	74,895	75
Agua Fria River	34.3	1		114	120,685	41	4,749	100	68,575	47
Hassayampa River	4.1			15	6,420	13	204	13	5,810	35
Other tributaries of Gila River	4.9	163	8,849	41	20,895	38	675	38	22,390	48
Other tributaries of Colorado River	3.1	53	18,872	8	1,175	9	99	9	3,333	32
Whitewater Draw and tributaries	**5.1**	**10**	**503**	**209**	**72,787**	**196**	**2,403**	**209**	**73,967**	**44**
Great Basin Drainage	**945.5**	**1,861**	**165,497**	**1,431**	**461,393**	**1,173**	**27,361**	**1,270**	**1,236,706**	**46**
Tributaries of Great Salt Lake	108.9	452	42,248	68	16,067	144	10,490	175	701,160	37
Bear River and tributaries	23.3	171	12,635	57	11,597	104	3,016	111	118,285	40
Bear River direct	7.7			2	902	29	2,208	32	80,025	37
Little Bear River	2.0	29	3,025			4	50	4	3,740	18
Malad River		2	219							
Little Malad Creek		57	7,493							
Other tributaries of Bear River	13.6	83	1,923	55	10,695	71	758	75	34,520	42
Weber River and tributaries	8.2	33	1,358	6	1,640	23	232	25	27,145	16
Weber River direct	1.3	12	388			9	106	10	6,615	14
Ogden River	1.8	9	320	1	230	1	7	1	230	33
Other tributaries of Weber River	5.1	12	650	5	1,410	13	119	14	20,300	17
Jordan River and Utah Lake and tributaries	77.4	242	28,255	5	2,830	17	7,242	39	555,730	38
Jordan River direct	0.3	9	130			5	4,300	20	388,500	19
Spanish Fork River	9.8	21	1,390							
Hobble Creek		18	766	1		1	6	1		14
Provo River	1.2	61	11,716	1	830	1	20	1	900	45
American Fork River	2.2	27	2,665	1	900	3	23	3	1,830	21
Big Cottonwood Creek	2.6	9	92			1	1	1	500	25
Other tributaries of Jordan River and Utah Lake	61.9	103	11,496	2	1,100	6	2,892	13	164,000	65
Independent streams	836.6	1,409	123,249	1,363	445,326	1,029	16,871	1,095	535,546	48
Sevier River and tributaries	9.0	255	38,863	3	178	8	117	10	18,318	30
Sevier River direct	1.9	184	27,127			1		2	11,250	
San Pitch River	3.4	16	3	1	150	1	5	1	450	4
Otter Creek		6	112							
Other tributaries of Sevier River	3.7	32	11,621	2	28	6	112	7	6,618	35
Beaver River	1.5	1		11	3,610	9	91	9	4,010	21
Coal Creek	0.7	155	9,655	41	10,500	20	270	24	10,400	47
Grouse Creek				1	265	1	6	3	265	240
Humboldt River and tributaries	15.7	12	805	18	2,540	18	71	19	22,495	30
Humboldt River direct	2.6	2		8	1,495	8	34	8	2,345	32
East Fork of Humboldt River				1	25	1		1	25	12
North Fork of Humboldt River	0.4			1		1	8	1		30
South Fork of Humboldt River				1	100	1	5	1	100	12
Pine Creek				1	10	1	10	1	10	
Reese River		4	190	4		3		3		
Other tributaries of Humboldt River	12.3	6	615	2	910	3	14	4	20,015	30
Truckee River and tributaries	0.9			1	250	1	6	1	250	8
Truckee River direct	0.7									
Tributaries of Truckee River	0.2			1	250	1	6	1	250	8

TABLE 17.—IRRIGATION WORKS, CLASSIFIED BY DRAINAGE BASIN: 1920—Continued.

DRAINAGE BASIN.	Pipe lines, length (miles).	FLOWING WELLS.		PUMPED WELLS.		PUMPING PLANTS.				
		Number.	Capacity (gallons per minute).	Number.	Capacity (gallons per minute).	Number.	Engine capacity (horse-power).	Pumps.		Average lift (feet).
								Number.	Capacity (gallons per minute).	
Great Basin Drainage—Continued.										
Independent streams—Continued.										
Carson River and tributaries	4.6	3	22	1	50	12	134	13	1,650	12
Carson River direct	1.1			1	50	4	53	4	50	13
Tributaries of Carson River	3.5	3	22			8	81	9	1,600	11
Walker River and tributaries		26	242	71	5	2	2	2		10
Walker River direct		17	240	70	5	2	2	2		10
Tributaries of Walker River		9	2	1						
Duck Creek	0.1	2	794	6	2,285	5	56	8	2,455	20
Steptoe Creek				4	503	4	17	4	1,268	23
Long Valley Creek	2.1			1	480	3	9	3	1,180	17
Susan River	2.0			1	75	4	34	4	3,450	23
Mohave River	28.8	31	4,874	88	45,477	86	2,145	86	45,960	89
Owens River	388.5	23	537	9	4,088	12	137	12	4,558	24
San Jacinto River	145.0	9	115	236	66,833	183	3,546	203	76,396	73
Whitewater River	77.5	242	36,860	326	121,495	235	3,212	247	126,366	41
Quinn River				10	50	3	4	5		25
Deep Creek (Oregon)		1				1	6	2	1,000	10
Donner and Blitzen River		1	10			1		1		16
Silver Creek		1	2	2	450	3	6	3	550	15
Silvies River				2	1,200	2	26	2	1,265	22
Other independent streams	160.2	664	30,170	532	155,621	416	6,976	434	213,775	40
Columbia River and tributaries	1,125.2	176	37,135	752	277,555	1,547	82,451	1,745	2,522,910	50
Columbia River direct	164.7	8	4,390	175	58,401	334	6,493	359	233,881	66
Kootenai River	3.6	2	30			1		1	5	10
Clark Fork and tributaries	27.8	11	3,333	3	80	27	283	27	12,447	32
Clark Fork direct	2.5									
Missoula River and tributaries	17.2	1	2,250	3	80	11	106	11	3,282	24
Missoula River direct	3.8			2		6	52	6	1,096	29
Hellgate River	3.2	1	2,250	1	80	2	10	2	130	29
Big Blackfoot River	0.4					1	16	1	650	12
Bitter Root River	3.4					1	12	1	1,406	7
Other tributaries of Missoula River	6.4					1	16	1		
Flathead River	8.1	10	1,083			16	177	16	9,165	37
Colville River	14.6			1	40	5	23	5	8,450	55
Spokane River and tributaries	163.5			47	58,504	89	4,468	104	118,084	77
Spokane River direct	132.7			47	58,504	83	3,476	93	68,443	70
Coeur d'Alene Lake and River	30.8					6	992	11	50,041	51
Okanogan River and tributaries	20.9			48	12,278	111	1,599	119	47,993	40
Okanogan River direct	14.9			44	12,428	97	930	104	38,268	40
Salmon Creek	0.6					5	607	6	7,385	58
Other tributaries of Okanogan River	5.4			4	850	9	62	9	2,350	26
Methow River	4.8	1		2	115	9	44	9	1,318	56
Entiat River	1.5					4	18	4	310	59
Wenatchee River	26.0			7	1,300	40	337	38	21,114	67
Crab Creek	34.9	3	60	111	36,285	137	2,321	147	66,270	65
Yakima River and tributaries	161.1	3	285	45	9,680	74	3,492	87	78,975	38
Yakima River direct	154.6	3	285	41	7,870	66	3,447	78	75,715	39
Wilson Creek	1.0									
Naches River	4.1			1	335	2	8	3	1,285	55
Ahtanum River				1	125	1	2	1	125	18
Other tributaries of Yakima River	1.4			2	1,350	5	35	5	1,850	18
Snake River and tributaries	261.6	105	9,867	130	40,957	362	39,327	469	1,661,534	30
Snake River direct	81.4	10	860	40	13,859	134	32,689	225	1,340,211	39
Henrys Fork	0.8									
Blackfoot River	1.1									
Port Neuf River	2.8					1	18	1		20
Salmon Falls River	0.1	3	1,900			1	6	1	440	15
Little Wood River	0.2			1	2,500	1	2	1	50	10
Big Wood River	7.0					4	30	4	4,000	19
Bruneau River	0.8	38	1,528	1	27	6	457	7	27,465	24
Owyhee River	2.5	4	787	3	265	61	1,318	61	80,568	26
Boise River	30.5	8	75	2	900	9	324	10	9,650	30
Malheur River	2.0			2	50	10	821	10	30,010	17
Payette River	5.2	1	38	3	9,000	11	608	13	18,256	28
Weiser River	15.1					3	620	5	31,160	76
Burnt River	1.0					3	24	3	965	17
Powder River	7.9	8	315	13	4,780	14	1,601	14	69,132	33
Imnaha River	0.1					4	73	4	500	40
Salmon River	1.9					2	38	2	10,875	56
Grande Ronde River	1.1			20	4,203	25	189	35	16,742	12
Clearwater River	35.9			23	2,750	33	394	36	6,945	21
Asotin Creek	48.0									
Pataha River	1.0			2	350	3	37	3	3,250	52
Palouse River	1.4	8	1,100			2	40	3	4,460	16
Other tributaries of Snake River	12.8	25	3,166	15	2,267	25	388	31	10,339	25

TABLE 17.—IRRIGATION WORKS, CLASSIFIED BY DRAINAGE BASIN: 1920—Continued.

DRAINAGE BASIN.	Pipe lines, length (miles).	FLOWING WELLS. Number.	FLOWING WELLS. Capacity (gallons per minute).	PUMPED WELLS. Number.	PUMPED WELLS. Capacity (gallons per minute).	PUMPING PLANTS. Number.	PUMPING PLANTS. Engine capacity (horsepower).	PUMPS. Number.	PUMPS. Capacity (gallons per minute).	Average lift (feet).
Columbia River and tributaries—Continued.										
Independent streams in Snake River Basin	2.4					9	326	9	96,250	8
Camas Creek						9	326	9	96,250	8
Medicine Lodge	9.4									
Little Lost River	1.9									
Big Lost River	6.1									
Walla Walla River	80.0	34	6,080	124	51,833	143	1,148	155	40,265	24
Klickitat River	2.5					5	26	5	8,875	28
White Salmon River	2.5			2	24	4	42	4	320	83
Umatilla River	14.3	2		6	171	13	115	13	4,246	34
Willow Creek	0.3					1	2	1	200	12
John Day River	3.7			6	475	45	413	47	41,280	25
Deschutes River	8.5			3	386	22	764	26	36,564	38
Hood River	38.6	3	10	1	17	5	36	5	755	70
Willamette River	3.2			15	1,369	30	220	32	7,813	24
Other tributaries of Columbia River	82.2	4	3,080	26	4,638	77	954	79	40,061	88
Pacific Ocean streams, other than the Colorado and Columbia Rivers	6,147.0	978	239,189	24,311	10,293,929	20,841	372,690	23,378	16,414,755	41
Dungeness River	1.0									
McDowell Creek	3.1									
Rogue River and tributaries	20.5	3	10,000	23	11,499	102	723	111	38,147	26
Rogue River direct	7.1			11	6,964	44	347	44	16,597	30
Little Butte Creek	0.8					1	9	1		23
Bear River	6.3			9	1,133	28	120	36	8,138	23
Evans Creek	0.5					5	77	5	1,175	29
Applegate River	2.1					8	93	8	3,200	26
Illinois River	1.0			2	402	7	32	8	3,067	11
Other tributaries of Rogue River	2.7	3	10,000	1	3,000	9	45	9	5,970	25
Klamath River and tributaries	22.1	4	35	16	5,975	74	3,996	83	174,184	25
Klamath River direct	20.8	3		14	4,375	57	3,148	62	142,484	28
Lost River	0.6			2	1,600	14	786	16	21,100	22
Other tributaries of Klamath River	0.7	1	35			3	62	5	10,600	30
Russian River	27.2	1		89	30,234	128	1,058	128	51,239	23
Sacramento River and tributaries	361.2	96	2,957	3,508	1,473,602	3,430	64,163	3,898	4,184,240	26
Sacramento River direct	61.2			514	278,468	655	28,625	807	2,616,658	24
Pit River	2.9	14	693	4	395	36	440	36	32,886	18
Cow Creek	0.4					11	87	11	8,955	14
Cottonwood Creek	0.6					9	100	10	7,565	33
Battle Creek	0.3			2	700	3	63	4	3,300	25
Stony Creek	17.5			68	40,451	61	759	66	45,959	25
Feather River	117.3	9	1,284	845	341,583	728	8,425	838	394,677	22
Yuba River	6.2	2	30	8	2,725	9	1,572	11	2,751	35
Cache Creek	0.4			144	91,211	75	1,524	76	92,391	24
American River	77.8			163	93,694	172	2,358	190	95,838	26
Other tributaries of Sacramento River	76.6	11	950	1,760	622,337	1,671	20,210	1,859	883,260	30
San Joaquin River and tributaries	1,396.6	145	48,828	11,149	4,911,280	9,973	136,911	10,951	7,400,131	34
San Joaquin River direct	194.8	49	15,155	1,521	668,420	1,481	36,086	1,639	1,295,475	25
Kern River	82.1	17	13,830	441	219,674	384	6,676	405	223,606	47
Tulare Lake	261.9	24	8,253	1,106	434,565	906	12,841	1,069	1,330,434	59
Tule River	162.7	2	231	1,146	493,272	974	11,329	1,083	995,319	45
Kaweah River	268.7	3	17	2,126	842,065	1,734	21,932	1,930	876,254	41
Kings River	284.2	34	10,600	2,547	1,185,710	2,283	25,426	2,397	1,225,607	23
Fresno River	6.2	1	200	145	79,255	134	1,520	144	82,738	33
Merced River	5.2	1	73	215	120,468	213	2,774	235	157,865	21
Tuolumne River	14.4	1	400	63	62,890	66	1,231	69	59,360	33
Stanislaus River	41.6			34	26,490	36	1,158	41	73,140	26
Calaveras River	20.4	6	220	555	189,181	544	4,358	585	200,337	26
Mokelumne River	52.2	3	25	709	356,156	694	8,309	765	451,434	33
Cosumnes River	5.5			117	50,370	111	1,788	131	84,740	28
Other tributaries of San Joaquin River	11.1	5	982	399	193,267	413	7,488	458	343,822	28
Tributaries of San Francisco Bay other than Sacramento and San Joaquin Rivers	204.6	74	12,675	2,651	795,610	1,897	36,219	2,102	862,987	55
Coyote Creek	40.2	14	3,490	821	246,482	657	12,407	725	312,320	50
Guadalupe River	96.3	51	7,700	723	242,912	612	12,480	572	278,221	67
Other tributaries	168.1	9	1,925	905	215,116	728	10,332	805	272,446	50
Pajaro River	63.2	17	2,696	688	186,255	370	7,083	417	203,845	35
Salinas River	169.6	18	3,808	667	422,195	339	10,085	286	424,002	25
Santa Maria River	28.9	13	2,700	118	65,393	62	2,934	78	204,534	47
Santa Ynez River	26.7	7	1,519	62	16,461	61	1,611	64	199,630	30
Santa Clara River	134.0	1	700	135	92,049	125	5,126	161	102,154	67
Los Angeles River	348.2	42	24,042	849	443,036	748	16,208	825	458,932	52
San Gabriel River	602.9	100	22,382	1,684	557,934	625	25,675	951	579,153	72
Santa Ana River	204.5	360	62,482	1,816	1,002,743	1,523	45,345	1,836	1,048,090	61
San Diego River	146.2	1	6	523	54,216	319	2,313	374	65,462	56
Other Pacific Ocean streams	1,165.4	95	27,549	1,144	224,207	968	13,150	1,093	417,995	59

CROPS.

TABLE 18.—ACREAGE, YIELD, AND VALUE OF PRINCIPAL CROPS GROWN ON IRRIGATED LAND, AND COMPARISONS WITH TOTALS FOR THE STATES INCLUDED: 1919 AND 1909.

[Totals for the states included, used in making comparisons, are reported in the state bulletins on agriculture.]

	Crop.	Area harvested.					Quantity harvested.					
		1919		1909				1919		1909		
		Acres.	Per cent of total for states included.	Acres.	Per cent of total for states included.	Per cent of increase.[1]	Unit.	Amount.	Per cent of total for states included.	Amount.	Per cent of total for states included.	Per cent of increase.[1]
	Cereals:											
1	Corn	263,312	1.2	133,560	0.5	97.1	Bu.	7,525,354	1.6	3,168,973	0.4	137.5
2	Oats	325,523	2.7	729,632	7.4	−56.0	Bu.	9,361,125	2.9	27,213,262	9.8	−65.6
3	Winter wheat	337,127	1.4	548,173	2.1	129.6	Bu.	7,115,303	1.8	14,045,117	3.6	76.5
4	Spring wheat	877,411	5.0				Bu.	17,679,328	12.2			
5	Barley	280,287	6.9	239,928	5.4	16.8	Bu.	7,202,430	9.8	6,965,841	7.2	3.1
6	Rye	16,614	0.5	5,986	2.9	217.6	Bu.	168,977	0.6	95,885	3.9	76.2
7	Kafir, milo, etc	137,769	4.2	(2)			Bu.	4,100,348	5.7	(2)		
8	Rough rice[3]	892,761	99.7	(2)			Bu.	35,032,275	99.9	(2)		
	Other grains and seeds:											
9	Clover and alfalfa seed[4]	39,431	25.0	31,948	23.1	23.4	Bu.	161,557	48.7	104,610	39.9	54.5
10	Dry beans, navy, etc	177,752	24.8	17,798	9.1	898.7	Bu.	2,862,567	34.0	314,271	8.8	810.9
11	Dry peas, Canada	51,464	33.0	18,422	20.2	179.4	Bu.	637,560	38.0	254,219	32.0	150.7
	Hay and forage:											
12	Timothy alone	140,607	16.5	202,763	18.8	−30.7	Tons	178,112	18.7	349,920	23.8	−49.1
13	Timothy and clover mixed	302,260	40.8	183,308	14.5	114.0	Tons	569,591	46.1	332,851	17.0	70.6
14	Clover alone	40,879	17.7	20,001	10.4	104.4	Tons	69,485	17.6	46,472	14.9	36.6
15	Alfalfa	3,151,675	42.2	2,216,628	56.1	42.2	Tons	8,430,766	51.6	6,524,498	58.3	29.2
16	Other tame grasses	234,312	15.9	219,035	14.1	16.1	Tons	316,803	15.2	333,977	16.4	−5.7
17	Wild, salt, or prairie grasses	1,034,507	7.8	1,536,669	11.7	32.4	Tons	951,345	8.7	1,627,804	12.5	−41.6
18	Small grains cut for hay	291,697	7.0	298,634	7.4	39.8	Tons	372,729	9.5	305,050	8.4	22.2
19	Annual legumes cut for hay	19,851	9.8	(2)			Tons	28,334	11.4	(2)		
20	Silage crops	56,424	9.2	(2)			Tons	388,630	13.3	(2)		
21	Corn cut for forage	36,689	1.6	(2)			Tons	87,389	2.5	(2)		
22	Kafir, sorghum, etc., for forage	51,981	1.2	(2)			Tons	106,035	1.5	(2)		
23	Root crops for forage	2,631	9.4	(2)			Tons	19,549	6.5	(2)		
	Vegetables:											
24	Potatoes	154,194	23.0	148,712	21.2	3.7	Bu.	22,978,739	40.7	22,267,845	30.3	3.2
25	Cantaloupes and muskmelons	20,374	60.3	(2)								
26	Tomatoes	20,649	41.6	(2)								
	Orchard fruits:											
27	Grapes	[5] 73,675,084	46.7	(2)			Lbs.	1,131,279,429	54.4	(2)		
28	Apples	[6] 9,085,326	35.2	(2)			Bu.	22,406,906	44.0	(2)		
29	Peaches	[6] 7,062,692	35.6	(2)			Bu.	13,224,500	47.2	(2)		
30	Pears	[6] 1,849,429	35.9	(2)			Bu.	3,479,806	43.2	(2)		
31	Plums and prunes	[6] 4,306,976	29.7	(2)			Bu.	7,974,240	40.9	(2)		
32	Cherries	[6] 567,907	22.5	(2)			Bu.	578,354	20.0	(2)		
	Subtropical fruits:											
33	Oranges	[6] 8,711,152	84.1	(2)			Boxes	18,774,366	86.4	(2)		
34	Lemons	[6] 2,299,716	79.6	(2)			Boxes	5,776,149	85.1	(2)		
	Miscellaneous:											
35	Sugar beets grown for sugar	377,655	81.0	174,071	68.0	117.0	Tons	3,567,532	82.8	2,074,303	70.5	72.0
36	Cotton	214,576	1.5	(2)			Bales	113,862	2.8	(2)		

[1] A minus sign (−) denotes decrease.
[2] Not reported separately in 1909.
[3] Quantity harvested and value given for irrigated land were not tabulated separately. The totals given include small amounts representing rice grown without irrigation.
[4] Not including red clover seed.
[5] Number of vines of bearing age.
[6] Number of trees of bearing age.

CROPS.

TABLE 18.—ACREAGE, YIELD, AND VALUE OF PRINCIPAL CROPS GROWN ON IRRIGATED LAND, AND COMPARISONS WITH TOTALS FOR THE STATES INCLUDED: 1919 AND 1909—Continued.

[Totals for the states included, used in making comparisons, are reported in the state bulletins on agriculture.]

	Crop.	Unit	Average yield per acre, 1919. For states included.	Average yield per acre, 1919. On non-irrigated land.	Average yield per acre, 1919. On irrigated land. Average	Average yield per acre, 1919. On irrigated land. Per cent of average for states included	Average yield per acre, 1919. On irrigated land. Per cent of average on non-irrigated land.	Value. 1919. Amount.	Value. 1919. Per cent of total for states included.	Value. 1909. Amount.	Value. 1909. Per cent of total for states included.	Value. Per cent of increase.[1]
	Cereals:											
1	Corn	Bu.	21.9	21.8	28.6	130.6	131.2	$11,692,813	1.8	$2,421,420	0.8	383.1
2	Oats	Bu.	29.5	26.5	28.8	108.7	108.7	9,534,495	3.7	14,055,424	12.4	−32.2
3	Winter wheat	Bu.	14.1	14.1	18.7	132.6	132.6	15,269,840	1.8	12,839,562	3.5	311.4
4	Spring wheat	Bu.	8.2	7.6	20.1	245.1	264.5	37,556,853	11.4			
5	Barley	Bu.	17.9	17.3	25.7	143.6	148.6	10,775,076	11.2	4,395,928	8.4	145.1
6	Rye	Bu.	7.4	7.4	8.9	120.3	120.3	295,987	0.7	70,066	4.4	322.4
7	Kafir, milo, etc.	Bu.	19.9	19.6	26.8	134.7	136.7	6,725,561	7.5	(2)	.....	.....
8	Rough rice[3]	Bu.	39.2	4.1	39.2	100.0	956.0	96,368,090	99.9	(2)	.....	.....
	Other grains and seeds:											
9	Clover and alfalfa seed[4]	Bu.	21.0	1.4	4.1	19.5	292.9	3,461,762	46.8	765,775	37.5	352.1
10	Dry beans, navy, etc.	Bu.	11.8	10.3	10.1	136.4	156.3	12,966,298	34.6	570,193	8.3	.....
11	Dry peas, Canada	Bu.	10.8	10.0	12.4	114.8	124.0	2,042,455	36.6	358,568	29.3	469.6
	Hay and forage:											
12	Timothy alone	Tons	1.12	1.09	1.27	113.4	116.5	4,582,905	23.0	3,210,820	26.2	42.7
13	Timothy and clover mixed	Tons	1.48	1.30	1.45	98.0	96.7	11,782,635	42.5	3,071,935	18.8	348.7
14	Clover alone	Tons	1.58	1.56	1.55	98.4	99.4	1,334,600	18.8	381,703	14.0	249.6
15	Alfalfa	Tons	2.19	1.84	2.68	122.4	145.7	186,391,219	54.0	30,850,633	59.6	266.5
16	Other tame grasses	Tons	1.31	1.39	1.25	95.4	94.7	6,473,377	17.4	2,584,906	17.5	152.4
17	Wild, salt, or prairie grasses	Tons	0.83	0.82	0.93	110.8	112.2	17,954,630	11.2	11,734,258	18.4	53.0
18	Small grains cut for hay	Tons	0.95	0.92	1.28	134.7	139.1	8,448,901	9.8	2,983,171	7.2	183.2
19	Annual legumes cut for hay	Tons	1.22	1.20	1.43	117.2	119.2	494,052	10.1	(2)	.....	.....
20	Silage crops	Tons	4.75	4.54	6.89	145.1	151.8	3,831,525	14.6	(2)	.....	.....
21	Corn cut for forage	Tons	1.52	1.51	2.38	156.6	157.6	1,121,730	2.8	(2)	.....	.....
22	Kafir, sorghum, etc., for forage	Tons	1.69	1.66	2.04	120.7	121.4	1,814,225	1.6	(2)	.....	.....
23	Root crops for forage	Tons	10.77	11.11	7.43	69.0	66.9	340,329	6.7	(2)	.....	.....
	Vegetables:											
24	Potatoes	Bu.	84.3	64.2	149.6	176.7	229.6	30,778,993	40.2	8,965,658	27.1	466.4
25	Cantaloupes and muskmelons	.....	.....	.....	.....	.....	.....	3,953,637	66.5	(2)	.....	.....
26	Tomatoes	.....	.....	.....	.....	.....	.....	2,701,968	39.1	(2)	.....	.....
	Orchard fruits:											
27	Grapes	Lbs.	[5] 13.2	[5] 11.3	[5] 15.4	116.7	136.3	36,904,252	53.8	(2)	.....	.....
28	Apples	Bu.	[6] 2.0	[6] 1.7	[6] 2.5	125.0	147.1	24,566,534	28.6	(2)	.....	.....
29	Peaches	Bu.	[6] 1.4	[6] 1.2	[6] 1.9	135.7	158.3	34,070,264	49.2	(2)	.....	.....
30	Pears	Bu.	[6] 1.6	[6] 1.4	[6] 1.9	118.8	135.7	4,695,848	32.9	(2)	.....	.....
31	Plums and prunes	Bu.	[6] 1.2	[6] 1.0	[6] 1.6	133.3	160.0	15,188,490	41.1	(2)	.....	.....
32	Cherries	Bu.	[6] 0.7	[6] 0.6	[6] 0.9	128.6	150.0	2,139,891	29.4	(2)	.....	.....
	Subtropical fruits:											
33	Oranges	Boxes	[6] 2.1	[6] 1.8	[6] 2.2	104.8	122.2	58,244,422	86.4	(2)	.....	.....
34	Lemons	Boxes	[6] 2.3	[6] 1.7	[6] 2.5	108.7	102.3	16,730,832	88.1	(2)	.....	.....
	Miscellaneous:											
35	Sugar beets grown for sugar	Tons	9.24	8.26	9.45	102.3	112.8	28,831,339	82.2	10,042,721	69.8	286.7
36	Cotton	Bales	0.28	0.28	0.53	189.3	189.3	30,457,881	4.3	(2)	.....	.....

[1] A minus sign (−) denotes decrease. Per cent not shown when more than 1,000.
[2] Not reported separately in 1909.
[3] Quantity harvested and value given for irrigated land were not tabulated separately. The totals given include small amounts representing rice grown without irrigation.
[4] Not including red clover seed.
[5] Yield per vine.
[6] Yield per tree.

STATE TABLE I.—ACRES HARVESTED AND PRODUCTION AND VALUE OF PRINCIPAL CROPS IN 1919 ON IRRIGATED LAND FOR THE STATES, AND ACRES HARVESTED, BY COUNTIES.

ARIZONA.

THE STATE.	Corn.	Oats.	Winter wheat.	Spring wheat.	Barley.	Kafir and milo.	Alfalfa.	Other tame grasses.	Annual legumes cut for hay.	Small grains cut for hay.	Wild, salt, or prairie grasses.	Silage crops.
	PRINCIPAL CROPS.											
Acres harvested	8,612	4,448	28,895	3,250	19,811	20,316	97,094	3,108	792	10,424	1,050	5,634
Production	[1] 205,979	[1] 136,227	[1] 692,332	[1] 56,778	[1] 603,[illegible]	[1] 600,343	[2] 323,052	[2] 9,535	[2] 1,081	[2] 14,477	[2] 1,096	[2] 36,130
Value ... dollars	401,523	156,661	1,509,384	152,679	871,[illegible]	914,000	7,914,774	181,545	21,620	330,740	15,344	342,235
	ACRES HARVESTED.											
COUNTIES.												
Apache	552	1,907	134	430	234		2,736	215		[4] 490	251	
Cochise	1,010	36	128		167	741	2,353	461	139	507	2	191
Coconino	32	32					476	2		24		
Gila	148	1	23		2	5	202			140		
Graham	1,470	96	6,306		3,845	61	11,936	67		286		359
Greenlee	1,286	386	208	139	223	30	1,607	128	20	144	8	82
Maricopa	1,481	1,192	18,123	1,767	12,121	15,513	57,360	2,957	146	2,430	124	3,962
Mohave	47		22	42	35		460	58		93		
Navajo	310	404	24	273	6	5	1,765	112		257	147	43
Pima	510		325		37	208	1,586	297	180	2,112		650
Pinal	425	2	6,107	115	2,419	1,204	6,339	141	228	1,930		171
Santa Cruz	199				3		181	207	8	2,006		132
Yavapai	1,060	291	13	119	395	313	3,140	290	3	770	486	24
Yuma	72	11	452	265	284	2,234	6,749	176	48	305	22	

THE STATE.	Corn cut for forage.	Kafir, sorghum, etc., for forage.	Cantaloupes and muskmelons.	Watermelons.	Potatoes.	Clover and alfalfa seed.	Dry beans.	Cotton.	Grapes.	Apples.	Peaches.	Oranges.
	PRINCIPAL CROPS.											
Acres harvested	2,074	12,245	3,123	807	1,911	4,217	1,295	101,080	[3] 14,072	[4] 30,749	[4] 22,890	[4] 24,196
Production	[2] 7,461	[2] 23,183			[1] 37,271	[1] 28,193	[1] 9,876	[5] 56,567	[6] 139,690	[7] 54,643	[7] 46,962	[7] 45,704
Value ... dollars	82,074	347,745	428,855	86,501	93,428	592,053	46,417	10,176,213	8,381	121,143	127,853	128,036
	ACRES HARVESTED.											
COUNTIES.												
Apache	216	99	46	60	40		81			626	139	
Cochise	236	2,979	37	106	84		406		2,538	2,645	4,720	
Coconino	183		1	26	406		1			770	458	
Gila	26	28		2			5		10	389	592	
Graham	74	113	4	20	16		45	409	188	4,740	1,051	
Greenlee	79	121	11	20	24		50		494	1,579	1,981	
Maricopa	1,482	5,092	2,846	402	87	1,231	32	72,396	9,910	5,928	13,092	33,153
Mohave	48	57			2		3			527	441	
Navajo	191	45	2	6	64	18	12			175	20	
Pima	268	462	8	86	31	200	242	755	274	178	4,862	
Pinal		1,743	167	32	5		59	1,321		4,930	2,071	20
Santa Cruz	28	295					290					
Yavapai	225	198		16	261		60		108	8,217	3,016	
Yuma	31	1,516	1	51	1	2,768	10	26,289	634	25	407	24

[1] Bushels. [2] Tons. [3] Number of vines. [4] Number of trees. [5] Bales. [6] Pounds. [7] Boxes.

CALIFORNIA.

THE STATE.	Corn.	Oats.	Winter wheat.	Spring wheat.	Barley.	Rye.	Kafir, milo, etc.	Rough rice.	Clover and alfalfa seed.	Dry beans.	Dry peas.	Sugar-beet seed.	Flower and vegetable seeds.
	PRINCIPAL CROPS.												
Acres harvested	56,958	9,359	85,245	48,330	128,812	2,546	124,692	130,347	2,319	148,379	1,504	503	3,234
Production	[1] 1,964,828	[1] 231,878	[1] 1,636,503	[1] 717,549	[1] 2,299,308	[1] 29,294	[1] 2,253,711	[1] 6,926,313	[1] 9,762	[1] 4,484,350	[2] 24,550	[2] 138,000	[2] 2,056,510
Value ... dollars	3,346,208	266,878	3,583,942	1,571,432	5,228,893	54,194	5,531,309	20,432,627	203,742	11,588,944	88,218	98,600	2,656,519
	ACRES HARVESTED.												
COUNTIES.													
Alameda	6									10			
Alpine		21	184		19								
Amador	4												
Butte	113	397	1,464	199	991		107	24,887		1,290	15		
Calaveras	32		5	1	5		21			27			

[1] Bushels. [2] Pounds.

STATE TABLE I.—ACRES HARVESTED AND PRODUCTION AND VALUE OF PRINCIPAL CROPS IN 1919 ON IRRIGATED LAND FOR THE STATES, AND ACRES HARVESTED, BY COUNTIES—Continued.

CALIFORNIA—Continued.

COUNTIES—continued	ACRES HARVESTED.												
	Corn.	Oats.	Winter wheat.	Spring wheat.	Barley.	Rye.	Kafir, milo, etc.	Rough rice.	Clover and alfalfa seed.	Dry beans.	Dry peas.	Sugar-beet seed.	Flower and vegetable seeds.
Colusa	944		231		431		199	44,842	20	110			
Contra Costa	6,117	76	119		1,396				15	4,936			20
Eldorado	17		1				1			1			
Fresno	2,148	269	6,609	1,637	15,763	15	4,197	60	282	118	2		
Glenn	219	30	789	33	4,373	20	1,966	38,805					
Humboldt	13			1	19								
Imperial	2,662	989	18,179	6,296	17,221	20	62,392		429	2	1		
Inyo	1,499	173	242	800	159				26	14			
Kern	1,989	464	8,816	18,987	18,051	12	11,842	708	138	96			1
Kings	1,999	297	12,576	15,621	10,535	525	5,132		57				
Lassen		637	1,394	3,494	474	197			283				
Los Angeles	2,908	183	622	275	1,259	20	1,490		48	24,620	4		11
Madera	569	13	238		2,151	8	1,650	275		140			
Mendocino					9								
Merced	1,529	176	1,093	299	6,546	275	2,356	437	10	3,288	5		
Modoc	3	89	1,599	1,291	790	449			147	5			
Mono	4	30	1	32	79					1			
Monterey	8	19	1,450	1,703	1,998					2,961	121	503	
Napa	25	22	37		48								
Nevada	20	2				2	8			3			
Orange	964	147			260		26			11,020	194		30
Placer			6		2		13	294					
Plumas		436	158	375	5	280							
Riverside	721	43	962	68	3,745	4	3,894	7	355	400	70		8
Sacramento	1,082	262	1,845	63	2,718		158	100	7	7,285	352		776
San Benito	9		79	80	133								319
San Bernardino	760	153	391		3,412	13	2,086		20	260	214		
San Diego	357	29	47	174	35	4	116			1,170	2		
San Joaquin	24,473	232	2,528	840	18,217	104	2,355	45		15,597			1,391
San Luis Obispo	23		100		205	5				63			35
San Mateo		29	1	26	23								
Santa Barbara	2				49					373			419
Santa Clara	420	6	30		1,629					1,271			110
Santa Cruz	2									5			
Shasta	177	14	318	72	169	5	27	267		73	3		
Sierra		123		37	25	16							
Siskiyou	106	586	305	1,361	737	1			50	27			
Solano	1,105	473	130	237	944			113		2,311	200		
Sonoma	5	11								13			
Stanislaus	1,574	2,862	5,501	221	942	343	11,630	1,246	157	15,506	55		24
Sutter	213	308	349	178	3,166	20	280	7,112	38	352	186		
Tehama	32	21	4,555	67	5,456		692	150	5	308	3		
Trinity	41	26	20	38	8					18	2		
Tulare	1,726	325	8,561	1,845	9,513	148	10,498	22	20	110			2
Tuolumne	22	4	5	4						8			
Ventura	25				20		20			52,026	42		
Yolo	133	30	719	397	2,731		40	5,511	202	1,158			88
Yuba	161	13	122		368		536	2,277		330			

THE STATE.	PRINCIPAL CROPS.												
	Timothy alone.	Timothy and clover mixed.	Clover alone.	Alfalfa.	Other tame grasses.	Annual legumes cut for hay.	Small grains cut for hay.	Wild, salt, or prairie grasses.	Silage crops.	Corn cut for forage.	Kafir, sorghum, etc., for forage.	Root crops for forage.	Potatoes.
Acres harvested	2,919	39,796	4,862	586,686	15,963	3,053	145,357	85,603	16,244	5,060	7,418	684	29,696
Production	[1] 4,938	[1] 54,900	[1] 6,386	[1] 1,947,589	[1] 22,676	[1] 2,728	[1] 190,472	[1] 98,729	[1] 119,291	[1] 12,946	[1] 14,557	[1] 5,712	[2] 4,502,597
Value ... dollars	98,794	1,019,911	118,936	44,289,463	296,830	74,830	4,988,882	1,264,196	1,133,364	181,244	220,005	94,248	10,355,973

COUNTIES.	ACRES HARVESTED.												
Alameda		25		1,688		50	793						
Alpine	140	272	154	414				95					
Amador		5		110	44		143	21	20	6	1		23
Butte	30		5	2,897	14	69	1,604	28	132	28	56	3	15
Calaveras		88	25	973	182	2	405	207		5			70
Colusa		40		2,394		90	615	43		17			
Contra Costa				2,117	82		1,559	100					
Eldorado	4	95	92	264	174	36	444	114	3	1			5,951
Fresno	4			50,838	493	142	11,944	132	2,080	281	655		60
Glenn	140	8		11,723	183	85	757		219	13	66		28

[1] Tons. [2] Bushels.

STATE TABLE I.—ACRES HARVESTED AND PRODUCTION AND VALUE OF PRINCIPAL CROPS IN 1919 ON IRRIGATED LAND FOR THE STATES, AND ACRES HARVESTED, BY COUNTIES—Continued.

CALIFORNIA—Continued.

COUNTIES—continued.	ACRES HARVESTED.												
	Timothy alone.	Timothy and clover mixed.	Clover alone.	Alfalfa.	Other tame grasses.	Annual legumes cut for hay.	Small grains cut for hay.	Wild, salt, or prairie grasses.	Silage crops.	Corn cut for forage.	Kafir, sorghum, etc., for forage.	Root crops for forage.	Potatoes.
Humboldt		4		146	44		36		17			7	
Imperial	45		170	48,053	377	281	6,931	20	1,222	949	1,951		6
Inyo	143	718	150	6,944	263	2	91	777	409	20	110		124
Kern			12	28,461	197	72	8,645	41	694	190	697		521
Kings			79	24,911	77	5	6,594		461	276	2		17
Lake		65		151			17					1	12
Lassen	135	2,152	2,610	10,553	190		967	22,780	50			8	
Los Angeles	4	4	95	21,774	284	353	15,983	54	2,359	1,132	326	297	7,594
Madera				10,850	37	28	2,066		34	82	192		46
Marin							10						
Mendocino				976	51		40	15				1	2
Merced				66,102	113	147	5,234	4,441	1,625	142	163	2	231
Modoc	516	19,484	129	5,429	2,552	57	1,668	28,855					72
Mono	60	840	181	1,461			52	493		7			
Monterey				14,775	12	5	2,779			3	4	23	
Napa				369			194		28				10
Nevada	2	122	229	468	533		84	131	25	73	14	4	83
Orange	5		32	2,553	135	192	7,771	26	217	93	55	24	174
Placer		10	32	514	11	2	674	7		3	3	1	7
Plumas	130	3,315	75	591	265		163	5,484				1	54
Riverside	8	70	2	15,430	202	39	10,080	1	462	348	1,116	45	261
Sacramento			1	7,481	55	49	3,269	35	164	70	25	11	848
San Benito			17	3,423			867	41	80			72	
San Bernardino	86			10,325	738	149	7,706		1,184	280	254	3	990
San Diego			2	3,583	56	787	2,620	2	452	109	21	31	207
San Joaquin		44	1	30,655	77	145	6,596	496	403	44	102	2	11,089
San Luis Obispo				2,759		5	191		22	28			17
San Mateo				259			846						237
Santa Barbara				1,670		4	678		150				16
Santa Clara	34	1	61	6,773	301	56	4,211	1	259	23		51	162
Santa Cruz				208			53		4			1	8
Shasta	541	3,851	132	4,956	2,008	90	837	7,836	85	82	42	21	121
Sierra		830	36	563	318		158	6,356					20
Siskiyou	599	5,560	110	16,837	4,637		2,308	6,418	16	19		2	155
Solano				6,479	5		344				8		76
Sonoma				318		1	2						
Stanislaus	70	50	12	55,732	298		9,120	49	1,820	120	178	6	142
Sutter		25	27	3,118	60	16	1,374		94	8	4	2	1
Tehama		119	9	3,772	338	51	2,530	24	19	25	106		25
Trinity	177	850	45	1,847	85	2	373	82		9		3	58
Tulare		5		40,046	215	10	9,892	140	1,287	477	986	6	78
Tuolumne	15		37	384	11		148	78		9			34
Ventura				1,846		17	1,320		17		5	2	
Yolo			28	6,759	89		1,272		131	30	44	3	
Yuba	35	47	212	816	158	25	1,287	178		73	32	1	24

THE STATE.	PRINCIPAL CROPS.										
	Sweet potatoes and yams.	Cabbages.	Cantaloupes and muskmelons.	Celery.	Cucumbers.	Beans (green).	Peas (green).	Lettuce.	Onions.	Corn (sweet).	Tomatoes.
Acres harvested	5,858	3,279	13,800	2,605	477	1,564	2,258	4,266	5,801	2,219	16,997
Production ....bushels	659,734										
Value ....dollars	1,517,388	547,205	2,753,155	721,521	87,701	292,953	387,079	1,190,363	2,002,151	197,015	2,121,514

COUNTIES.	ACRES HARVESTED.										
Alameda		4		3	16	5	5	4	5	149	577
Amador	1	1	1			1			1	3	3
Butte	3	5	4	5	2	5		2	3	13	23
Calaveras		4	1	1	2	5	4	2	6	5	3
Colusa		1		1			1				
Contra Costa		1		1,014	2	1		3	263	1	113
Eldorado	2	1	1			3				1	1
Fresno	43	4	25	3	8	17	1	6	11	3	55
Glenn		2	21						1	3	6
Humboldt				1		1		1	1	1	
Imperial	7	2	5,734		10		285	1,230	20	8	216
Inyo			2				1		1	6	1
Kern	27	21	179	10	19	12	11	12	21	54	131
Kings	13	2	5		62	3	2	1	6	1	4
Los Angeles	1,035	1,931	1,375	335	215	753	671	2,603	196	1,361	5,277

STATE TABLE I.—ACRES HARVESTED AND PRODUCTION AND VALUE OF PRINCIPAL CROPS IN 1919 ON IRRIGATED LAND FOR THE STATES, AND ACRES HARVESTED, BY COUNTIES—Continued.

CALIFORNIA—Continued.

ACRES HARVESTED.

COUNTIES—continued.	Sweet potatoes and yams.	Cabbages.	Canta-loupes and musk-melons.	Celery.	Cucum-bers.	Beans (green).	Peas (green).	Lettuce.	Onions.	Corn (sweet).	Tomatoes.
Madera	2		354							9	
Marin		3		1		2	3	5	2	6	2
Mendocino									1		
Merced	2,710	1	435	1			1	1	9	1	32
Monterey		14		2	1	1	1	33	6	4	2
Nevada		1	2							7	4
Orange	300	429	22	104	27	74	77	20	8	55	1,099
Placer			1							1	17
Plumas		1							1		
Riverside	130	9	68		2	24	10	2	664	16	942
Sacramento	4	69	16	145	19	26	26	102	44	80	473
San Benito		1				1		1	1	1	467
San Bernardino	190	45	30	2	1	4	5	6	14	50	453
San Diego	133	84	85	22	45	279	527	71	13	126	339
San Joaquin		50	246	880	9	43	5	15	4,285	27	358
San Luis Obispo		7	2	1	1	2	2	6	2	6	4
San Mateo		221		6	2	62	247	36	21	47	277
Santa Barbara	6		2			3	15		16		1
Santa Clara		23	11	52	17	189	45	26	85	88	4,548
Santa Cruz		3	1	2		1	2	2	1	5	5
Shasta	6	1	5	1	2	4			1	7	8
Sierra		1									
Siskiyou		1				1					
Solano		164	6	1	1	3	2	3	5	17	165
Sonoma		10	1	1	1	5	2	14	7	12	94
Stanislaus	1,234	49	5,120	3	3	8	290	5	58	10	353
Sutter	5	6	5	2	1	4	4	8	3	3	18
Tehama			5			2				2	3
Trinity		1	1							1	
Tulare	27	8	20	5	2	7	3	2	4	9	16
Tuolumne		3	4		1	4	1	1	2	10	5
Ventura		88	2	1	11	2	5		4	4	58
Yolo		5	5	1	4	7	3	41	8	4	839
Yuba		2	2	1			1	2	1	2	6

PRINCIPAL CROPS.

THE STATE.	Water-melons.	Asparagus.	Cauliflower.	Peppers (green).	Pumpkins.	Spinach.	Sugar beets grown for sugar.	Cotton.	Broom corn.	Hops.	Straw-berries.
Acres harvested	3,979	9,626	2,362	4,255	544	867	55,720	83,963	883	2,172	1,465
Production							[1] 423,427	[2] 44,681	[3] 351,700	[3] 3,691,623	[4] 5,143,533
Value ... dollars	227,628	1,653,081	497,886	632,191	18,736	128,516	5,491,551	8,891,519	28,136	1,919,644	1,028,707

ACRES HARVESTED.

COUNTIES.	Water-melons.	Asparagus.	Cauliflower.	Peppers (green).	Pumpkins.	Spinach.	Sugar beets grown for sugar.	Cotton.	Broom corn.	Hops.	Straw-berries.
Alameda							844				
Butte	14				45						7
Calaveras	2	1	1								1
Colusa	20							40	769		
Contra Costa		960									
Eldorado											1
Fresno	34	2	3	7		2		5,484			13
Glenn	24										
Imperial	346	100				19		54,688	13		5
Inyo	8										1
Kern	79				5			1,191	15		8
Kings	33	1			29	80	80	450	11		
Lake											2
Los Angeles	837	126	1,983	207	105	199	16,923				645
Madera	109				8			39			3
Marin			1								
Mendocino											
Merced	249				2				1	134	3
Modoc											2
Monterey							13,474				
Napa											1
Nevada											4
Orange	76	7	22	3,911	35		13,552				4
Placer											9
Riverside	146	22		6	15	119	544	22,060	40		1
Sacramento	17	6,739	24	2	3	233				941	522
San Benito					5						
San Bernardino	114	14	39		34		877		4		4
San Diego	73	3	22	84		10	212				3
San Francisco							1,796				

[1] Tons. [2] Bales. [3] Pounds. [4] Quarts.

STATE TABLE I.—ACRES HARVESTED AND PRODUCTION AND VALUE OF PRINCIPAL CROPS IN 1919 ON IRRIGATED LAND FOR THE STATES, AND ACRES HARVESTED, BY COUNTIES—Continued.

CALIFORNIA—Continued.

COUNTIES—continued.	ACRES HARVESTED.										
	Water-melons.	Asparagus.	Cauliflower.	Peppers (green).	Pumpkins.	Spinach.	Sugar beets grown for sugar.	Cotton.	Broom corn.	Hops.	Straw-berries.
San Joaquin	147	62	7	32	167	91			5		
San Luis Obispo		1	1				1,663				1
San Mateo	2		230	3		6					
Santa Barbara	1		1				3,269				5
Santa Clara	2	1	19	2	5	50	95				171
Santa Cruz											21
Shasta	9			1	1						14
Siskiyou											1
Solano		1,553									
Sonoma			13			50					
Stanislaus	1,537	1		1	51		86	2	4		
Sutter	2		1		10		880				
Tehama	1										
Trinity	1										2
Tulare	26			1	24			9	21		1
Tuolumne	1										10
Ventura	3	1					1,365				
Yolo	4		4	1		17	120			348	
Yuba	1									749	

THE STATE.	PRINCIPAL CROPS.									
	Grapes.	Apples.	Peaches.	Pears.	Plums and prunes.	Cherries.	Apricots.	Quinces.	Oranges.	Lemons.
Acres harvested	[1] 73,217,2 24	[2] 804,683	[2] 5,662,259	[2] 1,017,060	[2] 3,841,678	[2] 284,569	[2] 1,630,763	[2] 12,403	[2] 8,678,956	[2] 2,299,716
Production	[3] 1,128,175,200	[4] 1,335,057	[4] 10,318,362	[4] 1,783,951	[4] 6,542,548	[4] 326,449	[4] 2,608,136	[4] 18,315	[5] 18,725,602	[5] 5,776,149
Value ... dollars	36,101,606	2,069,338	19,088,970	3,211,112	14,066,478	1,365,796	5,216,272	36,630	58,049,366	16,750,832

COUNTIES.	ACRES HARVESTED.									
Alameda		2	402	756	7,455	6,171	14,072			
Amador	8,000	251	1,544	112	1,067	53				
Butte	5,017	3,521	95,888		52,565			7	67,244	1,959
Calaveras	10,887	3,812	1,970	592	629	103	644		20	7
Colusa		11	32	16	2,703				18	
Contra Costa	65	95	8,568	15,257	9,519	2,363	18		32	2
Eldorado		12,678	40,329	91,627	31,666	961	12	6	25	
Fresno	51,883,387	54,755	1,713,499	11,288	94,141	405	138,822	594	114,431	13,579
Glenn	4,804	1,175	6,254	955	14,491	304	3,928	9	10,359	815
Humboldt	186	283	230	72	110	79				
Imperial	65,697	129	430	466	124	73	1,030	21	1,635	299
Inyo	2,522	16,188	5,892	3,277	414	212				
Kern	250,457	9,700	21,257	40,811	18,480	691	19,737	58	50,806	958
Kings	931,528	4,184	217,009	4,624	34,137	90	58,337		24	6
Lake		100	30		300					
Lassen		373	84	24	36	8				
Los Angeles	92,872	95,854	209,330	173,433	38,699	8,385	72,941	1,735	2,209,046	753,104
Madera	2,180,823	1,466	93,962	850	2,535	29	13,441	18	142	14
Marin		124	42	112	29					
Mendocino		638	110	1,932	625	9				
Merced	831,821	1,192	173,483	4,014	5,447	361	6,456	425	2,371	109
Modoc		4,647	797	262	333	343				
Mono		587	47	55	43	28				
Monterey	10	28,662	1,577	2,908	5,922	196	8,596		5	8
Napa		3,512	770	3,107	31,755	3,223	1			
Nevada	20	5,881	6,132		3,301			8	284	8
Orange	12,166	17,484	16,081	2,830	4,006	19	46,016	33	1,275,248	437,370
Placer	248,093	26,281	653,654	176,181	608,301	38,324	431	5,922	16,971	414
Riverside	102,337	80,135	152,698	28,765	43,712	10,697	283,247	35	929,624	309,867
Sacramento	3,931,111	7,958	107,356	175,678	132,710	19,746	2,361	260	22,456	1,529
San Benito	1,055	4,088	23,213	15,391	79,448	7,589	60,365		13	2
San Bernardino	1,470,497	240,167	424,579	17,998	8,441	6,729	102,422	24	2,236,541	286,140
San Diego	175,257	3,750	48,825	4,413	2,984	737	6,611	46	65,537	200,994
San Joaquin	4,889,665	4,481	232,842	13,537	71,804	55,145	13,899	2,221	1,971	39
San Luis Obispo		1,945	629	771	161	132	55	1	38	626
San Mateo		111	20	29	40	25				
Santa Barbara		243	84	25	27	11	18		2,648	49,108
Santa Clara	105,160	55,651	158,574	175,242	1,884,182	91,996	624,078	854	1,379	379
Santa Cruz				8	44	14				1
Shasta	5,397	14,850	34,863	2,376	19,073	324	200	8	67	1

[1] Number of vines of bearing age. [2] Number of trees of bearing age. [3] Pounds. [4] Bushels. [5] Boxes.

STATE TABLE L.—ACRES HARVESTED AND PRODUCTION AND VALUE OF PRINCIPAL CROPS IN 1919 ON IRRIGATED LAND FOR THE STATES, AND ACRES HARVESTED, BY COUNTIES—Continued.

CALIFORNIA—Continued.

COUNTIES—continued.	ACRES HARVESTED.									
	Grapes.	Apples.	Peaches.	Pears.	Plums and prunes.	Cherries.	Apricots.	Quinces.	Oranges.	Lemons.
Sierra		65		15		7				
Siskiyou	15	7,417	2,171	551	1,068	519	14			
Solano		59	26,478	1,965	4,971	8,800	19,431		432	5
Sonoma				1,783	37,531	35			600	1
Stanislaus	530,310	5,887	197,535	3,787	6,491	5,567	18,943	25	3,435	63
Sutter	1,184,005	5,838	420,201	9,504	121,455	2,648	2,157	16	1,307	63
Tehama		9,764	58,820	12,363	38,881	957	1,616		505	1
Trinity	110	842	250	142	328	70	1			
Tulare	4,238,152	42,795	455,902	9,306	285,687	4,071	28,374	74	1,564,276	73,302
Tuolumne	38,920	23,634	7,111	1,109	532	174	24	2	11	
Ventura		1,184	2,872	178	117	14	57,342	1	99,126	168,111
Yolo	16,798	167	15,808	3,170	27,752	6,347	25,069		261	15
Yuba		977	12,630	3,163	5,206	45	54		68	17

THE STATE.	PRINCIPAL CROPS.								
	Grapefruit (pomeloes).	Figs.	Alligator pears (avocados).	Dates.	Olives.	Japanese persimmons.	Pomegranates.	Almonds.	Walnuts (Persian or English).
Acres harvested	[1] 193,819	[1] 245,894	[1] 10,674	[1] 14,406	[1] 536,543	[1] 5,516	[1] 14,710	[1] 464,071	[1] 616,372
Production	[2] 390,923	[1] 10,974,552	[4] 7,294	[3] 118,311	[3] 12,264,764	[4] 9,500	[3] 590,091	[3] 3,190,813	[3] 30,210,494
Value ... dollars	797,846	1,027,455	58,352	23,662	981,181	38,000	35,405	797,703	9,063,148

COUNTIES.	ACRES HARVESTED.								
Alameda									265
Amador					2				
Butte	1,115	5,764	5		74,109			20,302	1,545
Calaveras	2	67			2			17	70
Colusa		2							45
Contra Costa		15			8			2,495	1,847
Eldorado		13			1,000				65
Fresno	421	111,472			21,542	445	2,363	2,686	1,918
Glenn	161	4,976			1,725			45,053	190
Humboldt		24						6	436
Imperial	14,306	1,607		1,498	256		11	13	400
Inyo									8
Kern	1,481	1,359			472		1	7,395	53
Kings	1	174			4		2	80	56
Los Angeles	24,798	13,542	6,762		133,046	1,167	24	7,353	303,883
Madera	2	6,938			15,895		55	2,974	926
Mendocino								1	3
Merced	1	28,813	100		7,551		41	14,922	210
Monterey	1	7						2,044	30
Napa		2						3	116
Nevada	5	66						21	336
Orange	3,714	2,304	1,362		2,013	1,135	500	26	177,539
Placer	405	828			14,149	2,644	10	57	13
Riverside	25,298	3,303	17	12,908	28,862	4		52,436	20,589
Sacramento	3,178	2,273			40,123	27	74	74,769	2,478
San Benito		1						17	15
San Bernardino	71,489	2,116	1,375		19,228	21	8	3,311	21,139
San Diego	4,205	3,143	15		28,297	47		669	676
San Joaquin		1,515			10,245		55	66,653	5,895
San Luis Obispo	3	2						22	1,849
Santa Barbara	235	49	250		1,500				12,255
Santa Clara	43	479	2		135	3		12,915	26,364
Santa Cruz									10
Shasta		321	650		6,665			16	143
Siskiyou								2	7
Solano	4	104			225			13,525	
Sonoma	2	80			200				10
Stanislaus	22	7,037			853			41,446	1,068
Sutter	13	5,523			616		1,000	55,761	2,298
Tehama	2	660			4,737			1,923	17
Trinity		5						3	7
Tulare	39,693	41,140			121,346	17	10,560	12,360	1,875
Tuolumne		164							
Ventura	1,165	232	136		1,300		6	31	303
Yolo	5	1,635			452			405	29,049
Yuba		276			2			22,347	142
								12	229

[1] Number of trees of bearing age. [2] Boxes. [3] Pounds. [4] Crates. [5] Bushels.

STATE TABLE I.—ACRES HARVESTED AND PRODUCTION AND VALUE OF PRINCIPAL CROPS IN 1919 ON IRRIGATED LAND FOR THE STATES, AND ACRES HARVESTED, BY COUNTIES—Continued.

COLORADO.

	PRINCIPAL CROPS.										
THE STATE.	Corn.	Oats.	Winter wheat.	Spring wheat.	Barley.	Rye.	Clover and alfalfa seed.	Dry beans.	Dry peas.	Potatoes.	Sugar beets grown for sugar.
Acres harvested	52,617	97,618	112,548	139,214	58,125	2,757	5,949	10,627	24,841	50,631	137,329
Production	[1] 1,316,478	[1] 3,037,305	[1] 2,577,277	[1] 2,994,897	[1] 1,383,519	[1] 34,217	[1] 21,363	[1] 120,629	[1] 265,449	[1] 7,475,618	[2] 1,409,560
Value ... dollars	1,843,069	2,885,440	5,309,191	6,169,488	1,798,575	49,615	491,349	410,139	663,622	18,446,360	14,800,380
	ACRES HARVESTED.										
COUNTIES.											
Adams	566	1,522	5,110	6,627	336	25		49		606	3,942
Alamosa		2,601	44	1,490	848	2	94	327	1,806	1,856	5
Arapahoe	766	670	2,141	1,555	518	10		6		152	875
Archuleta	85	603	35	156	101			9	10	23	
Baca	23		295	85	12						
Bent	2,302	1,375	10,796	291	1,171	52	279	101			5,716
Boulder	313	531	3,939	3,974	888					93	4,779
Chaffee		2,186	6	2,125	1,096	8		2	2,177	653	
Cheyenne	6										
Clear Creek		8		11						13	
Conejos	14	4,125	230	8,496	9,505	11	3,081	460	8,073	2,294	
Costilla	43	2,396	985	4,927	2,678	138		326	8,436	189	
Crowley	3,807	1,738	532	1,590	1,815	7	2	135		29	3,761
Custer	96	1,281	75	490	379	34	1		13	47	
Delta	2,758	4,024	1,036	4,452	460	30	40	38	7	2,898	2,602
Denver	30	56	52	199	6	10				8	
Dolores		10	5		5						
Douglas	340	211	505	203	50	45				6	
Eagle	6	2,418	202	701	303			14		1,299	
El Paso	1,300	197	310	236	79	10		32		16	41
Elbert	14	18	88		6	10				13	
Fremont	2,444	859	849	412	284	22	11	34	13		9
Garfield	456	3,041	380	6,051	681	36	78	33		2,636	1
Grand		480	103	26	115	8					
Gunnison		571	28	95	217	6	1			292	
Hinsdale										18	
Huerfano	486	962	223	698	1,253	77	11	171	128	5	
Jackson		68	2		46	42				29	
Jefferson	957	1,652	4,774	5,239	963	110	39	1		262	566
Kiowa	10		50								
Kit Carson	65										
La Plata	339	5,051	490	10,142	1,355	31	119	14	2	431	
Larimer	319	3,069	7,613	8,919	2,390		11		50	210	501
Las Animas	1,459	1,796	833	1,402	462	12		1,127	15	15	
Lincoln	45										
Logan	2,584	2,387	9,723	1,719	1,545	169		10		99	10,973
Mesa	3,964	2,756	2,379	2,556	549	11	1,343	180	44	1,403	2,620
Mineral										5	
Moffat	3	864	61	407	143	81				52	
Montezuma	1,206	3,288	276	3,545	830	9		6			
Montrose	2,196	5,336	3,026	9,646	494	46	278	132		6,698	
Morgan	4,901	2,339	3,172	1,334	2,161	263		190		607	19,441
Otero	4,479	3,194	6,414	550	634	38	205	1,659	14	27	11,864
Ouray		764	198	787	46				2	153	
Park		100			8					49	
Pitkin		1,265	21	598	204	30				700	
Prowers	2,041	1,970	11,657	407	1,294	343	137	18		5	6,368
Pueblo	7,672	1,675	2,222	1,732	939	109	64	1,029		19	3,676
Rio Blanco	10	1,426	722	736	56		60			44	
Rio Grande	4	8,602	265	9,584	4,956	38		61	2,656	12,203	
Routt		918	522	331	459	30				39	
Saguache	57	5,275	260	3,535	2,689	16		2	859	2,093	
San Miguel	21	705	130	609	340						
Sedgwick	312	320	805	1,059	305	97				426	3,987
Summit		120	4	3	75	52					
Teller		70			19	20				8	
Washington	180	318	351	278	471	193	10				1,459
Weld	3,823	10,397	28,509	29,206	11,843	499	85	4,461	536	11,880	54,143
Yuma	115	10	100		60					28	

	PRINCIPAL CROPS.											
THE STATE.	Timothy alone.	Timothy and clover mixed.	Clover alone.	Alfalfa.	Other tame grasses.	Annual legumes cut for hay.	Small grains cut for hay.	Wild, salt, or prairie grasses.	Silage crops.	Corn cut for forage.	Kafir, sorghum, etc., for forage.	Root crops for forage.
Acres harvested	33,588	106,664	3,095	659,912	46,110	9,386	26,630	290,693	19,015	14,547	12,123	633
Production ... tons	46,568	188,616	4,893	1,568,038	60,585	14,194	38,250	280,332	119,656	34,234	24,349	4,255
Value ... dollars	977,928	4,149,552	83,181	20,008,703	969,360	212,910	688,500	4,905,810	1,196,560	445,042	316,537	55,315

[1] Bushels. [2] Tons.

STATE TABLE I.—ACRES HARVESTED AND PRODUCTION AND VALUE OF PRINCIPAL CROPS IN 1919 ON IRRIGATED LAND FOR THE STATES AND ACRES HARVESTED, BY COUNTIES—Continued.

COLORADO—Continued.

COUNTIES.	ACRES HARVESTED.											
	Timothy alone.	Timothy and clover mixed.	Clover alone.	Alfalfa.	Other tame grasses.	Annual legumes cut for hay.	Small grains cut for hay.	Wild, salt, or prairie grasses.	Silage crops.	Corn cut for forage.	Kafir, sorghum, etc., for forage.	Root crops for forage.
Adams		26	26	13,339	88		214	190	539	146	40	33
Alamosa	10		35	15,799	220	330	336	18,136	48		25	
Arapahoe	15	33	7	6,893	73	38	141	25	511	245	55	40
Archuleta	191	4,843		3,595	341	13	323	876		2	5	
Baca				756							53	
Bent			28	22,392	100	12	81	382	515	235	1,583	19
Boulder	22	289		8,301	75		98	545	539	52	15	36
Chaffee	1,301	1,898	13	5,685	179	118	256	1,769	43	3		6
Cheyenne				200								
Clear Creek	80	155		11			26			10		
Conejos		88	392	13,164	11,727	2,518	2,997	7,020		4		
Costilla	73	62	193	4,791	166	259	1,017	4,435	26			
Crowley				15,236	108		58	45	1,167	381	825	3
Custer	131	891	41	2,142	9,398	56	254	599		172	5	
Delta	295		79	30,061	249	8	1,102	212	549	396		50
Denver		43		623			9		67			
Dolores	86	26	50	370			114	60				
Douglas	18	437		2,932			103		100	40	1	
Eagle	1,292	4,837	10	5,629	4,522		1,107	356		1		5
El Paso	85	866		5,424	98	15	309	2,834	233	283	114	
Elbert		176		789			32	102	25	32	4	
Fremont	128	1,239	5	7,044	405	9	533	608	187	1,466	22	41
Garfield	824	619		31,202	3,699	8	877	153	66	222	22	12
Gilpin		25				26	35	62				
Grand	1,401	13,444	118	300	330		285	11,497				
Gunnison	1,739	10,885	23	1,928	2,638	32	659	24,274				12
Hinsdale	24	1,192	1	46			120	1,184				
Huerfano	649	1,279	6	14,331	1,496	146	107	1,069	22	87	60	
Jackson	3,782	5,881			2,091		60	71,265				
Jefferson	118	687	15	15,332	205	41	543	107	400	1,687	5	86
Kiowa				822	20				50		30	
Kit Carson				235				340	60		40	
La Plata	946	1,229	54	24,846	371	129	978	609	152	80	15	5
Lake	110	214	7		295		137	3,218				10
Larimer	191	519	107	39,854	77	195	586	8,420	1,300	100	2	42
Las Animas	3,764	177	300	20,640	632	12	721	2,251	139	109	490	
Lincoln				44							10	
Logan	5	29		14,358	205			1,699	156	604	476	20
Mesa	224	595	15	34,667	238	22	1,286	88	542	2,524	557	73
Mineral	80	216			110		304	1,907				
Moffat	1,534	2,447	1	5,128	1,653	22	791	2,753		2		4
Montezuma	553	114	8	20,650	153	6	884	498	140	139	17	3
Montrose	481	1,176	143	33,284	24	45	931	194	602	191	20	47
Morgan			5	23,506	187		204	610	359	417	735	2
Otero			53	24,968	92	78	83	45	2,542	970	1,260	14
Ouray	748	5,434	55	1,964	222	16	264	659				1
Park	48	45		21	75		701	29,419				2
Pitkin	2,431	3,602	2	2,092	28		153	70				
Prowers			145	37,612	112	90	266	505	1,662	1,593	4,643	43
Pueblo	70	733	35	26,159	233	324	378	1,699	1,362	1,348	701	10
Rio Blanco	3,693	839	45	13,507	656	42	923	5,381				
Rio Grande	273	2,119	246	9,229	1,063	581	2,364	13,002	194			6
Routt	1,947	32,914	292	2,160	739	499	597	1,650				
Saguache	1,737	410	440	6,450	572	3,734	969	63,663		5		2
San Miguel	1,851	423	35	5,699	16		397	200		95	19	
Sedgwick				2,444	58		15	575	19	80	20	
Summit	310	4,026	52	47	39		41	1,110				1
Teller				42	115		336	819				
Washington				1,583				25			42	
Weld		2		78,820	437	67	769	1,379	4,699	766	126	5
Yuma				898			15	100			86	

THE STATE.	PRINCIPAL CROPS.									
	Cabbages.	Cantaloupes.	Cucumbers.	Tomatoes.	Grapes.	Apples.	Peaches.	Pears.	Plums and prunes.	Cherries.
Acres harvested	2,791	3,530	1,284	1,693	[1] 35,688	[2] 879,087	[2] 238,370	[2] 97,783	[2] 26,582	[2] 194,365
Production					[3] 173,669	[4] 1,842,018	[4] 460,404	[4] 210,944	[4] 19,264	[4] 101,271
Value ... dollars	544,640	816,427	198,241	234,779	12,894	3,039,330	851,747	464,077	46,234	329,131

[1] Number of vines of bearing age. [2] Number of trees of bearing age. [3] Pounds. [4] Bushels.

STATE TABLE I.—ACRES HARVESTED AND PRODUCTION AND VALUE OF PRINCIPAL CROPS IN 1919 ON IRRIGATED LAND FOR THE STATES, AND ACRES HARVESTED, BY COUNTIES—Continued.

COLORADO—Continued.

COUNTIES.	ACRES HARVESTED.									
	Cabbages.	Cantaloupes.	Cucumbers.	Tomatoes.	Grapes.	Apples.	Peaches.	Pears.	Plums and prunes.	Cherries.
Adams	670	12	98	102		925			100	20
Alamosa	5									
Arapahoe	89	5	8	12		3,774	6	2	200	174
Bent		12	9	1						
Boulder	2			1	80	1,669		4	391	1,754
Chaffee	10					8,921		24	219	116
Clear Creek	1									
Costilla	3					108		11	2	3
Crowley	3	1,163	120	134	3,492	18,295	252	14	580	23,372
Custer	1									
Delta	4	15	1	11						
Douglas						258				13
Eagle	1		2			50		4	1	5
El Paso	2				250	200				
Fremont	19	4	28	65	7,406	177,879	1,553	1,265	3,193	40,086
Garfield	3	4	2	4	8,562	63,752	7,390	1,139	2,622	3,709
Gunnison	3									
Huerfano	3	1	1			1,901		15	9	18
Jefferson	316		31	181	320	28,244	41	110	4,458	29,969
La Plata	2			2						
Larimer	40	13	6	13	150	46,231	92	395	2,752	55,364
Las Animas	1	6	1	4						
Mesa	11	30	2	507	4,747	412,282	220,557	92,624	3,600	6,318
Moffat									4	4
Montezuma	1	5		2	552	21,983	3,509	615	1,018	528
Montrose	3	1	1	5	1,399	51,811	4,195	1,373	1,549	2,250
Morgan	43		10	1		1,022	12	16	1,371	1,580
Otero	4	2,231	796	258	6,454	26,560	503	45	2,512	21,886
Ouray	1					130	12	3	38	17
Pitkin	1					34				
Prowers	2	1	1	2		386	38	10	27	26
Pueblo	79	22	38	40	2,276	9,645	34	42	1,349	5,630
Rio Blanco	2		1	2						
Rio Grande	12									
San Miguel	3					366	4	39	26	56
Sedgwick			4			49	1	12	162	76
Weld	1,451	5	124	346		2,532	10	21	1,008	771
Yuma						130	101			20

IDAHO.

THE STATE.	PRINCIPAL CROPS.										
	Corn.	Oats.	Winter wheat.	Spring wheat.	Barley.	Rye.	Red clover seed.	Other clover and alfalfa seed.	Timothy seed.	Dry beans.	Dry peas.
Acres harvested	10,994	42,487	20,306	299,360	19,667	2,414	14,814	8,955	537	10,150	9,443
Production ... bushels	383,740	1,232,896	360,211	7,364,943	540,749	19,751	57,195	33,442	1,286	188,086	153,017
Value ... dollars	652,358	1,294,540	738,423	15,098,133	811,124	36,539	1,544,265	769,166	7,459	658,301	719,180
COUNTIES.	ACRES HARVESTED.										
Ada	809	2,982	1,809	25,174	1,763	233	4,147	485	500	1	
Adams	55	417	100	842	46			2			
Bannock	8	2,069	1,047	7,134	835	48	15			22	
Bear Lake		1,160	642	2,244	305	25		5			
Bingham	30	4,890	1,159	20,371	1,135						
Blaine	2	904	307	4,260	331						
Boise	8	351	219	377	22	4	14	40			
Bonner		83		21	4						10
Bonneville	8	4,001	2,180	23,413	316		37	14	23	81	1,283
Boundary	41	301	178	209	10	6				1	6
Butte	6	1,115	424	4,701	466	21					5
Canyon	5,555	3,414	2,011	33,535	3,321	124	2,882	853		31	4
Caribou		42		25	4						
Cassia	30	1,873	1,573	14,899	836	104	461	408		5	5
Clark		15		89							
Custer	2	1,799	412	1,136	396			5			
Elmore	89	15	51	147	21	2	57				
Franklin	4	168	1,141	1,368	70						
Fremont		1,664	785	9,782	135						4,729
Gem	766	587	482	1,570	579	41	108	48		9	
Gooding	328	807	314	9,741	170	519	427	259			
Idaho	3		17	12	3						
Jefferson	19	3,107	267	12,958	312	5		119		4	1,791
Jerome	45	1,577	783	19,483	397	42	378	132		5	

STATE TABLE I.—ACRES HARVESTED AND PRODUCTION AND VALUE OF PRINCIPAL CROPS IN 1919 ON IRRIGATED LAND FOR THE STATES, AND ACRES HARVESTED, BY COUNTIES—Continued.

IDAHO—Continued.

COUNTIES—continued.	ACRES HARVESTED.										
	Corn.	Oats.	Winter wheat.	Spring wheat.	Barley.	Rye.	Red clover seed.	Other clover and alfalfa seed.	Timothy seed.	Dry beans.	Dry peas.
Lemhi		1,786	192	1,297	516	11		10	4	36	335
Lincoln	82	1,121	122	6,785	232		25	187		2	
Madison											1,250
Minidoka	596	1,629	512	5,643	483	119	698	755		38	4
Nez Perce			293	140							
Oneida		55	75	196	20			150			
Owyhee	287	654	14	3,530	934	67	10	136			
Payette	717	736	726	4,562	793	791	39	87			
Power	22	168	396	894	63	28					5
Twin Falls	913	2,779	1,035	77,270	4,070	117	5,508	5,243		9,911	16
Valley		22					6		10	3	
Washington	559	276	1,510	5,582	1,079	107	2	17		1	

THE STATE.	PRINCIPAL CROPS.									
	Timothy.	Timothy and clover mixed.	Clover alone.	Alfalfa.	Other tame grasses.	Wild, salt, or prairie grasses.	Small grains cut for hay.	Annual legumes cut for hay.	Silage crops.	Corn cut for forage.
Acres harvested	17,686	48,003	14,715	515,391	8,762	53,371	13,402	544	4,453	1,527
Production ... tons	22,360	62,010	23,743	1,510,380	13,066	53,515	17,056	762	37,908	4,969
Value ... dollars	648,440	1,612,260	474,860	32,473,170	274,386	1,016,804	469,040	16,002	379,080	54,659

COUNTIES.	ACRES HARVESTED.									
Ada	385	690	5,612	29,417	231	128	649		1,620	159
Adams	570	5,232	103	3,715	413	205	745		24	38
Bannock	1,955	4,961	39	25,727	1,009	7,110	534	50	31	3
Bear Lake	2,942	2,546	63	8,337	1,553	14,770	436	13		
Bingham	450	146	354	37,672	691	1,887	596	17	15	6
Blaine	710	645	90	13,980	94	1,663	448			
Boise	729	1,630	60	2,745	12	12	85			3
Bonner		507		5	7	31	102			
Bonneville	245	152	230	25,178	220	559	639	25		28
Boundary	538	385	142	39	237	4,782	347	1	14	5
Butte	50	200		13,130	20	539	271	10		
Canyon	148	148	2,769	48,825	133	78	604	103	1,016	468
Caribou	240	465		168	65	202				
Cassia	667	1,493	378	35,364	671	4,600	622		35	6
Clark				130						
Custer	1,761	4,683	9	13,765	342	3,735	850			
Elmore	8	169	33	1,600	20	160	71		21	7
Franklin	112	59		4,795	27	110	86		30	22
Fremont	1,761	1,497	27	10,124	588	1,903	353	139		
Gem	3	321	366	10,483	211	79	300		407	145
Gooding	28	35	352	28,485	47	90	218		233	60
Idaho	96	261	33	1,191		48	219			
Jefferson	135	197	60	17,440	58	613	1,122	10		2
Jerome		10	326	22,017			170	30	49	18
Lemhi	1,364	18,188	391	12,195	1,103	3,771	544	30	7	2
Lincoln		95	109	19,805	39		167			1
Minidoka	290	33	544	22,997	17		411		21	31
Nez Perce			6	561			167	20		35
Oneida	99	35		2,903	50	383	12			
Owyhee	471	2,911	85	22,114	478	3,304	299		23	124
Payette	20	127	83	12,260	36	150	253		110	176
Power	7	65		5,420	20	1,359	285	41		1
Shoshone	13						5			
Twin Falls	1,583	345	2,457	51,701	94	1,002	571	52	368	109
Valley	165	241		11	220		40			
Washington	68	392	68	11,032	26	96	1,181	3	429	78

THE STATE.	PRINCIPAL CROPS.							
	Potatoes.	Sugar beets grown for sugar.	Grapes.	Apples.	Peaches.	Pears.	Plums and prunes.	Cherries.
Acres harvested	32,044	32,270	[1] 10,809	[2] 852,307	[2] 71,890	[2] 20,290	[2] 273,303	[2] 31,136
Production	[3] 5,409,108	[4] 222,128	[5] 104,156	[3] 1,211,790	[3] 138,442	[3] 15,455	[3] 291,495	[3] 19,760
Value ... dollars	11,629,582	2,332,344	7,291	2,120,632	249,196	34,001	641,289	68,203

[1] Number of vines of bearing age. [2] Number of trees of bearing age. [3] Bushels. [4] Tons. [5] Pounds.

STATE TABLE I.—ACRES HARVESTED AND PRODUCTION AND VALUE OF PRINCIPAL CROPS IN 1919 ON IRRIGATED LAND FOR THE STATES, AND ACRES HARVESTED, BY COUNTIES—Continued.

IDAHO—Continued.

COUNTIES.	ACRES HARVESTED.							
	Potatoes.	Sugar beets grown for sugar.	Grapes.	Apples.	Peaches.	Pears.	Plums and prunes.	Cherries.
Ada	400		634	201,166	5,247	3,229	180,929	11,010
Adams	31		191	113,455	19,806	4,456	548	416
Bannock	964	2,343						
Bear Lake	174			2,315		198	341	19
Bingham	7,168	9,760		62,550	31	1,183	4,129	1,703
Blaine	106			1,393		197	119	127
Boise				548	103	37	44	59
Bonner	3							
Bonneville	7,640	1,720						
Boundary	123			54,487	350	917	758	571
Butte	165							
Canyon	3,336	1	5,922	121,554	10,238	1,708	25,954	5,102
Cassia	3,176	3,096		4,419	644	439	1,512	426
Clark	15							
Clearwater	7							
Custer	111							
Elmore	41			53,426	2,264	452	13,899	267
Franklin	162	1,518		1,195	28	16	50	10
Fremont	346	486		2,976		72	285	126
Gem	84		845	40,452	15,155	1,431	21,943	3,186
Gooding	145							
Idaho	19		50	842	59	42	64	52
Jefferson	2,349	2,444		10,058		376	798	577
Jerome	276	537		16,855	857	627	822	867
Lemhi	227			4,919	21	338	608	365
Lincoln	178			1,636	48	146	917	148
Madison		2,268						
Minidoka	1,217	3,412	6	10,946	230	532	1,183	896
Nez Perce	24			200	5		7	18
Oneida	9	347		30			10	1
Owyhee	125		5	7,450	637	414	1,176	202
Payette	265							
Power	85	15		1,345	33	95	71	52
Shoshone	9							
Twin Falls	3,010	4,323	3,155	95,198	13,825	3,190	9,283	4,240
Valley	1							
Washington	53		1	42,892	2,309	195	7,883	686

KANSAS.

THE STATE.	PRINCIPAL CROPS.											
	Corn.	Oats.	Winter wheat.	Spring wheat.	Barley.	Alfalfa.	Wild, salt, or prairie grasses.	Silage crops.	Corn cut for forage.	Kafir, sorghum, etc., for forage.	Kafir, milo, feterita, durra.	Sugar beets grown for sugar.
Acres harvested	238	1,238	4,029	234	1,370	14,962	615	491	186	1,238	2,059	851
Production	[1] 4,090	[1] 24,022	[1] 45,340	[1] 2,592	[1] 18,483	[2] 30,597	[2] 1,146	[2] 2,668	[2] 500	[2] 3,033	[2] 36,835	[2] 4,036
Value.....dollars	5,930	19,218	97,934	5,599	19,407	531,948	14,325	21,344	4,000	30,330	49,727	42,399
COUNTIES.	ACRES HARVESTED.											
Barber						80						
Barton	7				5	7	5	10	1			
Cheyenne	45					255	350		30			
Cowley						20						
Finney	48	1,073	3,328	118	1,223	9,760	200	261	145	1,036	1,709	821
Ford		10				30						
Gray					6	355		10		30	15	
Greenwood	35	63	36			197						
Hamilton			25		10	1,813				158	3	
Hodgeman			100									
Kearny	19	12	170	116	78	248				14	293	30
Nemaha					8	14						
Pawnee	30	77	250		15	1,226	10	210	10			
Pottawatomie						19						
Reno						9						
Republic						5						
Scott	24	3	120		20	872					26	
Sherman						45						
Thomas					5							
Wallace	30						50				4	
Wichita						7						

[1] Bushels. [2] Tons.

STATE TABLE I.—ACRES HARVESTED AND PRODUCTION AND VALUE OF PRINCIPAL CROPS IN 1919 ON IRRIGATED LAND FOR THE STATES, AND ACRES HARVESTED, BY COUNTIES—Continued.

MONTANA.

	PRINCIPAL CROPS.											
	Corn.	Oats.	Winter wheat.	Spring wheat.	Barley.	Rye.	Clover and alfalfa seed.	Dry beans.	Dry peas.	Flaxseed.	Sugar-beet seed.	Potatoes.
THE STATE.												
Acres harvested	2,436	43,133	39,396	121,804	10,295	1,370	2,330	1,022	12,070	3,740	965	4,903
Production ... bushels	34,132	1,183,008	331,968	1,551,985	185,906	6,826	8,824	14,576	143,042	22,534	508,385	568,008
Value ... dollars	38,024	1,183,008	792,687	3,708,327	278,799	11,263	211,776	61,219	443,430	100,276	305,031	1,334,819
	ACRES HARVESTED.											
COUNTIES.												
Beaverhead		3,230	248	1,628	873				74			97
Big Horn	120	1,490	825	3,362	116		238	1			573	70
Blaine	17	761	147	1,855	34	13	840			520		133
Broadwater		232		453	75							1
Carbon	260	2,828	1,226	14,428	416		667	298	10			322
Carter												7
Cascade	5	439	495	1,372	47		111			25		125
Custer	298	398	11	218	15	37	7	4				108
Dawson												6
Deer Lodge		676	123	263	5	28						299
Fergus	98	292	949	1,556	196	82	2		1			90
Flathead	12	435	1,014	1,938	182	80						64
Gallatin	45	5,785	4,406	12,462	2,569	12		120	3,737			231
Glacier				260						201		4
Hill		20		249								23
Jefferson	8	646	76	978	84	15	3	2	30			165
Lewis and Clark		1,023	601	1,651	50					5		673
Lincoln		163	113	574	73							272
Madison	2	4,078	1,179	6,576	538	9	21	1	1,575			540
Meagher		755	504	153	140	50						30
Mineral												1
Missoula	61	2,800	8,747	6,861	250	109	6	11	297			186
Musselshell		25		20			15					13
Park		1,245	943	2,874	551	5	6		1,585			139
Phillips	3	495	435	1,797	28	151	2			141		43
Pondera		2,998	438	23,892	974	416	305			2,416		109
Powell		1,410	2,998	1,652	99	43	30		27			358
Prairie												2
Ravalli	80	5,398	820	8,583	1,914	71	3	59	4,657			
Richland	95	579		2,730	145	68	97	9		141		
Roosevelt		14		199		100				155		
Rosebud	10	20					314					
Sanders	1	212	221	151	8							20
Sheridan												2
Silver Bow		68		37	4	12						
Stillwater	305	1,173	8,930	5,335	93	39	125	174	9			113
Sweet Grass		832	249	2,524	99		38		28	6		75
Teton		20	5	194	82							3
Treasure	867	78	10	164								10
Valley		140		563	12							12
Wheatland		210	645	245		10				100		1
Yellowstone	279	4,136	2,928	14,007	724	29	500	343	40	30	392	556

	PRINCIPAL CROPS.											
	Timothy alone.	Timothy and clover mixed.	Clover alone.	Alfalfa.	Other tame grasses.	Wild, salt, or prairie grasses.	Small grains cut for hay.	Annual legumes cut for hay.	Silage crops.	Sugar beets grown for sugar.	Apples.	Cherries.
THE STATE.												
Acres harvested	25,781	91,912	5,576	220,281	39,254	177,385	25,349	770	620	7,686	[1] 761,904	[1] 47,600
Production	[2] 35,613	[2] 185,815	[2] 6,967	[2] 408,993	[2] 39,523	[2] 131,652	[2] 18,194	[2] 1,184	[2] 3,357	[2] 67,297	[3] 477,796	[3] 9,595
Value ... dollars	1,050,584	3,175,330	205,526	11,247,308	1,047,360	3,093,822	426,656	28,416	40,284	740,267	788,363	39,819
	ACRES HARVESTED.											
COUNTIES.												
Beaverhead	4,470	7,325	9	14,102	8,904	192,621	1,113	27				
Big Horn	196	854	126	8,990	716	2,444	915	15		697	62	
Blaine	565		192	5,437	495	3,043	638	21	30			
Broadwater	15	58		2,615	685		70					
Carbon	1,261	5,378	423	15,981	2,953	64	1,450	116	56	666	35,535	874
Carter				288	100	65	30					
Cascade	345	317	19	7,885	101	1,036	499	80				
Chouteau				13		34						
Custer		20	14	4,633	195	340	1,408		147	239		
Dawson				288		329						
Deer Lodge	2,118	903		1,183	237	2,668	72				30	
Fergus	1,094	282	149	3,373	714	434	899				20	
Flathead	882	1,670	6	1,676	47	220	1,122		36	145	8,244	1,552
Gallatin	5,429	6,814	3,313	16,892	2,146	1,639	997	3			524	
Garfield				3								

[1] Number of trees of bearing age. [2] Tons. [3] Bushels.

STATE TABLE I.—ACRES HARVESTED AND PRODUCTION AND VALUE OF PRINCIPAL CROPS IN 1919 ON IRRIGATED LAND FOR THE STATES, AND ACRES HARVESTED, BY COUNTIES—Continued.

MONTANA—Continued.

COUNTIES—continued.	ACRES HARVESTED.											
	Timothy alone.	Timothy and clover mixed.	Clover alone.	Alfalfa.	Other tame grasses.	Wild, salt, or prairie grasses.	Small grains cut for hay.	Annual legumes cut for hay.	Silage crops.	Sugar beets grown for sugar.	Apples.	Cherries.
Glacier				42		50	295					
Granite	6											
Hill	10	40		435			228		7			
Jefferson	508	408		5,126	307	1,931	258	2	190			
Lewis and Clark	816	1,987	4	9,927	597	2,720	1,008	104				
Lincoln	1,076	903	8	456		14	297	2			5,007	83
McCone						90						
Madison	1,556	7,690	47	19,554	6,979	10,391	1,986	164	13		6,720	49
Meagher	3,469	4,050		2,370	3,289	4,847	793	10				
Mineral	70	22		67			19					
Missoula	2,954	7,640	274	4,241	272	825	1,423	50	18	400	24,059	1,946
Musselshell	55	150		2,294		245	119					
Park	2,607	8,644	106	13,075	694	1,148	638				1,280	
Phillips			27	5,382	3,973	11,630	1,313					
Pondera	511	319	17	4,011	194	1,324	2,121	3				
Powder River				305			5					
Powell	576	16,931	1	5,089	246	19,622	642					
Prairie				8								
Ravalli	2,521	15,016	617	11,072	1,323	1,690	752	83	26	1,460	666,699	42,802
Richland	12	8		3,783	41	69	314		13	343		
Roosevelt				126			393					
Rosebud				138			10					
Sanders	179	981	4	348		95	159				2,637	243
Sheridan					50		57					
Silver Bow	526	1,695	20	810	20	2,166	299					
Stillwater	620	1,433	167	6,684	524	72	745	28	12	625	2,883	14
Sweet Grass	1,424	844	1	14,324	547	1,180	1,074	16			375	
Teton				333	10	150						
Treasure				852	25		12			243		
Valley			1	850	1,845	870	150					
Wheatland	220	90		3,341	980	743	93	30				
Yellowstone	10	82	75	21,069	45	236	1,083	16	162	2,868	7,829	37

NEBRASKA.

THE STATE.	PRINCIPAL CROPS.													
	Corn.	Oats.	Winter wheat.	Spring wheat.	Barley.	Rye.	Alfalfa.	Other tame grasses.	Small grains cut for hay.	Wild, salt, or prairie grasses.	Corn cut for forage.	Kafir, sorghum, etc., for forage.	Potatoes.	Sugar beets grown for sugar.
Acres harvested	26,798	12,875	15,321	9,748	3,610	1,403	60,476	1,205	942	14,956	1,459	1,392	6,671	42,999
Production	[1] 626,064	[1] 364,083	[1] 321,419	[1] 158,405	[1] 105,958	[1] 17,630	[2] 135,942	[2] 1,506	[2] 867	[2] 12,797	[2] 2,923	[2] 3,385	[1] 720,833	[2] 445,521
Value ... dollars	845,186	273,062	691,050	340,571	116,554	24,682	2,582,898	18,825	11,271	172,760	30,692	32,158	1,729,999	4,677,971

COUNTIES.	ACRES HARVESTED.													
Antelope	165									109	59	92		
Boone							15							
Brown													10	
Buffalo	323				15		57		1					
Cass										10				
Cheyenne													7	
Custer		25												
Dawes										1,080				
Dawson	7,921	882	4,885	706	168	47	3,098	16		12	67	458	25	246
Deuel	590	10	450	20	50	245	1,289	15		683		7		180
Douglas													1	
Dundy	200	34	93		60		1,491			522	51	43		
Gage													3	
Garden	120	108				36	180							
Hitchcock	1,698	92	2,017	15	88	43	1,064	179	28	178	215	241	35	22
Keith	2,269		1,056		12	10	922			45	246	19		
Kimball	95	25		214	12		239						346	183
Lancaster													1	
Lincoln	1,804	278	198	491	4	90	2,449	29	11	804	101	232	86	3,664
Madison													1	
Morrill	4,238	2,990	2,467	1,991	165	250	7,963	212	107	4,624	607	164	984	8,701
Redwillow	491	10	10		70		179	4				48		
Saline		120												
Scotts Bluff	5,679	6,964	3,625	5,313	1,940	504	28,854	601	240	4,809	78	75	3,480	29,963
Seward		20												
Sioux	1,170	1,317	520	998	1,026	178	12,680	149	555	2,080	35	13	1,692	
Valley	35						5							

[1] Bushels. [2] Tons.

STATE TABLE I.—ACRES HARVESTED AND PRODUCTION AND VALUE OF PRINCIPAL CROPS IN 1919 ON IRRIGATED LAND FOR THE STATES, AND ACRES HARVESTED, BY COUNTIES—Continued.

NEVADA.

	PRINCIPAL CROPS.												
THE STATE.	Oats.	Winter wheat.	Spring wheat.	Barley.	Timothy alone.	Timothy and clover mixed.	Clover alone.	Alfalfa.	Other tame grasses.	Annual legumes cut for hay.	Small grains cut for hay.	Wild, salt, or prairie grasses.	Potatoes.
Acres harvested	2,501	2,921	17,062	5,156	4,229	14,059	487	112,166	29,114	706	5,564	134,389	2,823
Production	[1] 64,873	[1] 63,220	[1] 377,248	[1] 128,793	[2] 4,855	[2] 19,351	[2] 768	[2] 318,906	[2] 31,306	[2] 545	[2] 6,272	[2] 122,146	[1] 410,001
Value ... dollars	74,694	139,506	867,670	242,888	111,665	445,073	16,896	6,537,573	641,773	9,810	116,032	2,259,701	918,402
	ACRES HARVESTED.												
COUNTIES.													
Churchill	121	235	2,823	92			40	18,565			689	20	73
Clark	102	1,968	214	151				1,420	7	4	75		1
Douglas	218	494	2,674	1,395	318	2,742		8,761	2,105		130	688	96
Elko	541	168	1,057	273	2,611	6,248	305	12,068	18,486	682	1,000	70,556	187
Esmeralda	28	1	196	39				1,077			11		
Eureka	50		38	100	770			1,203	4,065		300	5,961	57
Humboldt	168	5	947	35		135		5,101	1,297		368	25,393	37
Lander			111	9	133	280		2,593	137		40	6,772	30
Lincoln	110	78	16	33	121			1,821	30		65	2,087	
Lyon	24	139	3,206	1,065	100			17,720	280		253	635	1,161
Mineral			254	111		1,000		3,032	427			1,120	215
Nye	52	44	72	189		57	16	2,577	1,164		100	6,451	43
Ormsby	6	25	85	45	7	547		376	6	3	6	110	79
Pershing	18	60	2,139	787				17,956	306		857	804	33
Storey			50					340			5		15
Washoe	155	416	2,637	231	8	2,410		11,217	804		1,495	6,501	526
White Pine	908	198	537	601	161	550	126	6,339		17	161	7,291	270

[1] Bushels. [2] Tons.

NEW MEXICO.

	PRINCIPAL CROPS.									
THE STATE.	Corn.	Oats.	Winter wheat.	Spring wheat.	Barley.	Clover and alfalfa seed.	Kafir, milo, etc.	Dry beans.	Dry peas.	Cotton.
Acres harvested	38,954	8,899	9,659	22,251	2,889	2,583	2,205	5,630	3,606	7,527
Production	[1] 948,594	[1] 250,102	[1] 185,479	[1] 395,679	[1] 62,070	[1] 6,354	[1] 66,683	[1] 63,269	[1] 51,202	[2] 4,077
Value ... dollars	1,422,891	262,607	378,958	791,358	80,691	127,080	83,354	221,442	128,005	913,248
	ACRES HARVESTED.									
COUNTIES.										
Bernalillo	2,677	178	272	1,169	26	8		134	26	
Chaves	3,729	975	791	99	344	1,733	112	14		43
Colfax	931	3,362	1,688	4,321	698	126		743	1	
De Baca	142						40	2		
Doña Ana	5,896	299	2,345	1,772	453	27	177	451	5	
Eddy	2,182	224	75		219	616	441	57		7,484
Grant	2,358	199	141	27			20	91	5	
Guadalupe	341	4	31	19				106		
Hidalgo	965	171	193	211	12		5	13		
Lea	56	65	42					19		
Lincoln	899	15	78	79	131		1	28		
Luna	743		76		153		1,226	1,121	12	
McKinley	855	293	17	374	13			134	1	
Mora	15			32						
Otero	548	57	318	106	92		166	18		
Rio Arriba	1,949	1,118	744	2,966	220			488	770	
San Juan	4,102	299	163	535	74	73		108	3	
San Miguel	609	205	377	275	11			91	6	
Sandoval	2,215	460	198	2,237	70			218	138	
Santa Fe	870	43	128	894				186	61	
Sierra	1,329	3	389	92	3		14	230	12	
Socorro	1,937	51	248	1,001	21		3	271	1	
Taos	1,346	755	613	3,484	259			728	2,565	
Valencia	2,879	245	408	2,618	60			379		

	PRINCIPAL CROPS.										
THE STATE.	Timothy alone.	Timothy and clover mixed.	Clover alone.	Alfalfa.	Other tame grasses.	Annual legumes cut for hay.	Small grains cut for hay.	Wild, salt, or prairie grasses.	Silage crops.	Corn cut for forage.	Kafir, sorghum, etc., for forage.
Acres harvested	1,766	1,238	821	87,105	4,015	701	6,459	8,513	1,188	3,456	5,748
Production ... tons	2,658	2,074	1,581	211,351	5,356	1,011	10,287	6,337	8,409	5,805	10,848
Value ... dollars	65,160	37,332	25,296	4,851,073	112,476	15,165	200,597	101,392	79,886	69,660	162,720

[1] Bushels. [2] Bales.

STATE TABLE I.—ACRES HARVESTED AND PRODUCTION AND VALUE OF PRINCIPAL CROPS IN 1919 ON IRRIGATED LAND FOR THE STATES, AND ACRES HARVESTED, BY COUNTIES—Continued.

NEW MEXICO—Continued.

COUNTIES.	ACRES HARVESTED.										
	Timothy alone.	Timothy and clover mixed.	Clover alone.	Alfalfa.	Other tame grasses.	Annual legumes cut for hay.	Small grains cut for hay.	Wild, salt, or prairie grasses.	Silage crops.	Corn cut for forage.	Kafir, sorghum, etc., for forage.
Bernalillo			38	3,178	69	477	176	304	81	274	99
Chaves	13		13	15,292	86	8	287	27	417	373	1,457
Colfax	666	230	247	7,876	868	10	1,736	3,187	175	137	264
De Baca				1,019							292
Dona Ana			365	11,854	193	2	626	237	214	305	577
Eddy				7,865	23		30			207	1,329
Grant				1,374	234		15			17	21
Guadalupe	3			570			6	3		91	34
Hidalgo				441	11		7				18
Lea				64	2					129	103
Lincoln			3	1,895			161			60	167
Luna			10	879	254		23	2,131	58	101	557
McKinley				512	32		19			10	
Mora				556			38	100			
Otero				1,685	127		113		15	41	324
Rio Arriba	778	964	15	4,939	899	97	1,182	558		50	2
Roosevelt										20	
San Juan			4	9,287	80	2	228	15	136	494	82
San Miguel	109	16		2,227	75	10	399	22	58	128	30
Sandoval	8	18		2,982	47		283	163		462	1
Santa Fe	3	10	2	1,931	162	6	113	10	34	140	4
Sierra				841	23		33			90	120
Socorro	5	6	3	2,656	201	5	110	44		120	1
Taos	179	90	20	3,859	551	63	800	992		73	11
Torrance											22
Valencia	2	4	101	3,323	84	21	80	720		114	33

THE STATE.	PRINCIPAL CROPS.								
	Potatoes.	Peppers (green).	Cantaloupes and muskmelons.	Grapes.	Apples.	Peaches.	Pears.	Plums and prunes.	Cherries.
Acres harvested	504	400	421	[1] 176,520	[2] 321,233	[2] 56,464	[2] 21,661	[2] 9,351	[2] 8,204
Production	[3] 19,650			[4] 630,440	[3] 487,878	[3] 93,140	[3] 26,007	[3] 11,123	[3] 5,876
Value.....dollars	46,178	58,290	54,590	50,435	780,605	206,251	45,512	23,914	19,978

COUNTIES.	ACRES HARVESTED.								
Bernalillo	3	72	17	10,528	16,205	6,482	1,885	1,210	1,536
Chaves	6	2	12	4,561	192,749	24,110	4,401	966	1,829
Colfax					30		1	3	3
Curry					150	200	10	45	175
Dona Ana	2	45	346	12,578	12,896	4,866	9,254	1,030	78
Grant		27			120	125	16	10	
Hidalgo	30				183	162	55	104	15
Lea				212	629	1,534	59	273	182
Lincoln					15,852	1,175	470	592	276
Luna	22	10	14	273	965	3,270	385	216	30
McKinley	11		2						
Rio Arriba	236	85			4,200	866	276	885	623
San Juan	114		18	9,261	47,453	3,626	2,847	1,227	1,690
San Miguel		2	1		1,256	594	156	365	157
Sandoval	2		1	136,567	2,105	2,646	440	718	575
Santa Fe		116	5	1,000	21,354	1,956	546	655	659
Sierra		12	2	25	2,348	1,671	289	531	60
Socorro	13	9	2	310	852	559	170	127	12
Taos	59				3,365	32	40	136	89
Torrance					65	35	2	11	4
Valencia	6	20	1	1,205	4,456	2,555	409	247	260

[1] Number of vines of bearing age. [2] Number of trees of bearing age. [3] Bushels. [4] Pounds.

STATE TABLE I.—ACRES HARVESTED AND PRODUCTION AND VALUE OF PRINCIPAL CROPS IN 1919 ON IRRIGATED LAND FOR THE STATES, AND ACRES HARVESTED, BY COUNTIES—Continued.

NORTH DAKOTA.

THE STATE.	Oats.	Spring wheat.	Barley.	Rye.	Other tame grasses.	Small grains cut for hay.	Wild, salt, or prairie grasses.
	PRINCIPAL CROPS.						
Acres harvested	2,870	15,713	1,186	2,040	1,028	1,664	779
Production	[1] 30,555	[1] 80,292	[1] 10,565	[1] 8,673	[2] 453	[2] 906	[2] 301
Value ... dollars	24,444	192,701	12,150	12,576	7,474	13,137	4,666
COUNTIES.	ACRES HARVESTED.						
Dunn	2,700	15,348	1,176	2,007	1,001	1,608	609
Williams	170	365	10	33	27	56	170

[1] Bushels. [2] Tons.

OREGON.

THE STATE.	Corn.	Oats.	Winter wheat.	Spring wheat.	Barley.	Rye.	Timothy alone.	Timothy and clover mixed.	Clover alone.	Alfalfa.	Other tame grasses.
	PRINCIPAL CROPS.										
Acres harvested	1,764	7,980	4,511	21,799	7,602	1,929	5,340	23,377	5,275	102,409	7,094
Production	[1] 62,187	[1] 235,637	[1] 78,640	[1] 387,487	[1] 216,493	[1] 18,470	[2] 7,066	[2] 33,484	[2] 9,795	[2] 309,206	[2] 9,759
Value ... dollars	192,570	223,855	165,949	817,598	335,564	38,787	176,650	770,132	200,797	6,493,326	175,662
COUNTIES.	ACRES HARVESTED.										
Baker	118	935	281	941	444	140	332	4,227	9	10,097	747
Clackamas			3				3	2			
Coos	2	9				1	45	47	8	1	
Crook		130	285	456	70	82	100	58	66	4,138	642
Deschutes	21	475	8	753	38	210	44	173	462	8,541	57
Douglas	4		4				3	20	103	139	54
Grant	1	252	57	240	68	37	947	8,210	62	2,805	193
Harney		321		176	122	83	104	496	22	1,733	600
Hood River	139	184	129	169	25		157	445	867	2,391	78
Jackson	297	27	348	92	310	8	471	1,205	306	5,544	920
Jefferson											
Josephine	65	21	38	34	99	2	52	2		120	
Klamath		2,650	209	5,425	1,236	891	931	619	47	871	701
Lake		144	1,142	2,596	504	97	83	3,018	20	14,464	300
Lane		37					14	438		353	610
Malheur	977	663	133	2,291	878	163	70	889	183	17,879	1,394
Marion											
Morrow	30		38		5					2,439	
Multnomah										13	
Polk											
Tillamook											
Umatilla	99	41	102	1,158	570	120		2	12	21,630	36
Union	21	481	411	641	370	30	696	1,064	75	2,536	255
Wallowa		1,590	1,316	6,827	2,863	65	582	1,172	3,010	6,089	112
Wasco									20	20	
Washington			5						3		
Wheeler							706	1,290		606	395

THE STATE.	Small grains cut for hay.	Annual legumes cut for hay.	Wild, salt, or prairie grasses.	Silage crops.	Potatoes.	Grapes.	Apples.	Peaches.	Pears.	Plums and prunes.	Cherries.
	PRINCIPAL CROPS.										
Acres harvested	23,022	1,523	51,453	1,432	1,880	[3] 8,525	[4] 177,789	[4] 25,953	[4] 115,520	[4] 21,664	[4] 6,656
Production	[2] 26,695	[2] 1,219	[2] 49,792	[2] 6,578	[1] 181,986	[5] 110,395	[1] 492,012	[1] 50,692	[1] 141,258	[1] 36,930	[1] 7,803
Value ... dollars	560,595	24,380	796,672	65,780	382,171	6,624	543,931	78,573	226,013	81,246	27,310
COUNTIES.	ACRES HARVESTED.										
Baker	832	1	5,560		41						
Clackamas					18						
Coos	71	10	43	20	3						
Crook	2,126		437	250							
Deschutes	2,605	204	610	194	733		4				4
Douglas	188		3								
Grant	1,040	3	1,183	31	20	18	8,909	365	657	3,637	170
Harney	1,794		15,920		61						
Hood River	604	3	34	21	278		35,282	53	2,408	30	14
Jackson	1,172	38	299	44	152	550	47,491	15,326	107,687	587	2,052

[1] Bushels. [2] Tons. [3] Number of vines of bearing age. [4] Number of trees of bearing age. [5] Pounds.

STATE TABLE I.—ACRES HARVESTED AND PRODUCTION AND VALUE OF PRINCIPAL CROPS IN 1919 ON IRRIGATED LAND FOR THE STATES, AND ACRES HARVESTED, BY COUNTIES—Continued.

OREGON—Continued.

COUNTIES—continued.	ACRES HARVESTED.										
	Small grains cut for hay.	Annual legumes cut for hay.	Wild, salt, or prairie grasses.	Silage crops.	Potatoes.	Grapes.	Apples.	Peaches.	Pears.	Plums and prunes.	Cherries.
Jefferson	32				1						
Josephine	326	19	55	29	68						
Klamath	5,885	1,181	7,173		203		607	6	3	63	29
Lake	900		6,289		4						
Lane	48						172	10	18	23	20
Malheur	1,652		15,219	313	47	14	1,512	25	11	14	23
Marion	37						70	4	32	18	4
Morrow	349			11	18						
Multnomah											
Polk					5						
Tillamook	15				4		5				
Umatilla	845			67	93	7,943	80,599	10,092	4,641	17,029	4,126
Union	560	4	311	363	45		2,667	72	56	213	198
Wallowa	1,937		150	82	78		363		7	50	16
Wasco	3				1						
Washington				7	2		108				
Wheeler			165		5						

SOUTH DAKOTA.

THE STATE.	PRINCIPAL CROPS.												
	Corn.	Oats.	Winter wheat.	Spring wheat.	Barley.	Clover and alfalfa seed.	Timothy alone.	Timothy and clover mixed.	Alfalfa.	Small grains cut for hay.	Wild, salt, or prairie grasses.	Potatoes.	Sugar beets grown for sugar.
Acres harvested	2,176	3,026	759	10,949	1,026	1,040	539	1,989	38,519	1,708	3,825	413	1,032
Production	[1] 39,667	[1] 71,692	[1] 7,335	[1] 133,341	[1] 17,841	[1] 2,358	[2] 566	[2] 1,953	[2] 74,193	[2] 1,720	[2] 3,026	[1] 35,065	[2] 11,782
Value.....dollars	51,567	53,769	16,357	297,350	21,409	53,055	8,490	23,201	1,595,150	28,380	39,338	87,662	117,820
COUNTIES.	ACRES HARVESTED.												
Brookings											35		
Brown				1,220							399		
Butte	1,477	2,660	665	8,054	880	526	67	56	24,388	1,423	813	209	1,032
Charles Mix		15		80					80		50		
Custer	205			114	20	8			2,202		1,340		
Day						4							
Fall River	86	6	5	409	1	287			449		264		
Hughes												1	
Lawrence	122	173	10	496	26		172	178	1,422	157	192	166	
McPherson	41										35		
Meade	137	101	75	237	47				2,517	104	18	1	
Pennington	108	71	4	339	52	215	300	1,755	7,461	24	778	36	

[1] Bushels. [2] Tons.

TEXAS.

THE STATE.	PRINCIPAL CROPS.									
	Corn.	Oats.	Winter wheat.	Kafir, milo, etc.	Dry beans.	Rough rice.	Broom corn.	Cotton.	Potatoes.	Sweet potatoes and yams.
Acres harvested	36,736	3,494	6,146	6,310	694	164,301	12,199	22,606	553	603
Production	[1] 1,207,132	[1] 53,895	[1] 90,525	[1] 209,459	[1] 6,781	[1] 5,297,169	[2] 5,144,047	[3] 8,537	[1] 35,317	[1] 59,223
Value.....dollars	1,029,628	43,116	187,407	230,528	29,836	14,832,073	257,202	1,476,901	79,441	106,601
COUNTIES.	ACRES HARVESTED.									
Anderson								35		
Atascosa	407			12	8			50	28	48
Bailey	210	20		185						
Bexar	1,783	112		9	10			342		
Borden			27					7		
Bosque				3						
Brazoria						629				
Brewster									3	
Cameron				10	51		686	7,512	424	120
Chambers	10,917					19,915				

[1] Bushels. [2] Pounds. [3] Bales.

STATE TABLE I.—ACRES HARVESTED AND PRODUCTION AND VALUE OF PRINCIPAL CROPS IN 1919 ON IRRIGATED LAND FOR THE STATES, AND ACRES HARVESTED, BY COUNTIES—Continued.

TEXAS—Continued.

COUNTIES—continued.	ACRES HARVESTED.									
	Corn.	Oats.	Winter wheat.	Kafir, milo, etc.	Dry beans.	Rough rice.	Broom corn.	Cotton.	Potatoes.	Sweet potatoes and yams.
Cherokee								15		
Coke				619	1					
Colorado						9,604				
Crockett	8									
Dallam	15									
De Witt	10							8		4
Deaf Smith	132	40	78	3,011						
El Paso	3,469	1,962	2,175	446	418				29	241
Fisher				27						
Fort Bend						230				
Frio	291			192	6				7	25
Galveston						200				
Gillespie	92	40	6	6						
Hale	12		944	1,234						
Harris						6,638				
Hemphill	10	10	10	100			30	10		
Hidalgo	14,677		9	3	98		11,419	6,646	54	82
Irion	43	2	22					107		
Jackson						6,645		37		
Jefferson						42,939				
Kerr									2	3
Kinney	258			100				140		
Lampasas		22						4		
Liberty						10,410				
Matagorda						37,927				
Maverick	230		455	5						2
Medina	2,545	7						595		3
Menard	432	321	911	33				331		15
Nueces	6							100		
Orange						9,223				
Palo Pinto	36									
Presidio	465		750	22	90			12		10
Reeves	68	86	339	57	8		33	3,480		
Runnels	3	5	2	15				682		
Rusk									1	
Smith		4						11		
Stephens								48		
Taylor	2									
Tom Green	205	832	298	201			1	1,594		40
Travis	42									
Uvalde	50	14						1		
Val Verde	70									2
Victoria						100				
Webb	88						8	81	5	7
Wharton						20,441		110		
Wichita	24	17	100					2		1
Zavalla	226			29	4		22	45		

THE STATE.	PRINCIPAL CROPS.									
	Alfalfa.	Other tame grasses.	Small grains cut for hay.	Wild, salt, or prairie grasses.	Corn cut for forage.	Kafir, sorghum, etc., for forage.	Cabbages.	Onions.	Beans (green).	Tomatoes.
Acres harvested	19,455	4,612	1,145	690	582	11,817	1,976	942	478	614
Production ... tons	95,544	8,796	1,244	691	631	26,570				
Value ... dollars	1,658,548	292,179	29,856	12,784	11,989	504,830	394,883	424,763	74,620	176,800

COUNTIES.	ACRES HARVESTED.									
Atascosa		12	26	1		98				
Bailey	160	4								
Bexar		512	51	9	29	237				
Borden			2							
Bosque		37		46	4	648				
Brewster									1	
Caldwell						4				
Cameron	342	394	3	52	75	1,593	1,254	16	356	409
Childress						30				
Coke			212	22		760				
Collin						2				
Crockett						3				
Dallam				100						
Deaf Smith	531	3			102	1,382				
Dimmit								56		3

STATE TABLE I.—ACRES HARVESTED AND PRODUCTION AND VALUE OF PRINCIPAL CROPS IN 1919 ON IRRIGATED LAND FOR THE STATES, AND ACRES HARVESTED, BY COUNTIES—Continued.

TEXAS—Continued.

COUNTIES—continued.	ACRES HARVESTED.									
	Alfalfa.	Other tame grasses.	Small grains cut for hay.	Wild, salt, or prairie grasses.	Corn cut for forage.	Kafir, sorghum, etc., for forage.	Cabbages.	Onions.	Beans (green).	Tomatoes.
El Paso	10,044	211	517		109	1,647	14	11	21	157
Floyd	112									
Frio	8	102				97		309	3	1
Gillespie					95	20				
Grayson							2			
Hale	703	22	2			279	1		1	
Hemphill		5				30				
Hidalgo	646	1,083		18	29	2,150	692	118	93	34
Irion	106	330		3		18				
Jack					10	197				
Kinney						152				
Lampasas				9						
McLennan							2	1	1	2
Matagorda		2			15		1		1	
Maverick	28	141								
Medina	25	27				224				
Menard	454	84	61		19	132	5			
Nueces						120	4			
Palo Pinto						3				
Potter		50			30	100				
Presidio	31	30	47			312				
Rains		14		6						
Reeves	4,854	21	26	10	43	376	1		1	
Runnels						176				
Sherman					12	350				
Smith	89									
Terrell	7	30								
Throckmorton						47				
Tom Green	932	807	62			263				
Travis	18	20				7				
Uvalde	38	200				22				
Val Verde		216	11	4	3	1				
Ward		35				233				
Washington					2					
Webb	327	26			5	41				
Wichita		60	40	400		28				
Wood										8
Zavalla		134	85			35		431		

UTAH.

THE STATE.	PRINCIPAL CROPS.								
	Corn.	Oats.	Winter wheat.	Spring wheat.	Barley.	Rye.	Clover and alfalfa seed.	Potatoes.	Sugar beets grown for sugar.
Acres harvested	9,028	52,695	41,289	91,533	11,884	3,892	9,692	10,758	92,439
Production	[1] 193,560	[1] 1,560,574	[1] 548,706	[1] 1,895,241	[1] 309,724	[1] 27,915	[1] 46,125	[1] 1,559,386	[2] 921,418
Value.....dollars	377,442	1,872,689	1,207,153	4,169,530	526,531	57,226	922,500	3,305,898	9,951,314
COUNTIES.	ACRES HARVESTED.								
Beaver	132	673	281	1,296	290	8	53	107	5
Box Elder	112	2,539	6,517	7,158	1,357	238	241	319	13,247
Cache	90	2,327	6,382	8,367	566	47	42	699	18,248
Carbon	77	378	74	474	26		112	117	136
Daggett	1	420	21	133				16	
Davis	98	453	1,844	2,526	645	3	2	1,017	5,397
Duchesne	586	3,472	1,111	3,877	240	28	1,859	1,054	3
Emery	244	4,165	83	4,458	139		1,763	213	3
Garfield	14	1,992	57	1,053	98	398		38	
Grand	714	75	19	165				36	
Iron	596	1,067	201	1,844	272		180	119	
Juab	140	364	2,011	796	161	284	226	93	252
Kane	832	578	242	197	4	146	60	54	
Millard	315	1,309	4,472	2,697	488	1,489	4,062	187	5,885
Morgan	3	534	470	2,410	360		91	139	167
Piute	8	1,309	7	1,540	35	47	18	109	5
Rich		1,377	133	758	288		8	57	
Salt Lake	830	1,852	2,599	7,247	975	30	12	1,438	6,957
San Juan	617	578	235	211	11		8	26	
Sanpete	95	6,198	2,295	12,307	1,436	660	16	480	4,041

[1] Bushels. [2] Tons.

STATE TABLE I.—ACRES HARVESTED AND PRODUCTION AND VALUE OF PRINCIPAL CROPS IN 1919 ON IRRIGATED LAND FOR THE STATES, AND ACRES HARVESTED, BY COUNTIES—Continued.

UTAH—Continued.

COUNTIES—continued.	Corn.	Oats.	Winter wheat.	Spring wheat.	Barley.	Rye.	Clover and alfalfa seed.	Potatoes.	Sugar beets grown for sugar.
	ACRES HARVESTED.								
Sevier	76	4,856	607	6,689	463	162	3	293	5,529
Summit	1	1,304	291	1,225	404	18	.....	190	.....
Tooele	105	459	3,904	817	680	226	28	120	296
Uintah	463	3,264	445	2,120	161	.....	691	100	23
Utah	1,619	4,672	4,399	12,408	1,499	23	144	2,136	20,153
Wasatch	.....	1,524	114	2,818	189	5	3	155	307
Washington	892	158	1,126	614	234	5	18	130	.....
Wayne	23	1,662	52	1,309	440	1	7	117	.....
Weber	276	2,725	1,207	4,016	433	65	45	1,199	11,785

THE STATE.	Timothy alone.	Timothy and clover mixed.	Clover alone.	Alfalfa.	Other tame grasses.	Wild, salt, or prairie grasses.	Small grains cut for hay.	Annual legumes cut for hay.	Silage crops.	Corn cut for forage.	Root crops for forage.
	PRINCIPAL CROPS.										
Acres harvested	11,972	31,284	2,136	342,635	23,341	67,344	9,320	1,596	3,377	3,837	733
Production ... tons	19,200	50,963	3,383	738,746	29,909	78,886	14,985	3,601	27,284	9,557	7,024
Value ... dollars	508,900	1,321,778	74,426	18,898,623	629,979	1,498,834	299,700	72,020	272,840	129,020	136,968
COUNTIES.	ACRES HARVESTED.										
Beaver	158	1,384	62	8,105	240	247	55	.....	12	7	2
Box Elder	640	910	32	25,132	2,359	4,793	715	140	140	53	66
Cache	1,515	2,612	42	16,955	985	1,463	739	26	285	41	240
Carbon	15	360	.....	4,139	160	261	47	16	1	46	1
Daggett	27	.....	.....	1,774	58	571	18	.....	.....	134	.....
Davis	286	325	31	9,019	2,103	358	249	4	570	110	16
Duchesne	379	168	635	34,620	405	176	614	10	1	211	21
Emery	2	.....	156	14,938	461	821	140	.....	195	.....	16
Garfield	581	.....	.....	8,716	643	1,281	631	41	.....	25	9
Grand	.....	10	.....	3,298	107	257	48	.....	.....	176	.....
Iron	150	298	22	12,932	195	302	181	.....	77	485	103
Juab	162	.....	.....	4,981	71	948	255	1	77	70	4
Kane	36	.....	.....	2,232	58	724	287	.....	46	674	4
Millard	12	.....	28	23,254	1	760	742	.....	2	344	12
Morgan	879	1,362	2	1,545	236	1,199	133	95	3	3	10
Piute	319	96	44	6,846	240	1,204	130	2	.....	45	8
Rich	319	1,590	.....	3,766	585	25,470	41	47	.....	.....	.....
Salt Lake	472	371	140	21,584	353	1,100	402	36	478	207	98
San Juan	16	100	.....	7,890	70	107	104	.....	50	180	1
Sanpete	638	510	48	27,665	4,062	6,257	1,221	33	67	28	10
Sevier	659	598	15	26,335	1,141	2,415	229	8	51	9	4
Summit	1,311	9,868	133	1,198	4,592	5,225	135	12	129	12	1
Tooele	20	69	.....	5,133	510	1,498	127	.....	10	49	15
Uintah	350	251	89	19,235	368	552	523	48	19	56	30
Utah	610	544	444	26,711	1,359	5,741	621	145	1,026	441	15
Wasatch	843	7,325	127	3,230	204	1,612	315	159	47	.....	10
Washington	113	50	10	7,697	92	13	55	8	10	112	.....
Wayne	.....	298	25	6,014	335	1,106	203	19	.....	.....	.....
Weber	1,368	2,193	51	10,673	428	1,423	360	746	81	319	37

THE STATE.	Peas (green).	Tomatoes.	Grapes.	Apples.	Peaches.	Pears.	Plums and prunes.	Cherries.
	PRINCIPAL CROPS.							
Acres harvested	2,055	2,428	[1] 93,344	[2] 594,168	[2] 519,350	[2] 46,261	[2] 55,925	[2] 94,612
Production	.....	.....	[3] 525,837	[4] 736,624	[4] 854,342	[4] 65,861	[4] 44,112	[4] 107,238
Value ... dollars	133,259	493,659	32,148	1,361,925	1,366,947	135,015	77,196	348,524
COUNTIES.	ACRES HARVESTED.							
Beaver	.....	.....	.....	854	179	93	339	66
Box Elder	44	125	5,030	79,547	122,577	1,147	6,008	13,949
Cache	1	8	143	27,174	6,247	457	1,087	696
Carbon	.....	5	89	4,389	2,086	894	537	259
Davis	266	1,605	10	38,622	30,799	1,353	1,612	24,314
Duchesne	.....	1	53	4,150	519	225	472	275
Emery	.....	3	100	25,956	2,548	2,555	1,813	640
Garfield	.....	.....	.....	118	67	10	.....	.....
Grand	.....	1	4	5,359	573	1,335	208	165
Iron	.....	.....	.....	2,075	503	242	998	155

[1] Number of vines of bearing age. [2] Number of trees of bearing age. [3] Pounds. [4] Bushels.

STATE TABLE I.—ACRES HARVESTED AND PRODUCTION AND VALUE OF PRINCIPAL CROPS IN 1919 ON IRRIGATED LAND FOR THE STATES, AND ACRES HARVESTED, BY COUNTIES—Continued.

UTAH—Continued.

COUNTIES—continued.	ACRES HARVESTED.							
	Peas (green).	Tomatoes.	Grapes.	Apples.	Peaches.	Pears.	Plums and prunes.	Cherries.
Juab		4	11	11,513	3,781	106	278	192
Kane			35	1,731	267	169	291	103
Millard		1		5,945	1,579	329	579	49
Morgan	655			4,426		561	227	39
Piute				1,633	449	86	381	305
Rich				1,617		168	147	106
Salt Lake	250	216	3,188	86,463	44,809	7,117	7,938	14,326
San Juan			7	639	398	131	239	100
Sanpete	52			11,482	4,458	427	2,768	499
Sevier		2		8,939	3,853	1,122	3,650	459
Summit	146			59		13	7	4
Tooele				4,649	2,022	594	1,521	
Uintah		3	4	12,223	968	693	1,991	444
Utah	198	525	5,380	192,909	172,566	19,419	14,536	20,772
Wasatch	144			4,611	1	9	383	64
Washington		15	36,956	7,897	30,839	2,148	2,482	1,181
Wayne	1			1,073	798	226	438	74
Weber	298	911	42,314	48,124	86,464	4,432	4,436	15,385

WASHINGTON.

THE STATE.	PRINCIPAL CROPS.												
	Corn.	Oats.	Winter wheat.	Spring wheat.	Barley.	Rye.	Red clover seed.	Hops.	Potatoes.	Sugar beets grown for sugar.	Timothy alone.	Timothy and clover mixed.	Clover alone.
Acres harvested	13,263	7,215	8,236	35,694	5,761	544	897	507	8,186	4,635	8,142	8,647	2,254
Production	[1] 487,154	[1] 337,056	[1] 154,116	[1] 923,493	[1] 193,568	[1] 5,646	[1] 2,925	[2] 870,769	[1] 1,526,353	[3] 40,286	[3] 15,466	[3] 18,140	[3] 4,128
Value.....dollars	876,877	337,056	324,201	2,013,215	296,352	11,292	117,750	391,846	3,205,341	435,089	463,980	444,430	99,072
COUNTIES.	ACRES HARVESTED.												
Adams				3,910									
Asotin	2					225							
Benton	1,399	15	949	680	105				584		77	5	23
Chelan	74	4	4	108					147		161	108	23
Clallam												10	
Clarke							3				1	6	
Columbia			1,060						1				
Douglas			60	200	30				10		5		
King												18	1
Kitsap											5		
Kittitas	31	3,916	945	9,686	1,441	76			185		5,170	5,602	419
Klickitat	36	903	161	550	12	7			74		455	1,081	451
Lewis		44		10					2			62	
Lincoln		5	110	205	30	7					660		
Mason									1				
Okanogan	346	78	73	246	52				188		213	383	102
Pend Oreille									5			572	3
Pierce									10			2	
Spokane	47	72	274			10			198		41	38	111
Stevens	27	103	52	63	1	8			34		464	162	35
Wahkiakum	293												
Walla Walla		1	265	115	157				241	303		79	
Yakima	11,008	2,074	4,283	19,921	3,933	211	894	507	6,506	4,332	890	539	1,086

THE STATE.	PRINCIPAL CROPS.											
	Alfalfa.	Other tame grasses.	Wild, salt, or prairie grasses.	Small grains cut for hay.	Silage crops.	Corn cut for forage.	Root crops for forage.	Grapes.	Apples.	Peaches.	Pears.	Plums and prunes.
Acres harvested	148,409	17,014	1,047	11,650	2,645	2,001	628	[4] 118,892	[5] 4,633,119	[5] 455,526	[5] 530,934	[5] 75,084
Production	[3] 494,066	[3] 35,054	[3] 2,075	[3] 15,214	[3] 23,762	[3] 6,046	[3] 2,619	[2] 1,410,672	[2] 15,823,446	[2] 1,259,176	[2] 1,236,330	[1] 127,042
Value.....dollars	11,857,584	735,378	39,425	418,385	261,382	78,598	55,104	112,806	13,607,378	2,707,228	580,118	247,732

[1] Bushels. [2] Pounds. [3] Tons. [4] Number of vines of bearing age. [5] Number of trees of bearing age.

STATE TABLE I.—ACRES HARVESTED AND PRODUCTION AND VALUE OF PRINCIPAL CROPS IN 1919 ON IRRIGATED LAND FOR THE STATES, AND ACRES HARVESTED, BY COUNTIES—Continued.

WASHINGTON—Continued.

ACRES HARVESTED.

COUNTIES.	Alfalfa.	Other tame grasses.	Wild, salt, or prairie grasses.	Small grains cut for hay.	Silage crops.	Corn cut for forage.	Root crops for forage.	Grapes.	Apples.	Peaches.	Pears.	Plums and prunes.
Adams	148			527								
Asotin	25					2						
Benton	16,620	11	7	888	294	259	10	38,469	370,732	70,920	65,269	9,653
Chelan	7,606	7		472		219	12	4,115	1,214,195	50,761	52,817	8,271
Columbia	3			45					35	2		6
Douglas	1,028	2		153		16		350	289,838	24,358	8,005	2,246
Ferry	40								12			
Franklin	5											
Garfield	82											
Grant								40	19,960	1,565	3,615	34
King	145			23		12			12	12	260	15
Kitsap				23								
Kittitas	12,003	16,495	341	1,420	222		2	79	9,884	359	531	325
Klickitat	354	31	130	878	37	49	7	736	29,840	452	261	293
Lewis		24		35			5					
Lincoln	110								490	1,700	262	284
Mason									69	1	3	6
Okanogan	12,902	100	298	1,239	334	378	454	1,082	384,425	4,403	3,410	839
Pend Oreille		45	15	55					82			10
Pierce	4			1					1,302	7	108	257
Spokane	693	2		550	72	180	10	3,317	622,158	4,622	9,837	2,026
Stevens	1,067	192	5	184	7	33	10		10,656			
Walla Walla	8,882	2		372	212	177	70					
Yakima	86,682	494	251	4,865	1,467	676	48	70,704	1,679,429	296,364	386,456	50,825

WYOMING.

PRINCIPAL CROPS.

THE STATE.	Corn.	Oats.	Winter wheat.	Spring wheat.	Barley.	Rye.	Clover and alfalfa seed.	Potatoes.	Sugar beets grown for sugar.
Acres harvested	2,738	23,684	2,466	40,470	3,099	541	2,386	4,532	2,714
Production	[1] 51,839	[1] 512,262	[1] 35,513	[1] 630,098	[1] 58,741	[1] 4,415	[1] 7,584	[1] 532,511	[2] 23,067
Value ....dollars	85,534	593,488	76,708	1,361,012	91,049	7,726	144,096	1,251,401	242,204

ACRES HARVESTED.

COUNTIES.	Corn.	Oats.	Winter wheat.	Spring wheat.	Barley.	Rye.	Clover and alfalfa seed.	Potatoes.	Sugar beets grown for sugar.
Albany		1,100	105	92	176	102		180	
Big Horn	80	3,289	192	6,268	192		866	547	40
Carbon		1,773	419	265	272	59		129	
Converse		43		35	110				
Crook								10	
Fremont	2	998	58	931	90	4			
Goshen	1,991	1,606	229	4,228	246	45		1,699	1,091
Hot Springs	9	156	18	43	50	40		68	
Johnson						8			
Laramie		15	2	15	11	15		27	
Lincoln		2,558	246	920	485	60		90	
Natrona		10		5				27	
Park	44	5,328	275	15,721	343		985	1,345	507
Platte	483	1,326	272	3,556	323	107	453	4	271
Sheridan	37	1,798	435	6,552	376		48	85	217
Sweetwater		1,125		118	39		24	40	
Uinta		1,921	160	1,051	308	101		143	
Washakie	87	565	40	456	78			131	588
Weston	5	5	15	214			10	7	

PRINCIPAL CROPS.

THE STATE.	Timothy.	Timothy and clover mixed.	Clover alone.	Alfalfa.	Other tame grasses.	Wild, salt, or prairie grasses.	Small grains cut for hay.	Annual legumes cut for hay.	Silage crops.	Corn cut for forage.
Acres harvested	18,645	25,691	1,636	176,295	50,923	142,750	9,081	778	653	951
Production	[2] 18,924	[2] 32,359	[2] 1,811	[2] 284,423	[2] 47,484	[2] 116,168	[2] 7,160	[2] 1,011	[2] 3,787	[2] 2,317
Value ....dollars	489,424	776,616	36,220	6,541,729	1,044,648	2,720,948	150,360	19,209	37,870	34,755

[1] Bushels. [2] Tons.

STATE TABLE I.—ACRES HARVESTED AND PRODUCTION AND VALUE OF PRINCIPAL CROPS IN 1919 ON IRRIGATED LAND FOR THE STATES, AND ACRES HARVESTED, BY COUNTIES—Continued.

WYOMING—Continued.

COUNTIES.	ACRES HARVESTED.									
	Timothy.	Timothy and clover mixed.	Clover alone.	Alfalfa.	Other tame grasses.	Wild, salt, or prairie grasses.	Small grains cut for hay.	Annual legumes cut for hay.	Silage crops.	Corn cut for forage.
Albany	881	21	10	5,375	3,463	34,748	683	.....	50	1
Big Horn	93	504	47	30,771	804	268	1,352	12	68	30
Campbell	.....	.....	.....	418	.....	30	50	.....	.....	.....
Carbon	4,665	7,864	65	10,810	7,362	27,301	118	27	.....	1
Converse	10	33	.....	1,161	.....	42	.....	.....	.....	.....
Crook	.....	.....	.....	60	.....	.....	30	.....	.....	.....
Fremont	22	63	147	4,471	.....	197	551	.....	9	.....
Goshen	40	15	.....	13,047	369	2,264	595	27	34	186
Hot Springs	160	1	.....	8,488	263	80	.....	20	4	12
Laramie	41	314	.....	1,559	.....	4,775	40	218	100	48
Lincoln	5,866	6,414	72	13,186	20,057	52,511	2,205	99	.....	.....
Natrona	.....	.....	.....	4,653	50	295	195	.....	.....	.....
Park	3,554	631	241	29,330	1,130	690	1,267	28	14	6
Platte	22	123	157	25,555	1,963	6,360	293	56	294	637
Sheridan	1,873	6,786	29	14,155	2,325	280	709	5	25	28
Sweetwater	585	23	.....	1,875	1,011	1,426	146	65	.....	.....
Uinta	833	2,718	795	6,904	12,101	10,686	599	221	5	.....
Washakie	.....	91	.....	1,422	.....	.....	85	.....	.....	.....
Weston	.....	.....	75	3,055	25	797	63	.....	.....	2

STATE TABLE II.—LAND IN IRRIGATION ENTERPRISES REPORTED AS AVAILABLE FOR SETTLEMENT, BY STATE, COUNTY, AND TERMS: 1920.

COUNTY.	Class of enterprise.	Source of water.	Acreage available for settlement.	Price of land, per acre.	Cost of preparing land for irrigation, per acre.	Price of water rights, per acre.	Terms, etc.
ARIZONA.							
Cochise	Cooperative	San Pedro River	500	$10.00	$40.00	$4.00	One-half cash, balance 3 to 5 years, 10 per cent interest.
Cochise	Cooperative	San Pedro River	1,300	10.00	25.00	4.00	No report.
Graham	Cooperative	Marylia Canyon	400	25.00	50.00	14.00	No report.
Graham	Cooperative	Gila River	100	25.00	79.00	2.00	No report.
Graham	Individual	Wells	430			20.00	Government land.
Graham	Cooperative	Gila River	1,000	50.00	30.00	5.00	No report.
Graham	Cooperative	Oregon Canal	200	50.00	100.00	2.00	No report.
Graham	Cooperative	Gila River	1,050		40.00	10.00	No report.
Graham	Individual	Wells	125	25.00	30.00		Cash.
Graham	Individual	Wells	192		20.00		No report.
Maricopa	Individual	Gila River	980	50.00			No report.
Maricopa	Cooperative	Gila River	5,000	30.00	60.00	22.00	Cash.
Pima	Individual	Rillito Creek	100	20.00	60.00		8 per cent interest.
Pima	Individual	Wells	147	25.00	50.00		8 per cent annually.
Pima	Partnership	Wells and Sabino Canyon	461	25.00	60.00		8 per cent annually.
Pima	Individual	Rillito Creek	120	150.00	50.00		8 per cent annually.
Pima	Individual	Wells	465	60.00	60.00		8 per cent annually.
Pima	Partnership	Wells	143	30.00	60.00		8 per cent annually.
Pima	Partnership	Wells	120	75.00	50.00		8 per cent annually.
Pima	Individual	Wells	120	60.00	40.00		8 per cent annually.
Pima	Individual	Wells	148	10.00	50.00		No report.
Pima	Commercial	Santa Cruz River	3,000	100.00	40.00	6.00	25 per cent cash, balance 2, 3, and 4 years, 6 per cent interest.
Pima	Individual	Wells	310	60.00	40.00		8 per cent interest.
Pinal	Commercial	Gila River	1,000	40.00	50.00	3.00	One-half cash, balance 8 per cent interest.
Pinal	Commercial	Gila River	6,000	50.00	40.00	3.00	One-half cash, balance 8 per cent interest.
Pinal	Individual	Wells	320	200.00		12.00	One-fourth cash, balance 5 payments, 6 per cent interest.
Pinal	Cooperative	Gila River	400	50.00	40.00	10.00	One-half cash, balance 8 per cent interest.
CALIFORNIA.							
Butte	Irrigation district	Little Butte Creek	4,000	$60.00	$75.00	$4.00	No report.
Butte	Cooperative	Butte Canal	500	200.00	10.00	1.00	No report.
Calaveras	Commercial	Mokelumne River	2,960	40.00	25.00		No report.
Contra Costa	Cooperative	San Joaquin River	8,000				No report.
Fresno	Commercial	Kings River	2,000	117.00	25.00		10 per cent down, 10 per cent annually.
Fresno	Commercial	San Joaquin River	41,667				5 years, 6 per cent interest.
Fresno	Commercial	San Joaquin River	24,000	175.00	40.00	38.00	10 equal payments, 6 per cent interest.
Glenn	U. S. Reclamation Serv.	Stony Creek	3,000	150.00	40.00	55.00	5 to 10 years, 7 per cent interest.
Glenn	Cooperative	Wells	300		50.00		No report.
Glenn	Cooperative	Sacramento River	345	125.00	15.00		10 years, 6 per cent interest.
Glenn	Partnership	Sacramento River	1,100	200.00	17.00		3 to 5 years, 6 per cent interest.
Imperial	Cooperative	Imperial Irrig. Dist	1,800	50.00	40.00	10.00	No report.
Inyo	Cooperative	Bulls Creek	1,300	150.00	25.00		One-fourth cash, balance 10 years, 6½ per cent interest.
Inyo	Cooperative	Owens River	3,000	50.00	40.00		No report.
Kern	Cooperative	Canyon Creek	524	300.00	25.00	100.00	One-fourth cash, balance 2, 3, and 4 years, 6 per cent interest.
Kings	Cooperative	Kings River	14,000				No report.
Lassen	Individual	Buckhorn River	3,000	30.00	10.00	30.00	6 years, 10 per cent interest.
Los Angeles	City	Sawpit and Monrovia Canyon	250	500.00			Cash.
Los Angeles	Cooperative	Wells	3,500	100.00	150.00		One-fifth cash, one-fifth annually.
Los Angeles	Cooperative	Dead Mans Canyon	1,200	5.00	15.00		No report.
Los Angeles	Partnership	San Gabriel River	300	50.00	15.00		No report.
Los Angeles	Commercial	Pacoima Creek	600	500.00	20.00		No report.
Los Angeles	Cooperative	Wells	250	250.00	200.00	100.00	One-third cash, 7 per cent interest.
Merced	Commercial	Merced River	150,000	100.00	40.00	10.00	No report.
Merced	Commercial	San Joaquin River	62,500				5 years, 6 per cent interest.
Mono	Cooperative	Rush Creek	40,000		10.00	1.00	No report.
Riverside	Cooperative	Wells	200	300.00			One-half cash, 7 per cent interest.
Riverside	Cooperative	Wells	2,500	200.00	20.00		One-tenth cash, balance 9 equal payments.
Riverside	Cooperative	Wells	2,510	250.00	25.00		Cash.
Riverside	Commercial	Whitewater River	1,250	325.00	20.00		7 per cent interest.
Riverside	Individual	Wells	1,000	70.00	50.00		One-third cash, 7 per cent interest.
Riverside	Cooperative	Wells	2,000	150.00	100.00	100.00	No report.
Riverside	Commercial	Edgar Canyon	980	100.00	30.00		One-fourth cash, balance 3 years, 6 per cent interest.
Riverside	Partnership	Springs	100	300.00	25.00		Cash.
Riverside	Cooperative	Wells	700	350.00	12.00	15.00	One-fourth down, balance 1 to 5 years, 7 per cent interest.
Sacramento	Cooperative	Sacramento River	9,585	125.00			One-fifth cash, 8 per cent annually, 6 per cent interest.
Sacramento	Cooperative	American River	4,295	150.00			One-fifth cash, 10 years, 6 per cent interest.
Sacramento	Cooperative	Sacramento River	1,208	185.00	3.00		One-fifth cash, 8 per cent annually, 6 per cent interest.
San Benito	Partnership	Los Veronas	1,700	100.00			No report.
San Diego	Individual	Agua Tibia and Marias Creek	1,000				No report.
San Diego	Commercial	Sweetwater River	6,500	300.00		19.00	No report.
Shasta	Individual	North Fork Cottonwood Creek	15,000	25.00	50.00		6 and 8 per cent interest.
Siskiyou	Cooperative	Big Springs	2,300	150.00	60.00	3.00	10 years, 6 per cent interest.
Stanislaus	Irrigation district	Tuolumne River	5,000	150.00	75.00	2.00	One-fourth down, 6 per cent interest.
Stanislaus	Commercial	San Joaquin River	20,833				5 years, 6 per cent interest.

STATE TABLE II.—LAND IN IRRIGATION ENTERPRISES REPORTED AS AVAILABLE FOR SETTLEMENT, BY STATE, COUNTY, AND TERMS: 1920—Continued.

COUNTY.	Class of enterprise.	Source of water.	Acreage available for settlement.	Price of land, per acre.	Cost of preparing land for irrigation, per acre.	Price of water rights, per acre.	Terms, etc.
CALIFORNIA—Continued.							
Stanislaus	Cooperative	San Joaquin River	2,000	$300.00	$40.00	$7.00	One-fifth down, 10 payments, 6 per cent interest.
Stanislaus	Irrigation district	Stanislaus River	40,000	75.00	50.00	33.00	No report.
Stanislaus	Irrigation district	Tuolumne River	10,000	200.00	75.00	.....	No report.
Tehama	Commercial	Los Molinos River	2,000	200.00	25.00	.....	One-tenth cash, 15 per cent yearly, 6 per cent interest.
Tehama	Cooperative	Thomas Creek	900	.....	40.00	.....	No report.
Tulare	Irrigation district	Wells	2,700	150.00	35.00	7.00	No report.
Yolo	Commercial	Cache Creek and Clear Lake	20,906	75.00	.....	20.00	No report.
Yuba	Commercial	Dry Creek	4,400	125.00	50.00	.....	5 years, 6 per cent interest.
Yuba	Individual	Feather River	800	150.00	60.00	.....	10 years, 7 per cent interest.
Yuba	Cooperative	Yuba and Feather Rivers	1,520	150.00	50.00	18.00	10 years, 7 per cent interest.
COLORADO.							
Alamosa	Cooperative	Rio Grande	8,000	$20.00	.....	$8.00	One-fourth cash, 6 per cent interest.
Alamosa	Cooperative	Rio Grande	64,000	25.00	$15.00	.....	No report.
Bent	Partnership	Dry Creek	640	5.00	2.00	.....	No report.
Bent	Cooperative	Arkansas River	1,900	.....	8.00	75.00	No report.
Bent	Partnership	Culebra Creek	4,000	5.00	6.00	.....	No report.
Crowley	Cooperative	Horse Creek	5,000	25.00	10.00	.....	No report.
Delta	U. S. Reclamation Serv.	Gunnison River	1,500	75.00	15.00	100.00	One-half cash, balance 3 to 5 years, 7 per cent interest.
Delta	Cooperative	Cottonwood Creek	1,400	15.00	25.00	50.00	No report.
Delta	Cooperative	Gunnison River	4,000	.....	.....	45.00	No report.
Delta	Partnership	Dirty Gorge	1,440	50.00	15.00	.....	8 per cent interest.
Delta	Cooperative	Gunnison River	700	75.00	20.00	22.00	One-fifth cash, 6 per cent interest.
Dolores	Carey Act	Creeks	20,000	1.25	20.00	25.00	No report.
El Paso	Individual	Turkey Creek	200	.....	.....	.....	No report.
El Paso	Cooperative	Fountain River	2,000	25.00	.....	75.00	One-third cash, balance 3 years, 7 per cent interest.
Elbert	Partnership	Bijou Creek	1,800	50.00	10.00	50.00	No report.
Fremont	Commercial	Beaver Creek	1,200	15.00	10.00	3.00	One-tenth down, 9 payments, 6 per cent interest.
Fremont	Cooperative	Arkansas River	3,350	25.00	90.00	3.00	One-twentieth cash, balance 5 years.
Garfield	Cooperative	West Drude Creek	5,000	10.00	10.00	28.00	No report.
Garfield	Cooperative	White River	1,000	15.00	10.00	115.00	No report.
Grand	Partnership	St. Louis Creek	800	10.00	.....	.....	No report.
Huerfano	Cooperative	Huerfano River	1,500	10.00	25.00	42.00	No report.
Huerfano	Irrigation district	Arapahoe Creek	900	20.00	6.00	.....	No report.
Huerfano	Partnership	South Abeyta	120	75.00	9.00	.....	No report.
Jackson	Individual	Big Grizzly	400	10.00	.....	.....	No report.
Jackson	Individual	Norris Creek	240	25.00	15.00	.....	No report.
Jackson	Cooperative	Wellar Creek	7,000	.....	.....	.....	Homestead lands.
Jackson	Commercial	Michigan River	20,000	.....	.....	.....	Homestead lands.
La Plata	Partnership	Draw	280	.....	.....	.....	No report.
La Plata	Partnership	Spring Hollow	200	.....	.....	.....	No report.
La Plata	Partnership	La Plata River	195	5.00	50.00	.....	No report.
La Plata	Partnership	Florida River	630	15.00	20.00	.....	No report.
La Plata	Partnership	Stevens Creek	100	20.00	100.00	.....	No report.
La Plata	Cooperative	Florida River	5,000	12.00	8.00	30.00	No report.
La Plata	Cooperative	Las Animas River	800	15.00	10.00	7.00	No report.
La Plata	Partnership	La Plata River	202	20.00	20.00	.....	No report.
La Plata	Cooperative	Los Pinos River	500	.....	.....	.....	No report.
Mesa	Cooperative	Kahnah Creek	1,200	10.00	50.00	50.00	No report.
Mesa	Cooperative	Deer and Indian Creeks	4,000	8.00	30.00	.....	No report.
Mesa	U. S. Reclamation Serv.	Grand River	32,500	35.00	20.00	.....	20 years, without interest.
Mesa	Cooperative	Grand River	1,500	15.00	10.00	20.00	No report.
Montezuma	Irrigation district	Dolores River	13,000	25.00	.....	27.00	One-tenth down, 18 annual payments, 8 per cent interest.
Montrose	Cooperative	San Miguel River	2,000	10.00	13.00	30.00	One-fifth down, 15 years, 7 per cent interest.
Montrose	Cooperative	Creeks	8,000	15.00	5.00	50.00	10 years, 8 per cent interest.
Montrose	U. S. Reclamation Serv.	Gunnison River	3,000	75.00	15.00	100.00	One-half cash, balance 3 to 5 years, 8 per cent interest.
Montrose	Cooperative	Cimarron River	500	15.00	20.00	20.00	No report.
Pueblo	Cooperative	Huerfano River	3,000	25.00	.....	10.00	No report.
Pueblo	Cooperative	Huerfano River	17,000	.....	2.00	.....	No report.
Pueblo	Individual	St. Charles River	2,000	.....	5.00	.....	No report.
Pueblo	Partnership	Mustang Creek	1,800	10.00	5.00	.....	No report.
Pueblo	Cooperative	Apishapa River	4,285	25.00	6.00	45.00	Cash.
Pueblo	Partnership	Mustang Creek	2,500	20.00	2.00	.....	No report.
Pueblo	Individual	Saunders Arroyo	1,000	10.00	.....	.....	No report.
Saguache	Cooperative	Saguache Creek	8,000	.....	.....	20.00	No report.
San Miguel	Cooperative	Naturita Creek	3,000	10.00	13.00	30.00	One-fifth down, 15 years, 7 per cent interest.

STATE TABLE II.—LAND IN IRRIGATION ENTERPRISES REPORTED AS AVAILABLE FOR SETTLEMENT BY STATE, COUNTY, AND TERMS: 1920—Continued.

COUNTY.	Class of enterprise.	Source of water.	Acreage available for settlement.	Price of land, per acre.	Cost of preparing land for irrigation, per acre.	Price of water rights, per acre.	Terms, etc.
IDAHO.							
Ada	Cooperative	Indian Creek	800	$40.00	.....	.....	No report.
Bannock	Carey Act	Port Neuf River, Toponis Creek	7,000	50.00	$20.00	$35.00	10 equal payments, 6 per cent interest.
Bannock	Partnership	Bear River	9,000	.....	10.00	.....	No report.
Bingham	Carey Act	Snake River	12,688	0.50	35.00	40.00	No report.
Blaine	Partnership	Silver Creek	500	25.00	10.00	50.00	20 years, 7 per cent interest.
Boise	Partnership	Elk Creek	193	.....	50.00	.....	No report.
Cassia	Partnership	Cassia Creek	212	42.00	20.00	.....	8 per cent interest.
Cassia	U. S. Reclamation Serv.	Snake River	154	58.00	6.00	50.00	No report.
Cassia	Irrigation district	Raft River	1,247	15.00	15.00	.....	No report.
Cassia	Partnership	Raft River	540	20.00	15.00	.....	No report.
Cassia	Individual	Six Mile Creek	348	100.00	20.00	.....	No report.
Cassia	Irrigation district	Raft River	680	15.00	15.00	.....	No report.
Clark	Partnership	Birch Creek	3,000	.....	300.00	5.00	No report.
Clark	Partnership	Spring Creek	120	.....	.....	.....	No report.
Custer	Carey Act	Big Lost River	1,350	50.00	15.00	40.00	10 years, 6 per cent interest.
Custer	Irrigation district	Salmon River	125	.....	10.00	23.00	No report.
Elmore	Irrigation district	Snake River	2,000	100.00	15.00	35.00	No report.
Elmore	Irrigation district	Malad River	185	50.00	25.00	65.00	No report.
Gooding	Cooperative	Snake River	32,353	.....	25.00	65.00	10 payments, 6 per cent interest.
Gooding	Cooperative	Dry Creek	1,000	10.00	20.00	.....	No report.
Jefferson	Carey Act	Crystal Lake	15,800	75.00	.....	35.00	10 payments, 10 per cent interest.
Jefferson	Cooperative	Snake River	6,000	75.00	38.00	10.00	10 years, 7 per cent interest.
Jefferson	Partnership	Snake River	425	.....	60.00	.....	No report.
Jerome	Cooperative	Snake River	17,647	.....	25.00	65.00	10 payments, 6 per cent interest.
Lemhi	Carey Act	Timber Creek	3,650	0.50	10.00	14.00	No report.
Lincoln	Carey Act	Big Wood River	26,000	0.50	20.00	42.00	Water, $10 cash, 12 payments, 6 per cent interest.
Lincoln	Individual	Little Wood River	100	10.00	15.00	.....	No report.
Lincoln	Individual	Little Wood River	150	5.00	.....	.....	No report.
Minidoka	U. S. Reclamation Serv.	Snake River	176	67.00	6.00	50.00	No report.
Owyhee	Individual	Flat Creek	100	50.00	25.00	.....	No report.
Owyhee	Partnership	Deer Creek	280	25.00	25.00	25.00	No report.
Owyhee	Partnership	Deer Creek	245	25.00	25.00	.....	No report.
Oywhee	Individual	Cherry Creek	160	50.00	25.00	.....	No report.
Owyhee	Individual	Deadwood River	100	50.00	25.00	.....	No report.
Owyhee	Irrigation district	Snake River	2,756	.....	25.00	55.00	10 years, bonds, 6 per cent interest.
Owyhee	Partnership	Snake River	140	25.00	35.00	.....	No report.
Owyhee	Irrigation district	Malad River	177	50.00	25.00	65.00	No report.
Payette	Cooperative	Snake River	3,000	75.00	.....	20.00	No report.
Payette	Cooperative	Payette River	1,000	.....	.....	100.00	No report.
Payette	Irrigation district	Payette River	1,356	75.00	15.00	10.00	One-half cash.
Twin Falls	Cooperative	Deep Creek	4,600	1.00	20.00	200.00	No report.
Twin Falls	Individual	Cornal Creek	130	.....	35.00	.....	No report.
Twin Falls	Cooperative	Snake River	200	40.00	20.00	55.00	No report.
Twin Falls	Cooperative	Devil Creek	2,500	.....	15.00	.....	No report.
Washington	Irrigation district	Crane Creek	1,500	38.00	30.00	50.00	One-half cash, 8 per cent interest.
MONTANA.							
Beaverhead	Individual	Steel Creek	160	.....	.....	.....	No report.
Beaverhead	Partnership	Willard Creek	500	.....	$10.00	.....	No report.
Beaverhead	Individual	Red Rock River	1,200	$40.00	30.00	.....	No report.
Blaine	U. S. Reclamation Serv.	Milk River	46,597	25.00	10.00	.....	20 years, without interest.
Blaine	Individual	Snake Creek	1,000	12.00	10.00	.....	No report.
Broadwater	Partnership	Missouri River	300	25.00	15.00	.....	No report.
Broadwater	Partnership	Missouri River	150	25.00	1.00	.....	No report.
Cascade	U. S. Reclamation Serv.	Sun River	168	35.00	.....	$36.00	20 years, without interest.
Choouteau	Partnership	Missouri River	150	.....	12.00	.....	No report.
Dawson	U. S. Reclamation Serv.	Yellowstone River	793	20.00	25.00	50.00	20 years, without interest.
Deer Lodge	Partnership	Klondike Creek	560	80.00	.....	.....	No report.
Fergus	Individual	Armells Creek	2,480	.....	.....	.....	No report.
Gallatin	Individual	Madison River	270	30.00	.....	.....	No report.
Gallatin	Cooperative	West Gallatin River	3,000	100.00	.....	.....	One-fourth cash, balance 5 payments, 7 per cent interest.
Jefferson	Cooperative	Pipestone Creek	800	.....	5.00	.....	No report.
Madison	Cooperative	Jefferson River	500	.....	6.00	2.00	No report.
Madison	Individual	Jefferson River	300	25.00	8.00	.....	No report.
Madison	Partnership	Jefferson River	1,300	35.00	.....	.....	No report.
Madison	Cooperative	Ruby River	1,159	15.00	25.00	.....	No report.
Madison	Partnership	Wolf Creek	200	.....	.....	.....	No report.
Mineral	Partnership	Thompson Creek	110	50.00	20.00	.....	No report.
Musselshell	Individual	Musselshell River	425	10.00	25.00	.....	No report.
Musselshell	Partnership	Musselshell River	175	3.00	100.00	.....	No report.
Phillips	U. S. Reclamation Serv.	St. Marys River	34,555	25.00	10.00	.....	20 years, without interest.
Pondera	Carey Act	Birch Creek	7,478	1.00	10.00	60.00	14 payments, 6 per cent interest.
Pondera	Individual	Dupuyer Creek	300	15.00	1.00	.....	No report.
Pondera	Cooperative	Teton River	15,000	.....	.....	.....	No report.
Pondera	Partnership	Sheep Creek	200	15.00	.....	.....	No report.
Pondera	Cooperative	Pondera Coulee	4,220	20.00	.....	.....	Three assessments.
Powell	Individual	Cottonwood Creek	300	.....	10.00	.....	6 years, 8 per cent interest.
Powell	Individual	Deer Lodge River	160	.....	.....	.....	No report.
Richland	U. S. Reclamation Serv.	Yellowstone River	23,535	20.00	25.00	50.00	20 years, without interest.
Rosebud	Partnership	Tongue River	200	25.00	75.00	.....	No report.
Sweet Grass	Carey Act	Sweet Grass Creek	10,000	50.00	10.00	60.00	One-fourth cash, balance to suit, 6 per cent interest.

STATE TABLE II.—LAND IN IRRIGATION ENTERPRISES REPORTED AS AVAILABLE FOR SETTLEMENT, BY STATE, COUNTY, AND TERMS: 1920—Continued.

COUNTY.	Class of enterprise.	Source of water.	Acreage available for settlement.	Price of land, per acre.	Cost of preparing land for irrigation, per acre.	Price of water rights, per acre.	Terms, etc.
MONTANA—Continued.							
Teton	Cooperative	Teton River	15,000				No report.
Teton	U. S. Reclamation Serv.	Sun River	12,000	$35.00		$35.00	20 years, without interest.
Valley	U. S. Reclamation Serv.	St. Marys River	18,848	25.00	$10.00		20 years, without interest.
Yellowstone	U. S. Reclamation Serv.	Yellowstone River	3,317	4.00		50.00	7 years, without interest.
NEVADA.							
Churchill	U. S. Reclamation Serv.	Truckee River	87,451	$20.00	$50.00	$60.00	20 years, without interest.
Clark	Cooperative	Virgin River	289	50.00	50.00	6.00	No report.
Clark	Partnership	Colorado River	110	50.00	50.00		No report.
Clark	Individual	Well, flowing	115	100.00	27.00		No report.
Clark	Individual	Well, flowing	116	50.00	25.00		No report.
Clark	Partnership	Well, flowing	100	3.00	25.00		No report.
Clark	Partnership	Well, flowing	125	50.00	30.00		No report.
Clark	Cooperative	Virgin River	375	40.00	10.00	10.00	No report.
Douglas	Partnership	West Walker River	19,220	75.00			No report.
Esmeralda	Partnership	Cheatovich Creek	550				No report.
Humboldt	Partnership	Humboldt River	360	30.00	15.00		No report.
Humboldt	Partnership	Pompernickle River	200				No report.
Humboldt	Partnership	Humboldt River	640	15.00			No report.
Humboldt	Partnership	Rock Creek	564	20.00			No report.
Lincoln	Cooperative	Pahranagat Lake	2,000	100.00	6.00	25.00	One-fourth cash, 5 years, 6 per cent interest.
Lincoln	Cooperative	Ash Springs	300	50.00	10.00	20.00	No report.
Lyon	Individual	Walker River	4,000				No report.
Lyon	Partnership	Walker River	10,490	75.00			No report.
Lyon	Partnership	Walker River	260	75.00	45.00		No report.
Lyon	U. S. Reclamation Serv.	Truckee River	1,787	20.00	50.00	60.00	20 years, without interest.
Nye	Individual	Reese River	300	2.00	15.00		No report.
Nye	Partnership	Hinorgoss River	920		12.00		No report.
Nye	Partnership	Cottonwood and Turney Creeks	400	2.00	40.00		No report.
Ormsby	Partnership	Clear Creek	200	2.00	10.00		No report.
Ormsby	Individual	Clear Creek	180	2.00	40.00		No report.
Ormsby	Cooperative	Carson River	1,000	32.00	60.00		5 years, 6 per cent interest.
Washoe	Commercial	Truckee River	7,000	50.00	10.00	7.00	5 years, 6 per cent interest.
White Pine	Individual	Willow Creek	300	20.00			No report.
NEW MEXICO.							
Bernalillo	Cooperative	Rio Grande	650	$25.00	$25.00	$4.00	No report.
Colfax	Cooperative	Cimarron River	550	15.00	4.00		One-third cash.
Colfax	Commercial	Rayado River	4,979	100.00	5.00		One-fourth cash.
Colfax	Commercial	Eagle Nest Dam	22,200	35.00	27.00	50.00	One-fifth cash, 9 years, 6 per cent interest.
Eddy	Individual	Pecos River	2,000	300.00	100.00		No report.
Eddy	Cooperative	Black River	550	20.00			No report.
Hidalgo	Cooperative	Gila River	500	20.00	60.00	100.00	No report.
McKinley	Cooperative	Springs	360	72.00	10.00		No report.
San Juan	Cooperative	Animas River	350	13.00	42.00	75.00	Cash or note, 6 to 8 per cent interest.
San Juan	Cooperative	Animas River	200	25.00		2.00	No report.
San Juan	Partnership	San Juan River	460	20.00	25.00	50.00	Cash or note, 8 per cent interest.
San Juan	Cooperative	San Juan River	1,300	50.00	10.00	10.00	No report.
San Juan	Cooperative	Animas River	900	50.00	25.00	2.00	No report.
San Miguel	Individual	Red River	940	10.00			No report.
Socorro	Cooperative	Rio Grande	300	50.00	30.00	96.00	$4 per acre per year.
Socorro	Cooperative	Rio Grande	200	200.00	30.00	38.00	No report.
Socorro	Cooperative	Rio Grande	4,140	50.00	15.00		No report.
Taos	Cooperative	Arroyo	4,400	10.00	10.00		No report.
Union	Partnership	Cimarron River	1,500	50.00	60.00		No report.
Valencia	Commercial	Hermosa River	20,000	3.00			No report.
OREGON.							
Baker	Individual	Goose Creek	1,000	$25.00	$25.00		No report.
Baker	Commercial	Powder River	1,002	75.00	40.00	$30.00	20 per cent cash, balance 5 years, 7 per cent interest.
Crook	Carey Act	Deschutes River	1,278	2.50	30.00	50.00	No report.
Deschutes	Carey Act	Deschutes River	8,966	2.50	25.00	40.00	One-fifth down.
Deschutes	Carey Act	Deschutes River	9,709	2.50	30.00	50.00	No report.
Deschutes	Cooperative	Deschutes River	5,000	10.00		26.25	7 per cent interest.
Harney	Individual	Riddle Creek	2,000	15.00	70.00		No report.
Hood River	Cooperative	Middle Fork, Hood River	5,000	85.00	150.00		7 per cent interest.
Hood River	Cooperative	Sand Creek	3,700	150.00	150.00	20.00	8 per cent interest.
Hood River	Cooperative	Hood River	1,000	400.00	50.00	30.00	No report.
Hood River	Irrigation district	East Fork, Hood River	4,010	50.00	125.00	22.00	No report.
Hood River	Cooperative	West Fork, Hood River	1,350	90.00	175.00	40.00	One-fourth cash, three years, 7 per cent interest.
Jackson	Cooperative	Rogue River	2,200				No report.
Josephine	Cooperative	Applegate River	394	100.00	75.00		No report.
Klamath	Irrigation district	Lost River	2,000	20.00	30.00	10.00	No report.
Malheur	Irrigation district	Malheur River	10,000	100.00	30.00	76.00	Ten years, 6 per cent interest.
Umatilla	Commercial	Umatilla River	6,000		20.00	40.00	One-tenth cash, ten years, 6 per cent interest.
Wasco	Commercial	Several creeks	34,000	50.00	15.00	60.00	6 per cent interest.

STATE TABLE II.—LAND IN IRRIGATION ENTERPRISES REPORTED AS AVAILABLE FOR SETTLEMENT, BY STATE, COUNTY, AND TERMS: 1920—Continued.

County.	Class of enterprise.	Source of water.	Acreage available for settlement.	Price of land, per acre.	Cost of preparing land for irrigation, per acre.	Price of water rights, per acre.	Terms, etc.
TEXAS.							
Cameron	Irrigation district	Rio Grande	15,000	$200.00	$65.00	$2.00	No report.
Cameron	Irrigation district	Rio Grande	19,000	250.00	50.00	.....	One-third cash, balance 3 years.
Cameron	Partnership	Rio Grande	2,000	.....	.....	.....	No report.
Cameron	Irrigation district	Rio Grande	14,650	130.00	50.00	6.00	One-third cash, balance 5 years, 6 per cent interest.
Dimmit	Partnership	Nueces River	4,850	50.00	40.00	.....	One-half cash, balance 2 years, 10 per cent interest.
Dimmit	Partnership	Wells	200	.....	.....	.....	No report.
Dimmit	Individual	Wells and lake	400	40.00	20.00	.....	One-fourth cash, 5 years, 7 per cent interest.
El Paso	U. S. Reclamation Serv	Rio Grande	25,000	95.00	65.00	81.00	No report.
Hidalgo	Cooperative	Rio Grande	19,000	300.00	35.00	.....	One-third down, 2 and 3 years, 8 per cent interest.
Hidalgo	Irrigation district	Rio Grande	11,000	400.00	40.00	6.00	Cash.
Hidalgo	Commercial	Rio Grande	8,000	350.00	20.00	75.00	5, 6, and 7 years, 6 per cent interest.
Jefferson	Partnership	Taylors Bayou	500	40.00	15.00	.....	No report.
Jefferson	Partnership	Pine Island Bayou	1,500	25.00	20.00	8.00	One-fourth cash, 8 per cent interest.
Jefferson	Partnership	Hillebrand Bayou	1,900	50.00	5.00	9.00	One-fourth cash, 3 years, 7 per cent interest.
Jefferson	Partnership	Hillebrand Bayou	1,200	35.00	.....	.....	No report.
Jefferson	Commercial	Pine Island Bayou	6,000	25.00	20.00	8.00	One-fifth cash, balance 4 payments, 7 and 8 per cent interest.
Kinney	Partnership	Rio Grande	1,450	.....	.....	.....	No report.
Liberty	Cooperative	Trinity River	500	20.00	10.00	.....	7 and 8 per cent interest.
Loving	Cooperative	Pecos River	2,600	10.00	25.00	.....	No report.
McMullen	Partnership	Frio River	1,900	100.00	40.00	.....	One-third cash, balance 7 per cent interest.
Matagorda	Partnership	Blue Creek	8,500	50.00	20.00	.....	One-third cash, balance 5 payments, 7 per cent interest.
Matagorda	Partnership	Colorado River	6,675	50.00	2.00	.....	No report.
Matagorda	Cooperative	Tres Palacios Creek	3,400	40.00	.....	100.00	No report.
Matagorda	Commercial	Colorado River	12,000	40.00	6.00	.....	No report.
Matagorda	Commercial	Colorado River	12,000	40.00	6.00	10.00	10 per cent interest.
Matagorda	Commercial	Colorado River	20,000	40.00	6.00	15.00	No report.
Matagorda	Commercial	Colorado River	17,000	40.00	6.00	.....	No report.
Maverick	Cooperative	Rio Grande	1,250	100.00	20.00	.....	One-fifth cash, balance 7 years, 7 per cent interest.
Maverick	Cooperative	Rio Grande	1,500	.....	25.00	.....	No report.
Orange	Individual	Cow Bayou	2,088	30.00	27.00	.....	4 years, 6 to 8 per cent interest.
Orange	Commercial	Adams Bayou	4,000	25.00	.....	.....	No report.
Orange	Cooperative	Adams Bayou	2,500	30.00	30.00	.....	No report.
Pecos	Individual	Cynanie	960	10.00	10.00	.....	One-half cash, balance 2 years, 8 per cent interest.
Pecos	Partnership	Leon Springs	1,500	225.00	25.00	2.00	One-fourth cash, balance 8 years, 6 per cent interest.
Pecos	Commercial	Pecos River	24,400	10.00	16.00	80.00	One-fourth cash, balance 6 years, 6 per cent interest.
Pecos	Individual	Santa Rosa	1,720	25.00	25.00	.....	One-third cash, balance 8 per cent interest.
Presidio	Irrigation district	Rio Grande	300	5.00	5.00	15.00	No report.
Reeves	Cooperative	Pecos River	7,000	50.00	15.00	.....	One-fourth cash, balance 6 to 8 per cent interest.
Reeves	Cooperative	Springs	2,960	.....	17.00	.....	No report.
Val Verde	Cooperative	Rio Grande	2,125	.....	50.00	2.00	No report.
Ward	Irrigation district	Pecos River	14,600	75.00	25.00	2.00	6 to 8 per cent interest.
Ward	Irrigation district	Pecos River	35,000	50.00	.....	.....	Part cash, balance in 5 to 6 years. Interest not shown.
Wharton	Individual	Colorado River	6,000	40.00	20.00	.....	No report.
Wharton	Commercial	Colorado River	25,000	50.00	1.00	10.00	No report.
UTAH.							
Beaver	Cooperative	Beaver River	480	$10.00	$10.00	$1.00	2 years, 6 per cent interest.
Beaver	Cooperative	North Creek	500	12.00	8.00	35.00	No report.
Box Elder	Commercial	Bear River and Lake	12,000	100.00	.....	100.00	One-sixth cash, 6 per cent interest.
Box Elder	Irrigation district	West Fork Grouse Creek	910	25.00	15.00	.....	No report.
Box Elder	Commercial	Bear River	3,000	75.00	10.00	60.00	5 payments, 7 per cent interest.
Carbon	Cooperative	Price River	700	.....	10.00	.....	No report.
Carbon	Cooperative	Price River	10,000	138.00	10.00	.....	8 per cent interest.
Daggett	Cooperative	Sheep Creek	3,750	20.00	15.00	15.00	5 years, 8 per cent interest.
Duchesne	Cooperative	Duchesne River	27,000	25.00	10.00	30.00	10 years, 7 per cent interest.
Duchesne	Cooperative	Green River	3,000	5.00	.....	5.00	No report.
Duchesne	Cooperative	Lake Fork River	200	6.00	15.00	5.00	No report.
Emery	Cooperative	Price River	580	.....	10.00	.....	No report.
Emery	Cooperative	Price River	840	5.00	50.00	.....	No report.
Emery	Cooperative	Muddy Creek	11,000	30.00	10.00	.....	No report.
Emery	Cooperative	Huntington Creek	6,000	63.00	55.00	.....	No report.
Emery	Cooperative	Huntington Creek	700	10.00	15.00	.....	No report.
Grand	Irrigation district	Mill Creek	500	20.00	12.00	37.00	No report.
Millard	Cooperative	Sevier River	15,000	40.00	20.00	100.00	One-fifth cash, balance in 4 to 10 years, 6 to 8 per cent interest.
Millard	Cooperative	Big Spring	700	.....	8.00	175.00	No report.
Millard	Partnership	Pole Canyon	2,000	100.00	10.00	20.00	No report.
Millard	Cooperative	Sevier River	300	30.00	10.00	60.00	Cash
Millard	Cooperative	Sevier River	5,000	40.00	10.00	40.00	10 years, 6 per cent interest.
Millard	Cooperative	Sevier River	6,000	80.00	20.00	40.00	One-fifth cash, 5 to 7 years, 6 per cent interest.
Salt Lake	Cooperative	Butterfield Creek	160	50.00	10.00	50.00	No report.
San Juan	Irrigation district	Lake Fork River	1,980	10.00	26.00	.....	Cash.
San Juan	Partnership	Montezuma Creek	1,000	.....	.....	7.00	No report.
San Juan	Cooperative	Springs	1,000	.....	20.00	.....	No report.
Sevier	Cooperative	Sevier River	2,000	22.00	.....	.....	No report.
Sevier	Cooperative	Sevier River	556	2.00	40.00	.....	No report.
Uintah	Cooperative	Uinta River	1,750	10.00	10.00	12.00	Crop payments or 5 annual payments.

STATE TABLE II.—LAND IN IRRIGATION ENTERPRISES REPORTED AS AVAILABLE FOR SETTLEMENT, BY STATE, COUNTY, AND TERMS: 1920—Continued

COUNTY.	Class of enterprise.	Source of water.	Acreage available for settlement.	Price of land, per acre.	Cost of preparing land for irrigation, per acre.	Price of water rights, per acre.	Terms, etc.
UTAH—Continued.							
Utah	Cooperative	Summit Creek	2,500	$25.00	$15.00	$50.00	Cash or terms, 8 per cent interest.
Utah	Commercial	Utah Lake	4,000	100.00			No report.
Washington	Cooperative	Santa Clara River	321	12.00	20.00	2.00	No report.
Washington	Cooperative	Virgin River	300	100.00	38.00	10.00	No report.
Washington	Cooperative	Virgin River	150	20.00	45.00	75.00	No report.
Washington	Cooperative	Shoal Creek	2,000	35.00	15.00	25.00	No report.
Washington	Partnership	Ash Creek	3,000	25.00	15.00	100.00	One-tenth cash, balance 9 years, 8 per cent interest.
Wayne	Cooperative	Fish Creek	100	2.00	25.00	50.00	10 years.
Wayne	Cooperative	Fish Creek	100	2.00	25.00	50.00	10 years.
Wayne	Cooperative	Dirty Devil River	600	2.00	10.00		No report.
WASHINGTON.							
Benton	Commercial	Columbia River	7,500	$60.00	$130.00	$7.00	One-fifth cash, balance one-fifth annually, 7 per cent interest.
Benton	District	Yakima River	6,000	50.00	25.00	2.00	One-fifth cash, balance 5 years, 7 per cent interest.
Benton	U. S. Reclamation Serv.	Yakima River	1,666	60.00	75.00	64.00	Various terms, 8 per cent interest.
Benton	Cooperative	Columbia River	260	100.00			No report.
Chelan	Commercial	Chewawah River	1,400				No report.
Chelan	Commercial	Creeks	2,200	15.00		5.00	No report.
Chelan	Cooperative	Grade Creek	1,200	150.00	25.00	5.00	Various terms.
Chelan	Commercial	Snow Creek	1,000	10.00		3.00	$100 per acre for ½ miner's inch of water.
Chelan	Cooperative	Chelan Lake	200			150.00	No report.
Clallam	Irrigation district	Dungeness River	2,000	35.00	100.00	1.00	Various terms, 6 per cent interest.
Clallam	Cooperative	Dungeness River	500	62.00	150.00	14.00	No report.
Douglas	Cooperative	Columbia River	529	50.00		14.00	One-third cash, balance 3 years, 8 per cent interest.
Douglas	Individual	Columbia River	400	75.00	20.00	10.00	No report.
Douglas	Cooperative	Wells	200		100.00	20.00	No report.
Franklin	Irrigation district	Columbia and Snake Rivers	10,500	82.00	50.00	45.00	One-tenth to one-fifth cash, balance 10 years, 6 per cent interest.
Klickitat	Individual	Springs	400	25.00	75.00		No report.
Klickitat	Cooperative	Alderdale Creek	100	200.00	25.00		One-third cash, balance 5 years, 6 per cent interest.
Okanogan	Partnership	Methow River	360	50.00	75.00		No report.
Okanogan	Irrigation district	Twisp Creek	1,500	50.00	15.00	60.00	One-third cash, 3 years, 8 per cent interest.
Okanogan	Partnership	Methow River	150	50.00	100.00		No report.
Okanogan	Cooperative	Okanogan	130	50.00	200.00		No report.
Okanogan	Commercial	Toats Coulee Creek	6,000	40.00	12.00	7.00	10 years, 7 per cent interest.
Spokane	Cooperative	Deer Lake and Loon Lake	1,500			2.00	Various terms.
Spokane	Cooperative	Well	238	300.00	200.00		One-third cash, 6 per cent interest.
Spokane	Cooperative	Well	300	500.00	200.00	12.00	No report.
Spokane	Commercial	Spokane River	1,420	119.00	35.00	88.00	5 payments, 7 per cent interest.
Stevens	Partnership	Hunters Creek	515	100.00			No report.
Thurston	Irrigation district	Nisqually River	2,000	100.00	50.00	4.00	One-third cash, 7 per cent interest.
Walla Walla	Partnership	Columbia River	295	100.00	10.00		10 years, 7 per cent interest.
Walla Walla	Partnership	Wells	125	700.00	90.00		No report.
Walla Walla	Irrigation district	Snake River	8,000	100.00	50.00	7.00	No report.
Walla Walla	Irrigation district	Walla Walla River and Columbia River.	1,400	100.00	100.00	10.00	No report.
Yakima	U. S. Reclamation Serv.	Yakima River	3,334	60.00	75.00	64.00	Various terms, 6 per cent interest.
WYOMING.							
Albany	Irrigation district	James Lake	1,000		$12.00	$35.00	No report.
Big Horn	Cooperative	Shoshone River	3,190			28.00	No report.
Big Horn	Carey Act	Shell Creek	6,000			60.00	No report.
Big Horn	Cooperative	Greybull River	6,000		8.00	50.00	One-fourth cash, balance 5 years, 7 per cent interest
Big Horn	Cooperative	Big Horn River	4,800			50.00	No report.
Carbon	Commercial	Platte River	4,500		5.00	35.00	No report.
Fremont	Partnership	Cottonwood River	940			25.00	10 payments, 6 per cent interest.
Fremont	U. S. Reclamation Serv.	Wind River	70,000	$25.00	25.00		20 years, without interest.
Fremont	Cooperative	Wind River	1,500	35.00	25.00	42.00	No report.
Goshen	U. S. Reclamation Serv.	N. Platte River	14,019	90.00		90.00	20 years, without interest.
Goshen	Carey Act	Horse and Bear Creeks	12,334	25.00	15.00	85.00	Cash or terms, 10 per cent interest.
Goshen	Individual	N. Platte River	1,100		15.00	75.00	No report.
Lincoln	Partnership	La Barge and Muddy Creeks	1,000		6.00		No report.
Lincoln	Partnership	N. and S. Beaver Rivers	213	30.00	1.00		5 years, 10 per cent interest.
Platte	Commercial	Laramie River	16,000	60.00	12.00	60.00	One-fourth cash, 6 per cent interest.
Platte	Commercial	Laramie River	30,000		12.00	65.00	7 years, 6 per cent interest.
Sweetwater	Carey Act	Big Sandy Creek	12,480	40.00	8.00		One-tenth cash, 6 per cent interest.
Sweetwater	Commercial	Boulder Creek	6,000	25.00	10.00	15.00	No report.
Sweetwater	Partnership	Burntfork River	2,000	2.00	10.00		No report.
Uinta	Partnership	Bear River	1,140		25.00	2.00	No report.
Washakie	Cooperative	Big Horn River	3,200			50.00	No report.

STATE TABLE III.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910.

[A minus sign (—) denotes decrease. Per cent not shown when more than 1,000.]

		STATES INCLUDED.	Arizona.	Arkansas.	California.	Colorado.	Idaho.
1	Number of all farms in 1920	1,916,391	9,975	232,604	117,670	59,934	42,106
2	Number of farms irrigated in 1919	231,541	6,603	1,166	67,391	28,756	25,283
3	Per cent of all farms	12.1	66.2	0.5	57.3	48.0	60.0
4	Number of farms irrigated in 1909	162,723	4,841	232	39,352	25,857	16,439
5	Per cent of increase, 1909-1919	42.3	36.4	402.6	71.3	11.2	53.8
	LAND AND FARM AREA.						
6	Approximate land area ... acres	1,223,989,120	72,898,400	33,616,000	99,617,280	66,341,120	53,346,560
7	All land in farms ... acres	505,449,954	5,802,139	17,456,750	29,365,667	24,462,014	8,375,873
8	Improved land in farms ... acres	214,689,819	712,803	9,210,556	11,878,339	7,744,757	4,511,680
9	Area irrigated in 1919 ... acres	19,191,716	467,565	143,946	4,219,040	3,348,385	2,488,806
10	Per cent of improved land in farms	8.9	65.6	1.6	35.5	43.2	55.2
11	Area irrigated in 1909 ... acres	14,433,285	320,051	27,753	2,664,104	2,792,032	1,430,848
12	Per cent of increase, 1909-1919	33.0	46.1	418.7	58.4	19.9	73.9
13	Area enterprises were capable of irrigating in 1920 ... acres	26,020,477	627,303	179,013	5,894,466	3,855,348	3,092,810
14	Area enterprises were capable of irrigating in 1910 ... acres	20,285,403	387,655	47,136	3,619,378	3,990,166	2,388,959
15	Per cent of increase, 1910-1920	28.3	61.8	279.8	62.9	—3.4	29.5
16	Area included in enterprises in 1920 ... acres	35,590,821	813,153	246,480	7,805,207	5,220,588	3,780,048
17	Area included in enterprises in 1910 ... acres	32,245,404	944,090	52,883	5,490,360	5,917,457	3,549,573
18	Per cent of increase, 1910-1920	11.3	—13.9	366.1	42.2	—11.8	6.5
19	Area of irrigated land reported as available for settlement ... acres	2,257,981	24,341	.....	533,981	274,282	118,334
	IRRIGATION WORKS.						
	Independent enterprises:						
20	Number, 1920	63,298	1,388	944	24,115	6,634	3,629
21	Number, 1910	56,858	1,259	310	13,970	9,065	3,092
	Main ditches:						
22	Number, 1920	51,621	1,295	84	6,040	8,867	4,553
23	Number, 1910	46,677	891	217	8,590	8,405	3,209
24	Length, 1920 ... miles	103,177	1,769	68	14,437	19,022	11,144
25	Length, 1910 ... miles	88,927	1,727	131	12,620	17,564	7,662
26	Capacity, 1920 ... second-feet	631,079	11,707	1,205	115,237	119,558	86,273
27	Capacity, 1910 ... second-feet	618,097	17,200	.....	89,597	148,483	80,458
	Laterals:						
28	Number, 1920	57,553	1,174	50	9,190	6,185	5,265
29	Number, 1910	36,513	313	.....	6,143	5,612	3,359
30	Length, 1920 ... miles	56,687	1,399	18	12,947	8,871	6,154
31	Length, 1910 ... miles	30,003	870	.....	8,509	5,006	5,097
	Reservoirs:						
32	Number, 1920	7,538	340	16	3,030	979	249
33	Number, 1910	6,956	402	19	1,583	1,084	243
34	Capacity, 1920 ... acre-feet	21,246,436	1,510,856	20	1,091,394	2,406,372	3,493,511
35	Capacity, 1910 ... acre-feet	12,602,924	1,349,938	3	743,269	2,646,503	1,742,303
	Flowing wells:						
36	Number, 1920	4,606	310	.....	1,415	476	142
37	Number, 1910	5,071	214	.....	2,361	313	62
38	Capacity, 1920 ... gallons per minute	935,057	14,547	.....	287,187	20,139	15,133
39	Capacity, 1910 ... gallons per minute	1,345,676	9,953	.....	477,343	41,989	7,200
	Pumped wells:						
40	Number, 1920	32,094	999	1,089	25,401	527	53
41	Number, 1910	15,971	479	307	10,724	121	24
42	Capacity, 1920 ... gallons per minute	16,396,549	1,042,590	1,470,147	10,608,476	210,094	17,749
43	Capacity, 1910 ... gallons per minute	7,248,699	705,921	268,829	4,119,575	53,564	2,826
	Pumping plants:						
44	Number, 1920	29,458	744	1,041	21,561	406	143
45	Number, 1910	15,803	429	315	9,297	206	58
46	Engine capacity, 1920 ... horsepower	748,971	22,014	58,332	386,200	8,635	28,364
47	Engine capacity, 1910 ... horsepower	361,489	37,258	12,440	128,143	7,969	7,065
48	Pump capacity, 1920 ... gallons per minute	36,275,605	1,048,030	1,654,097	16,773,692	299,726	1,397,081
49	Pump capacity, 1910 ... gallons per minute	19,355,864	831,873	436,402	5,276,298	296,937	278,569
50	Average lift, 1920 ... feet	41	44	50	41	23	29
	CAPITAL INVESTED.						
51	Capital invested to Jan. 1, 1920 ... dollars	697,657,328	33,498,094	7,153,322	194,886,388	88,302,442	91,501,009
52	Capital invested to July 1, 1910 ... dollars	321,454,608	17,677,966	987,834	72,580,030	56,636,443	40,977,088
53	Per cent of increase, 1910-1920	117.0	89.5	.....	168.5	55.9	123.3
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	26.81	53.40	40.13	33.06	22.90	29.59
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	15.85	45.60	12.47	20.05	14.19	17.15
	ESTIMATED FINAL COST.						
56	Estimated final cost of existing enterprises in 1920 ... dollars	819,778,005	34,615,064	7,283,522	225,799,123	95,198,423	97,019,717
57	Estimated final cost of existing enterprises in 1910 ... dollars	437,948,825	24,828,868	612,834	84,392,344	76,443,239	58,451,106
58	Per cent of increase, 1910-1920	87.2	39.4	.....	167.6	24.5	66.0
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	22.94	42.57	29.55	28.93	18.24	25.67
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	13.58	26.30	11.59	15.37	12.92	16.47
	DRAINAGE OF IRRIGATED LAND.						
61	Number of enterprises reporting land drained or needing drainage	3,008	31	134	545	420	206
62	Acreage included in enterprises reporting land drained or needing drainage	8,860,760	392,928	37,574	1,623,330	1,526,311	734,405
63	Acreage for which drains have been installed	1,519,823	35,173	27,350	319,573	113,899	81,187
64	Additional acreage needing drainage	1,476,771	71,397	2,621	409,933	220,711	94,934
65	Per cent that acreage for which drains have been installed is of total acreage included in enterprises reporting drainage	17.2	8.6	72.8	19.7	7.5	11.1
66	Per cent that acreage for which drains have been installed is of total acreage included in irrigation enterprises	4.2	3.1	11.1	4.1	2.2	2.1
67	Per cent that acreage for which drains have been installed, plus that needing drainage is of total acreage included in irrigation enterprises	8.3	11.9	12.2	9.3	6.4	4.7

STATE TABLE III.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910—Continued.

[A minus sign (—) denotes decrease. Per cent not shown when base is less than 100.]

		Kansas.	Louisiana.	Montana.	Nebraska.	Nevada.	New Mexico.	North Dakota.
1	Number of all farms in 1920	165,286	135,463	57,677	124,417	3,163	29,844	77,690
2	Number of farms irrigated in 1919	504	6,471	10,807	3,021	2,718	11,390	340
3	Per cent of all farms	0.3	4.8	18.7	2.4	85.9	38.2	0.4
4	Number of farms irrigated in 1909	1,006	2,690	8,970	1,852	2,466	12,795	69
5	Per cent of increase, 1909-1919	—49.9	140.6	20.5	63.1	12.0	—11.0	.....
	LAND AND FARM AREA.							
6	Approximate land area ... acres	52,335,360	29,061,760	93,523,840	49,157,120	70,285,440	78,491,920	44,917,120
7	All land in farms ... acres	45,425,179	19,019,822	35,070,656	42,225,475	2,357,163	24,409,633	36,214,751
8	Improved land in farms ... acres	30,600,760	5,626,226	11,007,278	23,109,624	594,741	1,717,224	24,563,178
9	Area irrigated in 1919 ... acres	47,312	454,882	1,681,729	442,690	561,447	538,377	12,072
10	Per cent of improved land in farms	0.2	8.1	15.3	1.9	94.4	31.4	(1)
11	Area irrigated in 1909 ... acres	37,479	380,200	1,679,084	255,950	701,833	461,718	10,248
12	Per cent of increase, 1909-1919	26.2	19.6	0.2	73.0	—20.0	16.6	17.8
13	Area enterprises were capable of irrigating in 1920 ... acres	67,853	728,742	2,753,498	562,468	704,708	696,119	34,235
14	Area enterprises were capable of irrigating in 1910 ... acres	139,995	553,220	2,205,155	429,225	840,962	644,970	21,917
15	Per cent of increase, 1910-1920	—51.5	31.7	24.9	31.0	—16.2	7.9	56.2
16	Area included in enterprises in 1920 ... acres	102,562	851,211	4,329,148	766,768	1,382,036	961,879	57,476
17	Area included in enterprises in 1910 ... acres	161,300	581,965	3,515,602	680,133	1,232,142	1,102,297	38,173
18	Per cent of increase, 1910-1920	—36.4	46.3	23.1	12.7	12.2	—12.7	50.6
19	Area of irrigated land reported as available for settlement ... acres	.....	.....	267,530	.....	139,352	66,479	.....
	IRRIGATION WORKS.							
	Independent enterprises:							
20	Number, 1920	209	1,373	6,035	470	1,015	2,391	30
21	Number, 1910	716	1,237	5,534	474	1,347	2,786	49
	Main ditches:							
22	Number, 1920	139	1,298	8,819	513	2,082	2,228	32
23	Number, 1910	89	515	6,673	420	994	2,101	47
24	Length, 1920 ... miles	271	1,584	16,411	1,780	3,123	4,469	58
25	Length, 1910 ... miles	274	729	12,990	1,459	1,938	4,664	52
26	Capacity, 1920 ... second-feet	1,667	11,889	94,429	11,665	19,554	23,432	836
27	Capacity, 1910 ... second-feet	2,600	.....	83,549	9,378	17,579	29,646	2,161
	Laterals:							
28	Number, 1920	374	3,908	10,680	913	2,064	2,158	58
29	Number, 1910	39	180	8,307	1,038	1,531	1,280	46
30	Length, 1920 ... miles	147	1,659	6,085	1,545	1,245	1,463	93
31	Length, 1910 ... miles	42	439	5,944	1,269	1,213	1,190	74
	Reservoirs:							
32	Number, 1920	36	74	468	59	134	328	9
33	Number, 1910	42	104	827	44	109	522	22
34	Capacity, 1920 ... acre-feet	391	7,632	1,571,720	197,890	504,428	2,960,718	1,110
35	Capacity, 1910 ... acre-feet	31,024	19,482	580,261	2,098	325,953	454,162	132,187
	Flowing wells:							
36	Number, 1920	6	9	41	.....	123	556	.....
37	Number, 1910	3	.....	15	.....	19	673	.....
38	Capacity, 1920 ... gallons per minute	500	6,255	4,608	.....	21,942	376,222	.....
39	Capacity, 1910 ... gallons per minute	30	.....	22,185	.....	1,302	669,268	.....
	Pumped wells:							
40	Number, 1920	710	812	22	34	129	461	.....
41	Number, 1910	939	606	10	66	6	466	1
42	Capacity, 1920 ... gallons per minute	266,797	1,607,637	11,085	24,701	6,798	265,618	.....
43	Capacity, 1910 ... gallons per minute	73,362	1,108,236	5,263	3,363	1,349	190,690	15
	Pumping plants:							
44	Number, 1920	198	1,250	253	51	64	472	4
45	Number, 1910	698	1,007	125	75	18	413	4
46	Engine capacity, 1920 ... horsepower	6,946	85,628	10,341	959	409	8,488	2,068
47	Engine capacity, 1910 ... horsepower	1,517	57,426	3,511	140	693	14,226	2,038
48	Pump capacity, 1920 ... gallons per minute	297,975	4,968,686	453,231	73,686	35,266	304,789	51,250
49	Pump capacity, 1910 ... gallons per minute	128,276	5,064,173	281,199	5,366	24,295	216,355	182,115
50	Average lift, 1920 ... feet	30	32	20	24	22	40	38
	CAPITAL INVESTED.							
51	Capital invested to Jan. 1, 1920 ... dollars	2,067,381	14,063,181	52,143,363	13,909,185	14,754,280	18,210,412	1,857,118
52	Capital invested to July 1, 1910 ... dollars	1,365,563	6,859,166	22,970,958	7,798,310	6,721,924	9,154,897	836,482
53	Per cent of increase, 1910-1920	51.4	105.0	127.0	78.4	119.5	98.9	122.0
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	30.47	19.30	18.94	24.73	20.94	26.16	54.25
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	9.75	12.40	10.42	18.17	7.99	14.19	38.17
	ESTIMATED FINAL COST.							
56	Estimated final cost of existing enterprises in 1920 ... dollars	2,195,981	14,264,178	70,079,028	18,030,154	22,648,747	20,440,546	2,072,766
57	Estimated final cost of existing enterprises in 1910 ... dollars	1,365,563	6,914,166	32,382,077	9,485,231	12,188,756	11,640,091	836,482
58	Per cent of increase, 1910-1920	60.8	106.3	116.4	90.1	85.8	75.6	147.8
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	21.41	16.76	16.19	23.51	16.39	21.25	36.06
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	8.47	11.88	9.21	13.95	9.89	10.56	21.91
	DRAINAGE OF IRRIGATED LAND.							
61	Number of enterprises reporting land drained or needing drainage	5	406	276	24	58	203	8
62	Acreage included in enterprises reporting land drained or needing drainage	3,610	283,476	751,274	376,518	537,417	212,353	49,581
63	Acreage for which drains have been installed	250	167,138	62,872	10,793	34,175	74,783	1,613
64	Additional acreage needing drainage	1,326	21,202	50,901	26,606	98,249	60,277	659
65	Per cent that acreage for which drains have been installed is of total acreage included in enterprises reporting drainage	6.9	59.0	8.4	2.9	6.4	35.2	3.3
66	Per cent that acreage for which drains have been installed is of total acreage included in irrigation enterprises	0.2	19.6	1.5	1.4	2.5	7.8	2.8
67	Per cent that acreage for which drains have been installed plus that needing drainage is of total acreage included in irrigation enterprises	1.5	22.1	2.6	4.9	9.6	14.0	4.0

[1] Less than one-tenth of 1 per cent.

STATE TABLE III.—ACREAGE IRRIGATED, 1919 AND 1909, AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910—Continued.

[A minus sign (−) denotes decrease.]

		Oklahoma.	Oregon.	South Dakota.	Texas.	Utah.	Washington.	Wyoming.
1	Number of all farms in 1920	191,988	50,206	74,637	436,033	25,662	66,288	15,748
2	Number of farms irrigated in 1919	73	9,154	1,198	14,726	22,218	13,271	6,449
3	Per cent of all farms	(1)	18.2	1.6	3.4	86.6	20.0	41.0
4	Number of farms irrigated in 1909	137	6,669	500	5,238	19,709	7,664	6,297
5	Per cent of increase, 1909–1919	−46.7	37.3	139.6	181.1	12.7	73.2	2.4
	LAND AND FARM AREA.							
6	Approximate land area ... acres	44,424,960	61,128,480	49,195,520	167,934,720	52,597,760	42,775,040	62,430,720
7	All land in farms ... acres	31,951,964	13,542,318	34,636,491	114,020,621	5,050,410	13,244,720	11,809,351
8	Improved land in farms ... acres	18,125,321	4,913,951	18,199,250	31,227,503	1,715,380	7,129,343	2,102,005
9	Area irrigated in 1919 ... acres	2,969	986,162	199,682	586,120	1,371,651	529,899	1,207,982
10	Per cent of improved land in farms	(1)	20.1	0.6	1.9	80.0	7.4	57.5
11	Area irrigated in 1909 ... acres	4,388	686,129	63,248	451,130	999,410	334,378	1,133,302
12	Per cent of increase, 1909–1919	−32.3	43.7	59.2	29.9	37.2	58.5	6.6
13	Area enterprises were capable of irrigating in 1920 ... acres	9,672	1,344,046	150,914	1,150,542	1,700,550	637,151	1,831,039
14	Area enterprises were capable of irrigating in 1910 ... acres	6,397	830,526	128,481	690,991	1,250,246	470,514	1,639,510
15	Per cent of increase, 1910–1920	51.2	61.8	17.5	66.5	36.0	35.4	11.7
16	Area included in enterprises in 1920 ... acres	11,742	1,925,987	188,382	1,687,447	2,359,244	836,795	2,564,668
17	Area included in enterprises in 1910 ... acres	8,528	2,527,208	201,625	1,253,173	1,947,625	817,032	2,224,298
18	Per cent of increase, 1910–1920	37.7	−23.8	−6.6	34.7	21.1	2.4	15.3
19	Area of irrigated land reported as available for settlement ... acres	.....	98,609	.....	346,446	189,563	61,738	197,326
	IRRIGATION WORKS.							
	Independent enterprises:							
20	Number, 1920	33	4,710	292	1,371	2,403	2,692	3,564
21	Number, 1910	114	3,745	395	2,772	2,472	1,934	5,577
	Main ditches:							
22	Number, 1920	18	5,252	370	820	2,381	1,873	5,007
23	Number, 1910	47	3,582	348	861	2,495	1,600	5,593
24	Length, 1920 ... miles	38	7,115	653	1,524	6,343	3,851	9,517
25	Length, 1910 ... miles	54	5,599	631	1,479	5,887	2,594	10,933
26	Capacity, 1920 ... second-feet	344	28,897	5,427	23,261	29,447	16,242	39,009
27	Capacity, 1910 ... second-feet	155	29,696	3,598	12,818	25,081	13,178	42,630
	Laterals:							
28	Number, 1920	72	2,784	632	2,022	4,068	3,179	2,777
29	Number, 1910	106	2,518	332	832	1,357	1,180	2,340
30	Length, 1920 ... miles	19	1,956	605	2,949	5,334	1,764	2,534
31	Length, 1910 ... miles	31	2,052	625	1,234	1,822	1,298	2,298
	Reservoirs:							
32	Number, 1920	8	266	119	368	476	205	374
33	Number, 1910	11	271	314	309	480	156	414
34	Capacity, 1920 ... acre-feet	52	1,905,037	212,264	392,999	1,600,505	477,789	2,911,748
35	Capacity, 1910 ... acre-feet	22	1,024,266	216,295	74,361	588,317	121,543	2,550,937
	Flowing wells:							
36	Number, 1920	1	65	4	135	1,256	60	7
37	Number, 1910	.....	51	42	123	1,138	55	2
38	Capacity, 1920 ... gallons per minute	100	11,968	2,750	62,364	96,371	14,925	46
39	Capacity, 1910 ... gallons per minute	.....	3,035	14,382	37,019	42,794	18,926	250
	Pumped wells:							
40	Number, 1920	19	208	1	901	192	520	16
41	Number, 1910	65	92	4	1,912	27	128	3
42	Capacity, 1920 ... gallons per minute	3,643	47,026	800	528,565	39,059	227,744	8,020
43	Capacity, 1910 ... gallons per minute	1,791	20,883	24	567,126	4,827	60,220	835
	Pumping plants:							
44	Number, 1920	22	573	25	1,369	250	975	57
45	Number, 1910	68	229	8	2,359	69	391	34
46	Engine capacity, 1920 ... horsepower	184	13,769	498	80,511	11,392	22,929	1,304
47	Engine capacity, 1910 ... horsepower	107	3,095	63	69,094	2,143	13,847	705
48	Pump capacity, 1920 ... gallons per minute	7,698	600,645	23,320	6,825,998	783,588	636,552	39,725
49	Pump capacity, 1910 ... gallons per minute	4,541	118,514	5,289	5,362,665	315,057	365,411	142,529
50	Average lift, 1920 ... feet	39	28	21	45	25	60	31
	CAPITAL INVESTED.							
51	Capital invested to Jan. 1, 1920 ... dollars	151,325	28,929,151	5,465,248	35,072,739	32,037,351	29,299,011	34,326,328
52	Capital invested to July 1, 1910 ... dollars	47,200	12,760,214	3,043,140	13,487,347	14,028,717	16,219,149	17,700,980
53	Per cent of increase, 1910–1920	220.6	126.7	79.6	160.0	128.4	80.6	93.9
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	15.65	21.52	36.21	30.48	18.84	45.98	18.75
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	7.38	15.26	23.69	19.52	11.22	34.47	10.80
	ESTIMATED FINAL COST.							
56	Estimated final cost of existing enterprises in 1920 ... dollars	162,775	41,565,742	5,509,748	38,860,871	33,835,641	37,684,591	51,500,288
57	Estimated final cost of existing enterprises in 1910 ... dollars	47,200	39,216,619	3,800,556	14,754,172	17,840,775	22,322,856	20,425,890
58	Per cent of increase, 1910–1920	244.9	6.0	44.7	170.2	89.7	68.8	152.1
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	13.86	21.59	29.20	23.62	14.34	45.03	20.08
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	5.53	15.52	18.85	11.77	9.16	27.32	9.18
	DRAINAGE OF IRRIGATED LAND.							
61	Number of enterprises reporting land drained or needing drainage	3	176	17	106	143	103	144
62	Acreage included in enterprises reporting land drained or needing drainage	1,960	347,750	106,129	650,822	503,212	218,763	513,347
63	Acreage for which drains have been installed	.....	93,799	2,109	272,437	85,448	79,168	68,086
64	Additional acreage needing drainage	1,829	46,115	4,714	154,832	91,976	43,461	75,183
65	Per cent that acreage for which drains have been installed is of total acreage included in enterprises reporting drainage	.....	27.0	2.0	41.9	17.0	36.2	13.3
66	Per cent that acreage for which drains have been installed is of total acreage included in irrigation enterprises in the state	.....	4.9	1.1	16.1	3.6	9.5	2.7
67	Per cent that acreage for which drains have been installed plus that needing drainage is of total acreage included in irrigation enterprises in the state	13.5	7.3	3.6	25.3	7.5	14.7	5.0

[1] Less than one-tenth of 1 per cent.

STATE TABLE IV.—TOTAL ACREAGE IRRIGATED IN 1919, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES TO 1920, CLASSIFIED BY DATE OF BEGINNING, CHARACTER OF ENTERPRISE, SOURCE OF WATER SUPPLY, AND CHARACTER OF WATER RIGHTS.

		STATES INCLUDED.	Arizona.	Arkansas.	California.	Colorado.	Idaho.
	AREA IRRIGATED, 1919.						
	Total	**19,191,716**	**467,565**	**143,946**	**4,219,649**	**3,348,385**	**2,488,806**
	Date of beginning:						
1	Before 1860	299,784	332		198,200	37,742	931
2	1860-1869	1,262,705	720		88,485	634,865	48,536
3	1870-1879	2,588,414	55,327		1,039,852	647,771	144,031
4	1880-1889	4,045,391	41,358		347,685	1,155,088	755,533
5	1890-1899	2,538,913	19,875	1,640	494,133	294,493	383,053
6	1900-1904	2,211,749	10,944	470	456,261	210,673	619,677
7	1905-1909	2,549,927	260,639	11,840	290,086	215,729	354,143
8	1910-1914	1,538,644	18,692	49,100	649,875	80,674	90,870
9	1915-1919	1,165,560	42,595	64,474	541,500	19,885	60,355
10	Not reported	972,629	16,983	16,422	292,963	51,465	31,677
	Character of enterprise:						
11	Individual and partnership	6,848,807	80,511	140,471	1,502,870	1,014,412	513,350
12	Cooperative	6,581,400	114,482	1,075	1,215,696	1,789,385	938,421
13	Irrigation district	1,822,887	300		577,168	248,409	355,995
14	Carey Act	523,929				2,430	383,813
15	Commercial	1,822,001	14,509	2,400	873,499	212,138	6,503
16	U. S. Reclamation Service	1,254,569	248,814		36,622	71,145	253,759
17	U. S. Indian Service	284,551	8,733		697	4,266	36,775
18	State	5,620			2,536	80	10
19	City	40,146	200		6,213	5,825	169
20	Other and mixed	7,236	25		3,064		
21	Not reported	570			275	295	
	Source of water supply:						
22	Streams, gravity	14,527,060	189,782	120	2,564,445	3,028,787	2,274,959
23	Streams, pumped	1,226,510	6,671	6,009	295,673	12,747	107,181
24	Streams, pumped and gravity	199,595			60,278	9,430	1,870
25	Wells, pumped	1,263,008	39,694	135,260	826,846	16,114	414
26	Wells, flowing	65,836	1,558		17,653	4,191	1,131
27	Wells, pumped and flowing	35,685	558		23,561	85	
28	Lakes, pumped	35,730	5	450	4,168	871	4,912
29	Lakes, gravity	100,646			48,084	2,867	2,492
30	Springs	198,008	2,578		27,698	16,856	33,337
31	Stored storm water	98,873	510	40	20,351	16,909	2,590
32	City water	930			515	11	
33	Sewage	2,578	195		1,385	195	80
34	Streams, gravity, and pumped wells	344,713	217,799	250	87,897	16,258	357
35	Streams, gravity, and flowing wells	82,665	525		4,255	67,890	1,927
36	Other mixed	996,621	7,690	1,817	228,424	165,825	54,601
37	Other and not reported	13,148			7,867	1,859	2,955
	Character of water rights:						
38	Appropriation and use	2,521,682	226,846	(1)	479,361	114,616	130,774
39	Notice filed and posted	2,765,636	97,130		704,608	209,262	238,637
40	Adjudicated by court	7,159,954	84,978		982,157	2,918,383	1,104,607
41	Permit from state	1,960,924	10		80,484		490,979
42	Certificate or license from state	1,288,124			25,484		338,958
43	Riparian rights	370,896			240,512		13,389
44	Underground	1,067,606	41,624		863,613	14,558	1,834
45	Other and mixed	494,564	525		396,703	12,275	55,565
46	Not reported	1,562,330	16,452	143,946	446,118	79,291	109,033
	CAPITAL INVESTED, 1920.						
	Total	**$697,657,328**	**$33,498,094**	**$7,183,322**	**$194,886,388**	**$88,302,442**	**$91,501,009**
	Date of beginning:						
47	Before 1860	9,527,597	2,058		6,802,109	265,660	3,137
48	1860-1869	24,130,038	9,770		2,389,615	14,410,037	881,963
49	1870-1879	37,722,304	1,881,284		16,475,201	8,150,179	1,024,629
50	1880-1889	76,427,344	921,806		19,046,449	17,150,419	13,791,700
51	1890-1899	77,443,017	645,369	93,111	31,330,191	7,043,688	9,088,738
52	1900-1904	95,749,105	437,719	25,026	19,106,308	14,101,894	25,892,906
53	1905-1909	183,980,169	20,951,874	439,542	15,252,978	14,192,932	34,081,217
54	1910-1914	102,507,009	3,778,003	2,276,584	41,765,878	11,479,877	3,795,869
55	1915-1919	67,613,693	4,419,044	3,302,492	32,996,398	550,800	2,227,426
56	Not reported	22,567,052	451,167	1,026,567	9,521,261	956,866	714,324
	Character of enterprise:						
57	Individual and partnership	154,634,169	5,598,625	7,073,297	57,616,716	11,599,883	5,747,004
58	Cooperative	183,041,500	3,171,406	60,013	48,999,448	42,911,035	36,576,664
59	Irrigation district	88,573,514	100,000		33,985,301	16,269,026	11,954,046
60	Carey Act	32,680,695				1,205,988	17,772,590
61	Commercial	85,735,470	3,699,400	50,012	44,996,723	5,711,887	698,179
62	U. S. Reclamation Service	129,509,819	20,277,919		2,398,220	10,253,231	17,804,839
63	U. S. Indian Service	14,851,236	585,629		55,536	220,979	932,387
64	State	344,174			224,909	3,994	1,000
65	City	2,936,678	71,500		1,401,320	117,665	14,300
66	Other	5,310,399			5,277,490		
67	Not reported	39,674	215		30,705	8,754	
	Source of water supply:						
68	Streams, gravity	420,570,623	11,587,884	3,874	78,139,147	68,832,489	81,823,379
69	Streams, pumped	59,343,298	521,852	96,450	16,267,561	2,490,900	5,108,912
70	Streams, pumped and gravity	9,512,907			3,084,038	397,392	168,200
71	Wells, pumped	76,787,251	3,417,339	7,628,772	54,037,185	373,277	24,935
72	Wells, flowing	2,945,059	115,936		807,353	55,251	23,652
73	Wells, pumped and flowing	2,498,672	54,700		1,776,156	5,300	
74	Lakes, pumped	2,274,601	400	9,500	90,081	27,530	544,981
75	Lakes, gravity	2,906,612			674,320	84,935	276,837
76	Springs	5,793,988	271,358		1,298,308	188,920	980,189
77	Stored storm water	15,075,592	11,600	1,500	6,593,659	1,467,459	246,257
78	City water	219,783			61,055	97	
79	Sewage	174,444	62,408		59,259	1,648	200
80	Streams, gravity, and pumped wells	28,347,835	17,092,890	8,500	10,001,650	190,454	59,700
81	Streams, gravity, and flowing wells	2,863,194	27,500		1,264,530	1,093,076	39,150
82	Other mixed	48,467,251	333,227	34,725	19,906,271	13,084,399	2,181,887
83	Other and not reported	876,218			805,115	47,355	12,730

[1] 1919 acreage in Arkansas not classified by character of water rights.

STATE TABLE IV.—ACREAGE IRRIGATED IN 1919, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES TO 1920, CLASSIFIED BY DATE OF BEGINNING, CHARACTER OF ENTERPRISE, SOURCE OF WATER SUPPLY, AND CHARACTER OF WATER RIGHTS—Continued.

		Kansas.	Louisiana.	Montana.	Nebraska.	Nevada.	New Mexico.	North Dakota.
	AREA IRRIGATED, 1919.							
	Total	**47,312**	**454,882**	**1,681,729**	**442,690**	**561,447**	**538,377**	**12,072**
	Date of beginning:							
1	Before 1860			4,386	30	4,782	28,062	
2	1860–1869			119,225		171,317	26,597	
3	1870–1879	80	40	114,804	1,090	124,723	33,720	
4	1880–1889	15,413	2,050	479,529	104,100	83,562	71,909	[1] 595
5	1890–1899	13,226	151,983	361,563	191,229	9,081	55,223	458
6	1900–1904		50,263	148,675	21,580	60,897	27,312	955
7	1905–1909	3,617	34,631	272,239	98,704	18,770	71,848	8,766
8	1910–1914	3,719	59,919	59,280	19,788	24,833	89,720	285
9	1915–1919	7,199	126,831	38,556	2,746	13,937	60,919	330
10	Not reported	4,148	29,195	101,872	3,423	49,545	73,067	683
	Character of enterprise:							
11	Individual and partnership	14,546	259,673	976,615	68,140	355,901	151,351	3,306
12	Cooperative	32,516	19,635	393,257	55,408	69,877	264,610	
13	Irrigation district			35,153	206,206	80,000	15,008	
14	Carey Act			54,771				
15	Commercial	150	184,574	34,115	25,335	5,990	19,871	
16	U. S. Reclamation Service			88,291	87,558	44,324	77,678	8,766
17	U. S. Indian Service			98,887		5,321	9,072	
18	State	100		20		12	77	
19	City			320		22	600	
20	Other and mixed			300	43		110	
21	Not reported							
	Source of water supply:							
22	Streams, gravity	20,807	10,226	1,515,212	435,567	466,812	432,478	9,030
23	Streams, pumped	730	248,306	15,743	1,115	2,647	1,890	2,469
24	Streams, pumped and gravity	600	12,620	19,872	850	720		
25	Wells, pumped	13,235	154,304	139	546	295	15,709	
26	Wells, flowing		196	212		811	30,030	
27	Wells, pumped and flowing	50	1,075			65	6,556	
28	Lakes, pumped		5,966	79				
29	Lakes, gravity		3,225	16,653		445	1,945	
30	Springs			14,945	2,050	21,987	10,791	
31	Stored storm water		84	3,280	1,200	17,348	6,448	508
32	City water			15	7	14	40	
33	Sewage			245	120	88		
34	Streams, gravity, and pumped wells	1,540	10,045	155	115	4,957	1,341	
35	Streams, gravity, and flowing wells			6,068		82	585	
36	Other mixed	350	7,835	89,070	1,120	45,176	29,787	65
37	Other and not reported			41			677	
	Character of water rights:							
38	Appropriation and use	26,435	[2]	229,887	42,141	200,556	152,746	6,348
39	Notice filed and posted	4,218		666,305	16,517	52,027	54,356	2,328
40	Adjudicated by court	458		701,015	9,280	161,175	91,807	
41	Permit from state			595	234,806	106,857	103,459	2,936
42	Certificate or license from state				117,960	6,666	20,096	
43	Riparian rights	30		5,500	618		400	
44	Underground	13,480		482	546	1,244	52,325	
45	Other and mixed	926		8,561	13	1,705	8	
46	Not reported	1,753	454,882	69,384	20,809	31,217	63,180	460
	CAPITAL INVESTED, 1920.							
	Total	**$2,067,381**	**$14,063,181**	**$52,143,363**	**$13,909,185**	**$14,754,280**	**$18,210,412**	**$1,857,118**
	Date of beginning:							
47	Before 1860			55,527	500	55,645	268,876	
48	1860–1869			1,323,315		2,400,682	384,754	
49	1870–1879	736	1,000	2,963,841	21,583	1,599,890	482,843	
50	1880–1889	1,058,982	24,800	5,685,794	1,659,094	1,026,933	2,568,298	[1] 8,000
51	1890–1899	88,719	5,487,222	7,645,284	2,075,677	134,494	1,262,916	17,669
52	1900–1904		1,347,322	3,005,519	321,927	8,149,026	1,122,232	37,714
53	1905–1909	200,085	1,171,166	25,592,156	8,685,843	244,493	4,692,515	1,777,570
54	1910–1914	176,286	1,902,982	2,756,019	444,144	576,638	4,594,735	2,000
55	1915–1919	407,576	3,848,822	3,631,564	189,314	234,932	2,021,448	11,207
56	Not reported	134,697	680,167	1,584,344	520,103	331,547	811,795	2,958
	Character of enterprise:							
57	Individual and partnership	775,095	7,943,252	15,543,287	1,146,227	4,014,570	5,589,372	81,693
58	Cooperative	1,289,737	161,658	6,602,877	547,104	1,019,047	8,558,863	
59	Irrigation district			1,708,851	2,811,474	1,246,611	914,479	
60	Carey Act			4,834,407			1,877,842	
61	Commercial	1,549	5,958,271	676,535	726,560	340,559	262,713	
62	U. S. Reclamation Service			14,381,318	8,674,250	7,953,537	5,020,230	1,775,425
63	U. S. Indian Service			8,193,390		178,536	691,194	
64	State	1,000		100		1,000	18,544	
65	City			105,538		420	276,299	
66	Other			7,060	3,570		876	
67	Not reported							
	Source of water supply:							
68	Streams, gravity	1,184,674	318,934	47,016,339	13,619,775	12,493,231	13,524,889	1,299,951
69	Streams, pumped	22,142	7,338,954	900,216	39,581	119,900	36,520	552,007
70	Streams, pumped and gravity	50,000	172,000	1,612,316	18,790	8,000		
71	Wells, pumped	741,582	5,396,948	16,285	23,250	19,900	925,003	
72	Wells, flowing		5,000	10,007		50,575	1,220,519	
73	Wells, pumped and flowing	4,099	22,500			5,500	388,165	
74	Lakes, pumped		356,959	8,250				
75	Lakes, gravity	1,000	112,749	271,760	100,300	234,851	13,750	
76	Springs			247,094	24,497	568,000	257,179	
77	Stored storm water		1,500	298,392	46,429	164,350	686,047	4,660
78	City water				1,000	300	1,000	
79	Sewage			6,724	313	620		
80	Streams, gravity, and pumped wells	50,532	247,595	3,000	5,035	181,887	175,000	
81	Streams, gravity, and flowing wells			433,000	6,902	3,400	14,000	
82	Other mixed	13,480	120,000	1,318,598	29,403	903,766	958,740	500
83	Other and not reported			1,382			4,600	

[1] Dakota territory.
[2] Acreage in Louisiana not classified by character of water rights.

STATE TABLE IV.—ACREAGE IRRIGATED IN 1919, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES TO 1920, CLASSIFIED BY DATE OF BEGINNING, CHARACTER OF ENTERPRISE, SOURCE OF WATER SUPPLY, AND CHARACTER OF WATER RIGHTS—Continued.

		Oklahoma.	Oregon.	South Dakota.	Texas.	Utah.	Washington.	Wyoming.
	AREA IRRIGATED, 1919.							
	Total	**2,969**	**934,162**	**100,682**	**586,120**	**1,371,851**	**529,890**	**1,207,982**
	Date of beginning:							
1	Before 1860		8,206			106,132	461	320
2	1860-1869		46,917			144,957	798	9,288
3	1870-1879		90,950	11,302	23,006	201,849	22,650	77,228
4	1880-1889		198,653	11,441	13,073	300,415	65,791	406,196
5	1890-1899	2,392	123,043	2,905	45,411	113,386	126,359	239,300
6	1900-1904	108	123,648	58,570	134,832	81,497	42,534	163,543
7	1905-1909	55	142,756	8,927	161,770	250,048	175,383	169,976
8	1910-1914	298	91,425	5,633	141,116	67,466	30,663	55,288
9	1915-1919	36	62,458	1,126	34,656	44,939	24,496	18,642
10	Not reported	80	98,106	718	32,256	61,061	49,794	68,201
	Character of enterprise:							
11	Individual and partnership	969	590,626	31,664	110,680	166,887	142,215	724,620
12	Cooperative	2,000	186,037	10,080	103,378	1,014,649	93,192	286,702
13	Irrigation district		92,081		88,571	21,143	79,918	22,935
14	Carey Act		39,665			16,009		36,230
15	Commercial		27,338	2,280	262,892	70,911	21,705	57,800
16	U. S. Reclamation Service		54,981	56,638	20,284	29,285	122,869	53,555
17	U. S. Indian Service		4,000	20		25,270	69,510	22,000
18	State				65		200	2,120
19	City		330		250	24,206		2,020
20	Other and mixed		104			3,300	290	
21	Not reported							
	Source of water supply:							
22	Streams, gravity	2,522	786,354	92,491	73,982	1,105,691	352,199	1,155,596
23	Streams, pumped	188	64,576	869	421,598	10,389	26,244	1,525
24	Streams, pumped and gravity		253		350	50	92,702	
25	Wells, pumped	107	1,993		39,483	7,308	17,504	147
26	Wells, flowing	18	72	130	3,256	4,908	1,671	19
27	Wells, pumped and flowing		340		1,727	178	1,490	
28	Lakes, pumped		1,620		597	11,400	4,662	
29	Lakes, gravity		5,750	170		15,218	3,442	355
30	Springs	6	9,584	326	8,686	41,319	7,869	5,985
31	Stored storm water		3,763	2,312	11,572	977	129	10,852
32	City water	3	258			25	42	
33	Sewage		10		260			
34	Streams, gravity and pumped wells		105	500	454	125	2,415	400
35	Streams, gravity and flowing wells		200	20	45	537	441	
36	Other mixed	125	111,137	3,864	24,170	173,495	19,027	33,043
37	Other and not reported		147			40	62	60
	Character of water rights:							
38	Appropriation and use	35	148,523	1,774	69,234	469,944	196,700	25,662
39	Notice filed and posted	215	150,332	62,054	105,069	171,955	169,831	60,792
40	Adjudicated by court	2,200	293,913	7,651	2,755	581,080	56,309	162,186
41	Permit from state	310	131,540	17,500	229,753	56,061	39,608	466,026
42	Certificate or license from state		217,228	8,612	11,898	66,778	17,406	457,038
43	Riparian rights	80	14,277	1,599	72,396		17,095	
44	Underground	120	3,235	130	44,649	8,631	20,859	276
45	Other and mixed	3	12,159	190	594	4,077	561	657
46	Not reported	6	14,955	1,172	49,672	13,125	11,530	35,345
	CAPITAL INVESTED, 1920.							
	Total	**$151,325**	**$28,929,151**	**$5,465,248**	**$35,072,739**	**$32,037,351**	**$29,299,011**	**$34,326,328**
	Date of beginning:							
47	Before 1860		151,216			1,883,633	37,986	1,250
48	1860-1869		398,603		30,000	1,639,394	16,174	45,731
49	1870-1879		1,672,943	261,476	1,108,104	2,495,342	104,885	978,368
50	1880-1889		2,321,551	149,465	295,723	4,728,282	1,130,394	5,459,654
51	1890-1899	54,378	1,656,226	94,851	987,951	2,333,321	4,883,571	3,109,641
52	1900-1904	3,403	4,193,262	4,543,349	4,903,055	807,149	2,907,222	4,844,972
53	1905-1909	4,085	10,876,802	221,514	7,762,497	10,322,803	12,527,690	14,962,407
54	1910-1914	67,101	2,741,335	106,127	14,010,412	5,113,678	5,697,725	1,621,916
55	1915-1919	17,009	4,759,181	63,308	2,747,636	1,863,298	1,993,364	2,337,484
56	Not reported	5,349	748,032	25,158	3,227,361	850,451		964,905
	Character of enterprise:							
57	Individual and partnership	110,658	6,584,382	743,880	8,256,568	2,736,804	4,733,970	8,738,866
58	Cooperative	40,667	3,143,698	240,030	3,821,844	20,254,212	3,951,207	6,701,990
59	Irrigation district		6,313,753		5,449,142	265,484	6,114,035	1,441,312
60	Carey Act		3,231,298			1,323,779		2,434,791
61	Commercial		3,281,034	15,058	13,825,409	2,374,991	2,342,028	780,562
62	U. S. Reclamation Service		5,956,950	4,464,780	3,673,476	3,567,057	10,444,717	12,863,870
63	U. S. Indian Service		230,038	1,500		765,354	1,687,386	1,339,887
64	State		16,107		6,802		55,668	15,050
65	City		171,068		39,498	729,090		9,980
66	Other		823			20,580		
67	Not reported							
	Source of water supply:							
68	Streams, gravity	90,040	20,028,187	5,122,271	5,631,241	26,503,462	19,305,396	33,025,460
69	Streams, pumped	4,210	2,807,806	93,340	19,432,010	733,077	2,677,946	99,914
70	Streams, pumped and gravity		3,700		60,000	5,100	3,933,461	
71	Wells, pumped	47,075	118,306		2,783,260	153,691	1,678,581	10,460
72	Wells, flowing	5,000	6,900	5,000	340,538	167,152	117,546	4,630
73	Wells, pumped and flowing		2,600		163,057	18,571	58,123	
74	Lakes, pumped		26,583		176,700	565,000	468,616	
75	Lakes, gravity		783,702	2,100		75,281	265,101	4,235
76	Springs	1,000	165,946	18,421	316,664	869,214	520,899	66,299
77	Stored storm water		124,499	155,121	4,785,276	81,803	5,985	407,055
78	City water	1,500	153,650			800	381	
79	Sewage		1,500		40,072			
80	Streams, gravity, and pumped wells		11,500	3,000	34,680	22,000	243,642	16,770
81	Streams, gravity, and flowing wells		1,000	480	5,000	11,822	23,334	
82	Other mixed	2,500	4,691,072	65,515	1,304,241	2,828,242		690,705
83	Other and not reported		2,200			2,736		100

ARIZONA.

INTRODUCTION.

The following pages present the statistics of irrigation for the state of Arizona collected at the census of 1920. Statistics of acreage irrigated, of acreage, yield, and value of crops grown on irrigated land, and of cost of operation and maintenance relate to the year 1919; other items relate to the year 1920. Throughout the report figures for the census of 1910 are given for purposes of comparison: and, for the purpose of showing the historical development of irrigation, items which have been reported in censuses previous to 1910 are presented.

Statistics of number of farms irrigated and of acreage, yield, and value of crops grown on irrigated land were collected in the general census of agriculture. All other statistics were obtained in a special canvass of irrigation enterprises.

TABLE 1.—SUMMARY FOR THE STATE: 1920 AND 1910.

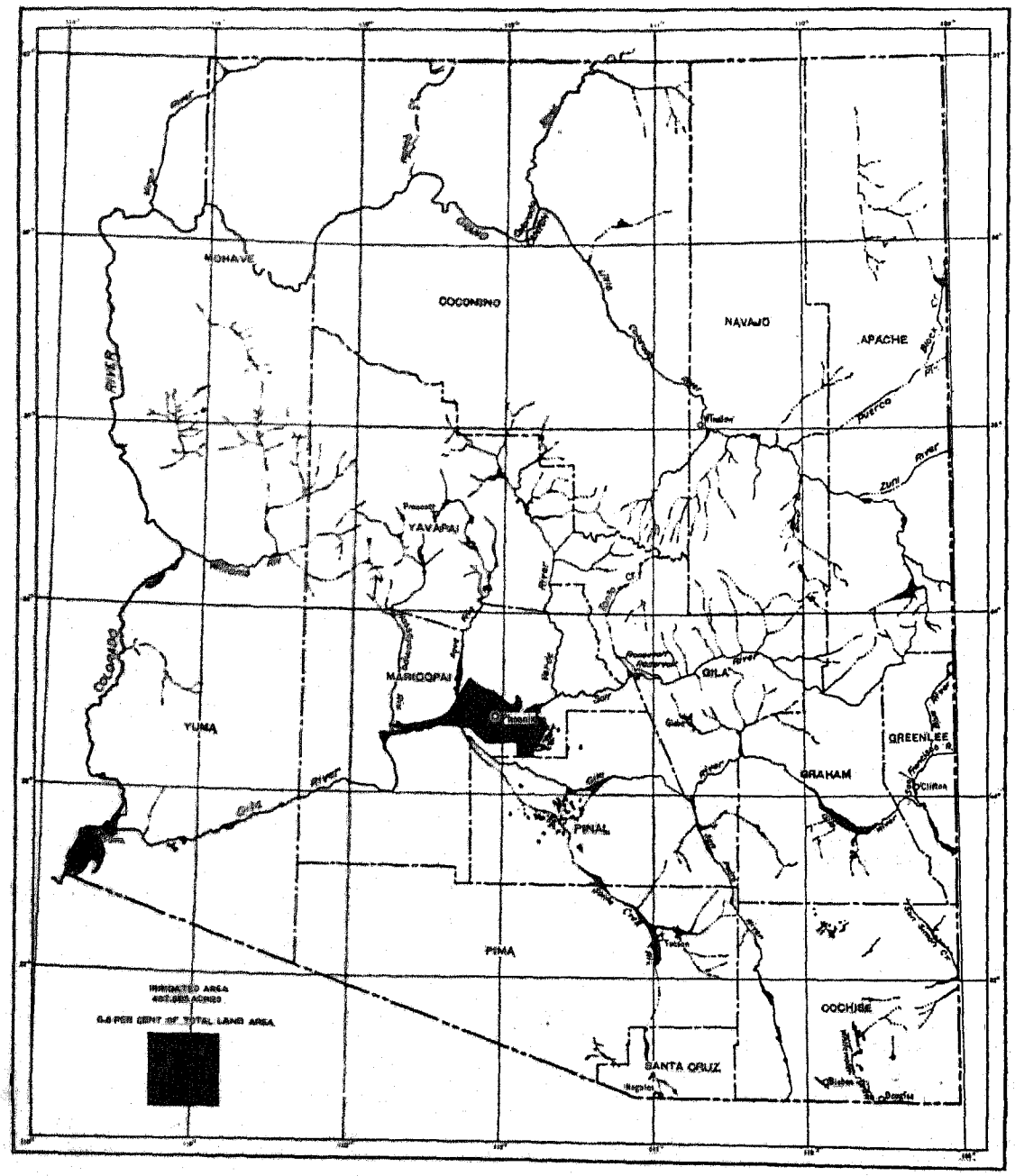
ITEM.	CENSUS OF—		INCREASE.[1]	
	1920	1910	Amount.	Per cent.
Number of all farms	9,975	9,227	748	8.1
Approximate land area of the state ... acres	72,838,400	72,838,400	.....	.....
All land in farms ... acres	5,802,126	1,246,613	4,555,513	365.4
Improved land in farms ... acres	712,803	350,173	362,630	103.6
Number of farms irrigated	6,605	4,841	1,764	36.4
Area irrigated ... acres	467,565	320,051	147,514	46.1
Area enterprises were capable of irrigating ... acres	627,303	387,655	239,648	61.8
Area included in enterprises ... acres	813,153	944,090	−130,937	−13.9
Per cent irrigated:				
Number of all farms	66.2	52.5	13.7	.....
Approximate land area of the state	0.6	0.4	0.2	.....
Land in farms	8.1	25.7	−17.6	.....
Improved land in farms	65.6	91.4	−25.8	.....
Excess of area enterprises were capable of irrigating over area irrigated ... acres	159,738	67,604	92,134	136.3
Excess of area included in enterprises over area irrigated ... acres	185,850	624,039	−438,189	−70.2
Area of irrigated land reported as available for settlement ... acres	24,341	(2)	.....	.....
Capital invested	$33,498,094	$17,677,966	$15,820,128	89.5
Average per acre enterprises were capable of irrigating	$53.40	$45.60	$7.80	17.1
Estimated final cost of existing enterprises	$34,615,064	$24,828,868	$9,786,196	39.4
Average per acre included in enterprises	$42.57	$26.30	$16.27	61.9
Average cost of operation and maintenance per acre	$3.27	$0.93	$2.34	251.6
IRRIGATION WORKS.				
Number of enterprises	1,388	1,269	119	9.4
Number of main ditches	1,295	891	404	45.3
Length of main ditches ... miles	1,769	1,727	42	2.4
Capacity of main ditches ... second-feet	11,707	17,200	−5,493	−31.9
Number of lateral ditches	1,174	313	861	275.1
Length of lateral ditches ... miles	1,599	870	729	83.8
Number of reservoirs	340	402	−62	−15.4
Capacity of reservoirs ... acre-feet	1,510,856	1,349,938	160,918	11.9
Number of flowing wells	310	214	96	44.9
Capacity of flowing wells ... gallons per minute	14,547	9,953	4,594	46.2
Number of pumped wells	999	470	529	112.6
Capacity of pumped wells ... gallons per minute	1,042,590	765,921	276,669	36.1
Number of pumping plants	744	429	315	73.4
Engine capacity ... horsepower	22,014	37,258	−15,244	−40.9
Pump capacity ... gallons per minute	1,048,030	851,873	196,157	23.0
Average lift ... feet	44	(2)	44	.....

[1] A minus sign (−) denotes decrease.

[2] Not reported in 1910.

ARIZONA

APPROXIMATE LOCATION AND EXTENT OF IRRIGATED LAND.



FARMS AND ACREAGE IRRIGATED.

TABLE 2.—NUMBER OF FARMS AND ACREAGE IRRIGATED: 1890 TO 1920.

CENSUS YEAR.	FARMS IRRIGATED.			AREA IRRIGATED.				
	Number.	Per cent of increase.	Per cent of all farms.	Acres.	Per cent of increase.	Per cent of total land area.	Per cent of land in farms.	Per cent of improved land in farms.
1920	6,665	36.4	86.2	467,565	46.1	0.6	8.1	65.6
1910	4,841	62.4	52.5	320,051	72.6	0.4	25.7	91.4
1900	2,981	177.3	31.3	185,386	181.7	0.3	9.6	72.8
1890	1,075	.....	75.4	65,821	.....	0.1	5.1	65.2

TABLE 3.—ACREAGE, CLASSIFIED BY DATE OF BEGINNING OF ENTERPRISES SUPPLYING WATER FOR IRRIGATION.

DATE OF BEGINNING.	Number of enterprises.	Area included in enterprises, 1920 (acres).	AREA IRRIGATED IN 1919.		Area enterprises were capable of irrigating in 1920 (acres).
			Acres.	Per cent of acreage in enterprises.	
Total	1,288	813,153	467,565	57.5	627,303
Before 1860	10	1,955	332	17.0	660
1860-1869	10	2,050	720	35.1	776
1870-1879	61	71,786	55,327	77.1	62,077
1880-1889	85	78,516	41,358	52.7	55,332
1890-1899	78	35,616	19,975	56.1	23,930
1900-1904	67	21,966	10,944	49.8	11,270
1905-1909	158	348,591	260,639	74.8	255,462
1910-1914	226	42,994	18,692	43.5	27,738
1915-1919	486	175,826	42,595	25.8	138,571
Not reported	207	35,853	19,983	55.8	21,487

TABLE 4.—ACREAGE, CLASSIFIED BY SOURCE OF WATER SUPPLY: 1919 AND 1909.

CLASS.	AREA IRRIGATED (ACRES).				Area enterprises were capable of irrigating in 1920 (acres).	Area included in enterprises, 1920 (acres).
	1919	1909	Increase.[1]			
			Amount.	Per cent.		
Total	467,565	320,051	147,514	46.1	627,303	813,153
Streams, gravity	189,782	300,067	−110,285	−36.8	299,122	398,591
Streams, pumped	6,071	7,711	−1,640	−13.5	9,397	16,840
Wells, pumped	39,694	6,096	33,598	551.1	59,783	99,231
Wells, flowing	1,553	1,489	69	4.6	1,902	6,831
Wells, flowing and pumped	558	(2)	558	.....	799	2,016
Lakes, gravity	.....	570	−570	.....	.....	.....
Lakes, pumped	5	(2)	5	.....	5	130
Springs	2,578	5,631	−1,053	−29.0	3,520	6,678
Stored storm water	540	487	23	4.7	690	700
Sewage	195	(2)	195	.....	200	270
Streams, gravity, and pumped wells	217,799	(2)	217,799	.....	240,640	258,104
Streams, gravity, and flowing wells	525	(2)	525	.....	645	1,317
Other mixed	7,690	(2)	7,690	.....	10,690	22,945

[1] A minus sign (−) denotes decrease.
[2] Not included in classification in 1909.

ACREAGE, BY CHARACTER OF ENTERPRISE.

Arizona, in common with other territory settled by the Spaniards, has many old irrigation enterprises, known as "community ditches" or "public acequias," which are operated in accordance with ancient laws and customs which have not been brought into a definite code. These laws and customs were continued by the law of 1871, which recognized the "laws and customs of Sonora and the usage of the people of Arizona." Such enterprises are controlled by the water users and are classed as cooperative.

Arizona enacted an irrigation district law in 1912, but almost nothing has been done under that law. The state accepted the conditions of the Federal Carey Act (act of Congress, Aug. 18, 1894) in 1912, but nothing has been done under that act.

TABLE 5.—ACREAGE, CLASSIFIED BY CHARACTER OF ENTERPRISE: 1920 AND 1910.

ITEM AND CLASS.	CENSUS OF—		INCREASE.[1]	
	1920	1910	Acres.	Per cent.
ACREAGE IRRIGATED.				
Total	467,565	320,051	147,514	46.1
Individual and partnership	80,511	61,196	19,315	31.6
Cooperative	114,482	101,025	13,457	13.3
Irrigation district	300	(2)	300	.....
Commercial	14,500	80	14,420	.....
U. S. Reclamation Service	248,814	138,364	110,450	79.8
U. S. Indian Service	8,733	19,386	−10,653	−55.0
City	200	(2)	200	.....
Other and mixed	25	(2)	25	.....
ACREAGE ENTERPRISES WERE CAPABLE OF IRRIGATING.				
Total	627,303	387,655	239,648	61.8
Individual and partnership	195,331	81,422	113,909	139.9
Cooperative	130,903	120,559	10,344	8.6
Irrigation district	300	(2)	300	.....
Commercial	20,000	200	19,800	.....
U. S. Reclamation Service	269,691	164,500	105,191	63.9
U. S. Indian Service	10,833	20,974	−10,141	−48.4
City	220	(2)	220	.....
Other and mixed	25	(2)	25	.....
ACREAGE INCLUDED IN ENTERPRISES.				
Total	813,153	944,090	−130,937	−13.9
Individual and partnership	288,510	175,834	112,676	64.1
Cooperative	157,849	360,639	−202,790	−56.2
Irrigation district	450	(2)	450	.....
Commercial	31,000	1,600	29,400	.....
U. S. Reclamation Service	314,691	370,000	−55,309	−14.9
U. S. Indian Service	20,058	36,017	−15,959	−44.3
City	300	(2)	300	.....
Other and mixed	295	(2)	295	.....

[1] A minus sign (−) denotes decrease. Per cent not shown when base is less than 100, or when per cent is more than 1,000.
[2] Not included in classification in 1910.

ACREAGE, BY CHARACTER OF WATER RIGHTS.

The laws of Arizona relating to water rights are summarized in the following paragraphs:

The bill of rights of the territory of Arizona, approved October 4, 1864, contained the following declaration regarding water rights:

"All streams, lakes, and ponds of water capable of being used for purposes of navigation or irrigation are hereby declared to be public property; and no individual or corporation shall have the right to appropriate them exclusively to their own private use, except under such equitable regulations and restrictions as the legislature shall provide for that purpose."—Art. 22.

The law of 1871 declared all rivers, creeks, and streams of running water to be public and applicable to the purposes of irrigation and mining. This law provided that the appropriator should post a notice at the point of diversion and file a copy of the notice with the county recorder.

A law enacted in 1887 declared that the common law doctrine of riparian rights should not be in force in the territory, and the state constitution, adopted in 1910, contained a similar declaration (Art. 17).

TABLE 10.—CAPITAL INVESTED, 1920, AND COST OF OPERATION AND MAINTENANCE, 1919, CLASSIFIED BY SOURCE OF WATER SUPPLY.

[When water is pumped, cost of operation and maintenance includes cost of fuel and attendance.]

CLASS.	CAPITAL INVESTED, 1920.			OPERATION AND MAINTENANCE, 1919.	
	Amount.	Per cent of total.	Average per acre.	Area for which cost is reported (acres).	Average cost per acre.[1]
Total	$33,498,094	100.0	$33.40	362,928	$3.27
Streams, gravity	11,587,884	34.6	38.74	111,223	2.27
Streams, pumped	521,952	1.6	55.53	6,682	8.12
Streams, pumped and gravity					
Wells, pumped	3,417,339	10.2	57.16	18,733	13.15
Wells, flowing	115,936	0.3	60.95	734	3.64
Wells, flowing and pumped	54,700	0.2	68.46	558	13.64
Lakes, pumped	400	(2)	80.00	5	10.00
Lakes, gravity					
Springs	273,358	0.8	77.09	1,325	3.88
Stored storm water	11,600	(2)	19.33		
Sewage	63,498	0.2	317.04	90	1.89
Streams, gravity, and pumped wells	17,692,890	51.0	71.03	216,207	2.70
Streams, gravity, and flowing wells	27,500	0.1	42.64	495	2.40
Other mixed	332,227	1.0	31.17	6,086	4.90

[1] Based on area irrigated in 1919. [2] Less than one-tenth of 1 per cent.

TABLE 11.—CAPITAL INVESTED, CLASSIFIED BY DRAINAGE BASIN: 1920 AND 1902.

DRAINAGE BASIN.	1920	1902	INCREASE.[1]	
			Amount.	Per cent.
Total	$33,498,094	$4,688,298	$28,809,796	614.5
Colorado River and tributaries	32,199,726	4,681,563	28,517,163	609.1
Colorado River direct	7,381,891	250,973	7,130,918	
Kanab Wash	20,500	4,705	15,800	336.2
Virgin River	7,474	3,425	4,049	118.2
Williams River	55,504	15,696	39,808	253.6
Little Colorado River and tributaries	460,206	265,701	194,505	73.2
Little Colorado River direct	146,913	218,900	−71,987	−32.9
Nutrioso Creek	16,500	2,600	13,900	534.6
Concho Creek	49,228	850	48,378	
Other tributaries of Little Colorado River	247,565	[2] 43,351	204,214	471.1
Gila River and tributaries	25,165,814	4,131,850	21,033,964	509.1
Gila River direct	2,841,528	1,203,882	1,637,644	136.0
San Francisco River	15,415	13,585	1,830	13.5
San Pedro River	359,153	40,135	318,018	792.9
Santa Cruz River	5,168,524	79,686	5,088,838	
Salt River and tributaries	14,259,034	2,097,189	12,241,845	583.9
Salt River direct	14,339,874	2,404,160	11,935,714	496.5
Tonto Creek	9,468	15,085	−5,617	−37.2
Rio Verde	209,482	250,813	−41,331	−16.5
Other tributaries of Salt River	280,210	[2] 27,131	253,079	
Agua Fria River	1,426,677	28,998	1,397,679	
Hassayampa River	51,299	11,160	40,139	359.7
Other tributaries of Gila River	362,786	[2] 65,215	297,571	456.3
Other tributaries of Colorado River	107,337	[2] 9,278	98,059	
Whitewater Draw and tributaries	299,368	6,735	292,633	

[1] A minus sign (−) denotes decrease. Per cent not shown when more than 1,000.
[2] Includes springs and wells.

In classifying capital invested by type of enterprise (Table 12) the average capital invested per acre is not presented, for the reason that it is not possible to compute this correctly. The United States Reclamation Service supplies stored water to enterprises controlled by agencies of most of the other classes shown in the table and a part of its expenditure is properly chargeable to those lands; but it is not possible to tell how much should be so charged or how it should be distributed among the various classes.

TABLE 12.—CAPITAL INVESTED, 1920, AND COST OF OPERATION AND MAINTENANCE, 1919, CLASSIFIED BY CHARACTER OF ENTERPRISE.

[When water is pumped, cost of operation and maintenance includes cost of fuel and attendance.]

CLASS.	CAPITAL INVESTED, 1920.		OPERATION AND MAINTENANCE, 1919.	
	Amount.	Per cent of total.	Area for which cost is reported (acres).	Average cost per acre.[1]
Total	$33,498,094	100.0	362,828	$3.27
Individual and partnership	5,598,625	16.7	43,378	7.53
Cooperative	3,171,406	9.5	93,444	2.44
Irrigation district	100,000	0.3	300	6.67
Commercial	3,693,400	11.0	14,500	4.86
U. S. Reclamation Service	20,277,919	60.5	205,064	2.44
U. S. Indian Service	585,029	1.8	5,977	9.51
City	71,500	0.2	140	1.93
Not reported	215	(2)	25	5.00

[1] Based on area irrigated in 1919. [2] Less than one-tenth of 1 per cent.

DRAINAGE OF IRRIGATED LAND.

The acreages reported in Table 13 relate to lands within the boundaries of irrigation projects, and do not include lands within the vicinity of these projects. "Additional acreage needing drainage" includes all lands so reported by the owners of the enterprises, and includes lands producing partial crops as well as those wholly unproductive.

TABLE 13.—ACREAGE WITHIN IRRIGATION ENTERPRISES FOR WHICH DRAINS HAVE BEEN INSTALLED AND ADDITIONAL ACREAGE IN NEED OF DRAINAGE: 1920.

Number of enterprises reporting land drained or needing drainage	31
Acreage included in enterprises reporting land drained or needing drainage	382,928
Acreage for which drains have been installed	25,173
Additional acreage needing drainage	71,357
Per cent that acreage for which drains have been installed is of total acreage included in enterprises reporting drainage	6.6
Per cent that acreage for which drains have been installed is of total acreage included in irrigation enterprises in the state	3.1
Per cent that acreage for which drains have been installed plus that needing drainage is of total acreage included in irrigation enterprises in the state	11.9

QUANTITY OF WATER USED.

The quantity of water used in 1919 was reported on only part of the irrigation schedules, and the figures given vary greatly. In order that proper values may be assigned to the figures given, those representing measurements and those representing estimates are reported separately in Table 14. While the data are incomplete, the reports represent sufficient acreages to serve as bases for reliable averages.

TABLE 14.—QUANTITY OF WATER USED IN 1919.

ITEM.	Total.	Measured.	Not measured.
Average volume of water entering canals, second-feet	4,199	2,967	1,232
Area irrigated in 1919 ... acres	336,393	258,260	78,133
Average number of acres per second-foot	80	87	63
Total quantity of water entering canals, acre-feet	1,839,689	1,402,101	437,588
Area irrigated in 1919 ... acres	358,383	283,376	75,007
Average quantity per acre ... acre-feet	5.1	4.9	5.8
Total quantity of water delivered ... acre-feet	876,016	690,083	185,933
Area irrigated in 1919 ... acres	291,637	233,469	58,168
Average quantity per acre ... acre-feet	3.0	3.0	3.2

TABLE 17.—IRRIGATION WORKS, CLASSIFIED BY DRAINAGE BASIN: 1920.

DRAINAGE BASIN.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.	
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).
Total	248	99	1,295	11,707	1,769	1,174	1,599	340	1,510,856
Colorado River and tributaries	242	48	1,120	11,154	1,648	1,082	1,592	264	1,425,785
Colorado River direct	2		6	713	52	174	221		
Kanab Wash	1		1	1		4	4	4	258
Virgin River		1	10	9	9	9	2		
Williams River	5		37	40	34	1	1	1	4
Little Colorado River and tributaries	32	14	82	341	156	43	43	45	37,098
Little Colorado River direct	19	9	36	208	78	15	22	18	30,823
Nutrioso Creek	4	1	7	17	8			4	1,050
Concho Creek			2	3	2	1	1	2	625
Other tributaries of Little Colorado River	9	4	37	113	68	27	20	21	4,600
Gila River and tributaries	199	33	950	10,632	1,385	836	1,316	210	1,377,406
Gila River direct	27	1	91	2,520	370	219	203	2	210
San Francisco River	28	1	38	22	12			2	
San Pedro River	30	9	114	270	162	31	16	45	894
Santa Cruz River	31	5	237	1,196	260	147	75	26	392
Salt River and tributaries	44	3	174	5,684	290	313	911	11	1,367,307
Salt River direct	8	1	18	4,447	111	271	898	2	1,367,300
Tonto Creek	9	1	34	58	26			1	1
Rio Verde	22		75	359	107	29	7	5	1
Other tributaries of Salt River	5	1	47	220	46	13	6	3	5
Agua Fria River	12	5	106	525	107	105	101	16	24
Hassayampa River	1	1	24	46	18			1	180
Other tributaries of Gila River	28	8	166	369	166	21	11	107	8,399
Other tributaries of Colorado River	3		34	18	12	15	5	4	11,019
Whitewater Draw and tributaries	6	51	175	553	121	92	7	76	85,071

DRAINAGE BASIN.	Pipe lines, length (miles).	FLOWING WELLS.		PUMPED WELLS.		PUMPING PLANTS.				
		Number.	Capacity (gallons per minute).	Number.	Capacity (gallons per minute).	Number.	Engine capacity (horse-power).	Pumps.		Average lift (feet).
								Number.	Capacity (gallons per minute).	
Total	194.5	310	14,547	999	1,042,590	744	22,014	1,001	1,048,030	44
Colorado River and tributaries	99.4	300	14,044	790	966,803	546	19,611	792	974,063	45
Colorado River direct				3	750	7	414	10	80,200	14
Kanab Wash	1.3									
Virgin River										
Williams River	10.1			5	2,015	6	39	8	2,590	20
Little Colorado River and tributaries		2		2	1,000	1	1	2	1,000	30
Little Colorado River direct		2								
Nutrioso Creek										
Concho Creek										
Other tributaries of Little Colorado River				2	1,000	1	1	2	1,000	30
Gila River and tributaries	87.9	298	14,044	774	965,338	525	19,087	765	889,573	44
Gila River direct	1.0			78	78,531	80	2,382	84	92,581	34
San Francisco River	1.4			4	225	11	70	12	5,835	19
San Pedro River	5.1	133	5,195	25	11,474	27	285	29	12,949	30
Santa Cruz River	35.0			265	576,234	241	8,073	366	528,649	44
Salt River and tributaries	4.3	1		132	150,874	75	2,653	124	153,184	68
Salt River direct	1.5			72	75,319	14	629	60	75,719	54
Tonto Creek				1	500	2	25	2	1,500	16
Rio Verde	1.8	1		3		11	96	11	1,070	63
Other tributaries of Salt River	1.0			56	75,055	48	1,903	51	74,895	75
Agua Fria River	34.3	1		114	120,685	41	4,749	100	68,575	47
Hassayampa River	4.1			15	6,420	13	204	13	5,810	35
Other tributaries of Gila River	2.7	163	8,849	41	20,895	37	671	37	21,990	49
Other tributaries of Colorado River	0.1			6	700	7	70	7	700	20
Whitewater Draw and tributaries	5.1	10	503	209	72,787	198	2,403	209	73,967	44

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910.

[A minus sign (—) denotes decrease. Per cent not shown when base is less than 100.]

		THE STATE.	Apache.	Cochise.	Coconino.	Gila.	Graham.[1]	Greenlee.[1]
1	Number of all farms in 1920	9,975	337	1,251	362	289	870	262
2	Number of farms irrigated in 1919	6,605	181	567	50	117	533	199
3	Per cent of all farms	66.2	53.7	46.5	13.8	40.5	61.3	76.0
4	Number of farms irrigated in 1909	4,841	184	293	38	251	765	.....
5	Per cent of increase, 1909–1919	36.4	—1.6	73.0	.....	—53.4	.....	.....
	LAND AND FARM AREA.							
6	Approximate land area ... acres	72,838,400	7,282,560	3,948,800	11,918,720	3,007,360	2,963,200	1,201,920
7	All land in farms ... acres	5,802,126	717,898	998,242	164,669	35,752	165,691	24,383
8	Improved land in farms ... acres	712,803	27,452	120,229	19,827	8,909	38,632	7,990
9	Area irrigated in 1919 ... acres	467,565	12,070	12,982	1,479	1,797	32,400	6,974
10	Per cent of improved land in farms	65.6	44.0	10.8	7.5	20.2	83.9	87.3
11	Area irrigated in 1909 ... acres	320,051	8,853	4,900	901	2,778	38,824	.....
12	Per cent of increase, 1909–1919	46.1	36.3	164.9	64.2	—35.3	.....	.....
13	Area enterprises were capable of irrigating in 1920 ... acres	627,303	16,159	19,130	1,902	2,379	34,355	8,086
14	Area enterprises were capable of irrigating in 1910 ... acres	387,655	9,330	6,488	1,183	3,272	41,223	.....
15	Per cent of increase, 1910–1920	61.8	73.2	194.9	60.8	—27.3	.....	.....
16	Area included in enterprises in 1920 ... acres	813,153	27,571	33,999	2,040	7,012	41,938	15,288
17	Area included in enterprises in 1910 ... acres	944,690	34,807	14,141	3,223	4,233	52,143	.....
18	Per cent of increase, 1910–1920	—13.9	—20.8	140.4	—36.7	65.7	.....	.....
19	Area of irrigated land reported as available for settlement ... acres	24,341	.....	2,100	.....	.....	3,407	.....
	IRRIGATION WORKS.							
	Independent enterprises:							
20	Number, 1920	1,388	39	328	21	83	100	69
21	Number, 1910	1,269	64	244	20	117	190	.....
	Main ditches:							
22	Number, 1920	1,295	55	303	26	83	96	72
23	Number, 1910	891	67	71	20	102	124	.....
24	Length, 1920 ... miles	1,769	97	266	24	93	190	70
25	Length, 1910 ... miles	1,727	112	94	17	90	216	.....
26	Capacity, 1920 ... second-feet	11,707	249	837	49	162	883	232
27	Capacity, 1910 ... second-feet	17,200	577	349	49	453	1,075	.....
	Laterals:							
28	Number, 1920	1,174	24	124	20	3	208	.....
29	Number, 1910	313	46	3	25	11	10	.....
30	Length, 1920 ... miles	1,599	27	23	11	2	181	.....
31	Length, 1910 ... miles	870	40	2	20	5	14	.....
	Reservoirs:							
32	Number, 1920	340	36	165	4	2	56	2
33	Number, 1910	462	32	170	11	3	73	.....
34	Capacity, 1920 ... acre-feet	1,510,856	45,614	86,617	13	1	1,471	.....
35	Capacity, 1910 ... acre-feet	1,348,938	39,456	68	5,428	1	2,950	.....
	Flowing wells:							
36	Number, 1920	310	.....	204	.....	.....	95	.....
37	Number, 1910	214	.....	90	.....	.....	117	.....
38	Capacity, 1920 ... gallons per minute	14,547	.....	9,643	.....	.....	4,054	.....
39	Capacity, 1910 ... gallons per minute	9,953	.....	2,959	.....	.....	6,799	.....
	Pumped wells:							
40	Number, 1920	999	2	255	.....	18	4	14
41	Number, 1910	470	4	194	.....	10	9	.....
42	Capacity, 1920 ... gallons per minute	1,042,590	1,000	90,531	.....	5,230	1,880	3,125
43	Capacity, 1910 ... gallons per minute	765,921	65	27,185	.....	2,858	4,002	.....
	Pumping plants:							
44	Number, 1920	744	1	241	2	19	10	21
45	Number, 1910	429	4	194	.....	11	19	.....
46	Engine capacity, 1920 ... horsepower	22,914	15	2,909	50	146	104	136
47	Engine capacity, 1910 ... horsepower	37,258	7	4,336	.....	43	1,248	.....
48	Pump capacity, 1920 ... gallons per minute	1,048,030	1,000	94,556	30	5,900	11,030	8,735
49	Pump capacity, 1910 ... gallons per minute	851,873	65	27,185	.....	2,908	8,517	.....
50	Average lift, 1920 ... feet	44	36	43	22	24	18	20
	CAPITAL INVESTED.							
51	Capital invested to Jan. 1, 1920 ... dollars	33,498,094	275,016	611,883	72,317	59,749	945,403	75,158
52	Capital invested to July 1, 1910 ... dollars	17,677,966	234,838	513,333	42,266	38,667	335,971	.....
53	Per cent of increase, 1910–1920	89.5	17.1	19.2	71.1	54.5	.....	.....
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	53.40	17.02	31.99	38.02	25.12	27.52	9.29
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	45.60	25.17	79.12	35.73	11.82	8.15	.....
	ESTIMATED FINAL COST.							
56	Estimated final cost of existing enterprises in 1920 ... dollars	34,615,064	283,240	635,248	72,317	60,749	995,803	77,758
57	Estimated final cost of existing enterprises in 1910 ... dollars	24,828,868	384,828	513,333	42,266	38,667	346,721	.....
58	Per cent of increase, 1910–1920	39.4	—26.4	23.7	71.1	57.1	.....	.....
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	42.57	10.27	18.68	35.45	8.66	23.74	5.09
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	26.30	11.06	36.30	13.11	9.13	6.65	.....

[1] Part of Graham County taken to form Greenlee County in 1911.

ARKANSAS.

INTRODUCTION.

The following pages present the statistics of irrigation for the state of Arkansas collected at the census of 1920. Statistics of acreage irrigated, of acreage, yield, and value of crops grown on irrigated land, and of cost of operation and maintenance relate to the year 1919; other items relate to the year 1920. Throughout the report figures for the census of 1910 are given for purposes of comparison; and, for the purpose of showing the historical development of irrigation, items which have been reported in censuses previous to 1910 are presented.

Statistics of number of farms irrigated and of acreage, yield, and value of crops grown on irrigated land were collected in the general census of agriculture. All other statistics were obtained in a special canvass of irrigation enterprises.

Rice is the only crop grown under irrigation in Arkansas, with the exception of a few small tracts in other crops, and practically all the rice grown in the state is irrigated. The area harvested in 1919 is reported as 143,211 acres, the quantity of rough rice produced 6,797,126 bushels, and the value $18,352,240.

TABLE 1.—SUMMARY FOR THE STATE: 1920 AND 1910.

ITEM.	CENSUS OF—		INCREASE.[1]	
	1920	1910	Amount.	Per cent.
Number of all farms	232,604	214,678	17,926	8.4
Approximate land area of the state ... acres	33,616,000	33,616,000	.....	.....
All land in farms ... acres	17,456,750	17,416,075	40,675	0.2
Improved land in farms ... acres	9,210,556	8,076,254	1,134,302	14.0
Number of farms irrigated	1,166	232	934	402.6
Area irrigated ... acres	143,946	27,753	116,193	418.7
Area enterprises were capable of irrigating ... acres	179,013	47,136	131,877	279.8
Area included in enterprises ... acres	246,480	52,883	193,597	366.1
Per cent irrigated:				
Number of all farms	0.5	0.1	0.4	.....
Approximate land area of the state	0.4	0.1	0.3	.....
Land in farms	0.8	0.2	0.6	.....
Improved land in farms	1.6	0.3	1.3	.....
Excess of area enterprises were capable of irrigating over area irrigated ... acres	35,067	19,383	15,684	80.9
Excess of area included in enterprises over area irrigated ... acres	102,534	25,130	77,404	308.0
Capital invested	$7,183,322	$587,834	$6,595,488	.....
Average per acre enterprises were capable of irrigating	$40.13	$12.47	$27.66	221.8
Estimated final cost of existing enterprises	$7,283,522	$612,834	$6,670,688	.....
Average per acre included in enterprises	$29.55	$11.59	$17.96	155.0
Average cost of operation and maintenance per acre	$13.67	(2)	.....	.....
IRRIGATION WORKS.				
Number of enterprises	944	310	634	204.5
Number of main ditches	84	217	−133	−61.3
Length of main ditches ... miles	68	131	−63	−48.1
Capacity of main ditches ... second-feet	1,205	(2)	1,205	.....
Number of lateral ditches	50	(2)	50	.....
Length of lateral ditches ... miles	18	(2)	18	.....
Number of reservoirs	16	19	−3	−15.8
Capacity of reservoirs ... acre-feet	20	3	17	566.7
Number of flowing wells	(3)	(2)	.....	.....
Capacity of flowing wells ... gallons per minute	(3)	(2)	.....	.....
Number of pumped wells	1,089	307	782	254.7
Capacity of pumped wells ... gallons per minute	1,470,147	268,829	1,201,318	446.9
Number of pumping plants	1,041	315	726	230.5
Engine capacity ... horsepower	58,332	12,440	45,892	368.9
Pump capacity ... gallons per minute	1,654,097	436,402	1,217,695	279.0
Average lift ... feet	50	(2)	50	.....

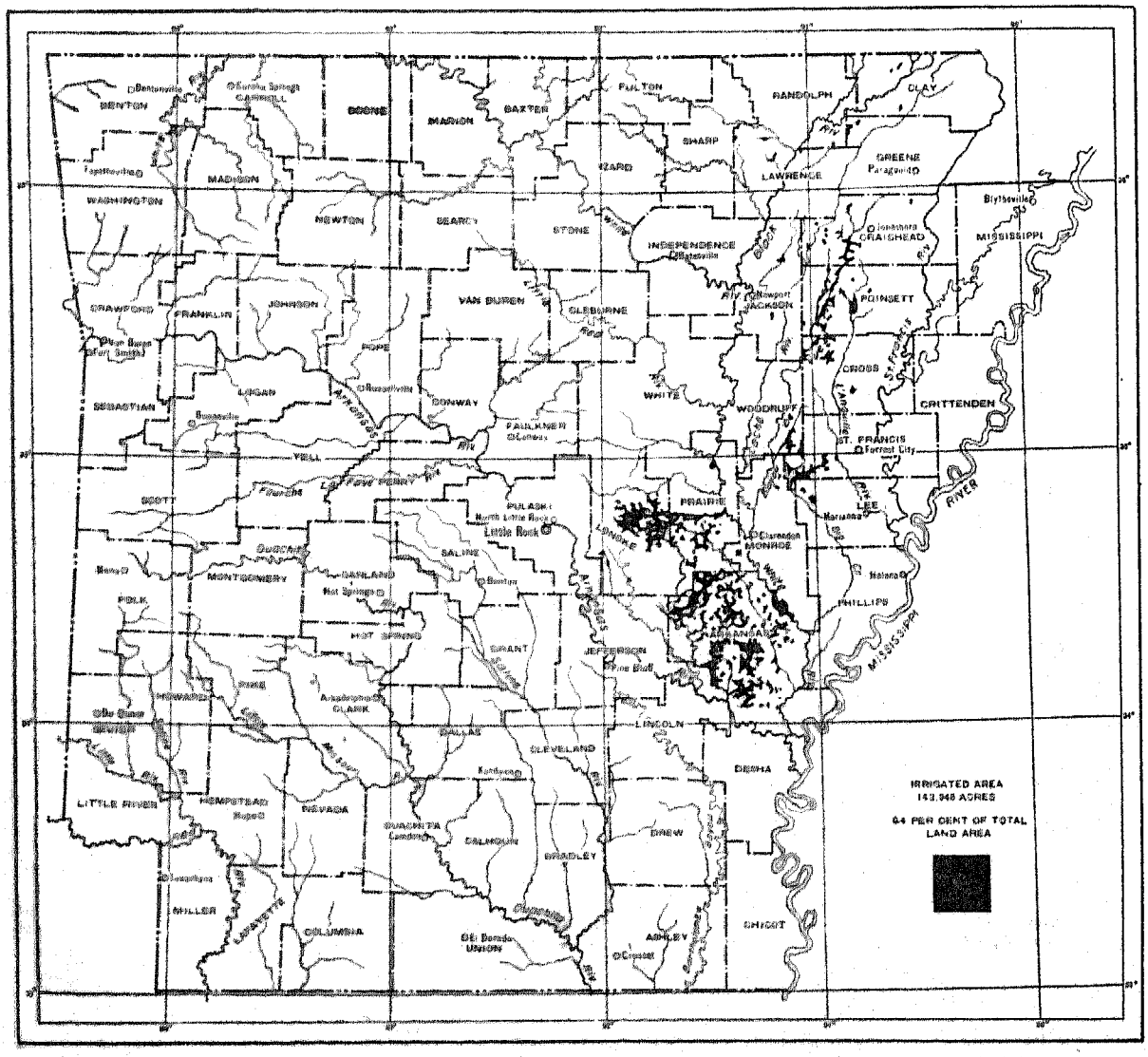
[1] A minus sign (−) denotes decrease. Per cent not shown when more than 1,000.

[2] Not reported in 1910.

[3] Not reported in 1920.

ARKANSAS

APPROXIMATE LOCATION AND EXTENT OF IRRIGATED LAND.



CLIMATIC CONDITIONS.

The rainfall in Arkansas is sufficient for the growing of general crops without irrigation, the annual average being about 47 inches.

The rainfall for the year 1919 was about 7 inches above the normal, and rice was damaged to some extent by rain during harvest.

WATER SUPPLY FOR IRRIGATION.

Arkansas is abundantly supplied with streams, but about 94 per cent of the rice is watered from wells, from which the water is pumped. The average lift is about 50 feet, and there seems to be sufficient water for all the land that the farmers care to irrigate.

FARMS AND ACREAGE IRRIGATED.

TABLE 2.—NUMBER OF FARMS AND ACREAGE IRRIGATED: 1890 TO 1920.

CENSUS YEAR.	FARMS IRRIGATED.			AREA IRRIGATED.				
	Number.	Per cent of increase.[1]	Per cent of all farms.	Acres.	Per cent of increase.[1]	Per cent of total land area.	Per cent of land in farms.	Per cent of improved land in farms.
1920	1,166	402.6	0.5	143,946	418.7	0.4	0.8	1.6
1910	232	.....	0.1	27,753	.....	0.4	0.2	0.3
1900	20	.....	(2)	25	.....	(2)	(2)	(2)
1890	.....	.....	.....	9	.....	(2)	(2)	(2)

[1] Per cent not shown when base is less than 100.
[2] Less than one-tenth of 1 per cent.

TABLE 3.—ACREAGE, CLASSIFIED BY DATE OF BEGINNING OF ENTERPRISES SUPPLYING WATER FOR IRRIGATION.

DATE OF BEGINNING.	Number of enterprises.	Area included in enterprises, 1920 (acres).	AREA IRRIGATED IN 1919.		Area enterprises were capable of irrigating in 1920 (acres).
			Acres.	Per cent of acreage in enterprises.	
Total	944	246,480	143,946	58.4	179,013
1890-1899	3	2,400	1,640	68.3	1,640
1900-1904	2	700	470	67.1	550
1905-1909	68	19,230	11,840	61.6	14,304
1910-1914	335	92,862	49,100	52.9	61,227
1915-1919	447	105,869	64,474	60.9	79,108
Not reported	89	25,419	16,422	64.6	22,184

TABLE 4.—ACREAGE, CLASSIFIED BY SOURCE OF WATER SUPPLY: 1919 AND 1909.

CLASS.	AREA IRRIGATED (ACRES).				Area enterprises were capable of irrigating in 1920 (acres).	Area included in enterprises, 1920 (acres).
	1919	1909	Increase.[1]			
			Amount.	Per cent.		
Total	143,946	27,753	116,193	418.7	179,013	246,480
Streams, gravity	120	2,542	−2,422	−95.3	220	220
Streams, pumped	6,009	543	5,466	.....	6,585	6,825
Wells, pumped	135,260	24,398	110,862	454.4	168,548	235,620
Lakes, pumped	450	270	180	66.7	950	950
Stored storm water	40	(2)	40	.....	55	55
Streams, gravity, and pumped wells	250	(2)	250	.....	300	300
Other mixed	1,817	(2)	1,817	.....	2,355	2,510

[1] A minus sign (−) denotes decrease. Per cent not shown when more t han 1,000.
[2] Not included in classification in 1910.

ACREAGE, BY CHARACTER OF ENTERPRISE.

The state of Arkansas has no legislation regarding the organization of enterprises for supplying water for irrigation, and, as shown by Table 5, almost the entire area irrigated is supplied with water by individual or partnership enterprises. With a very few exceptions, each rice grower has his own well and pumping plant.

Neither the Federal Carey Act (act of Aug. 18, 1894) nor the Federal reclamation act (act of June 17, 1902) applies to this state.

The acreage irrigated in 1909 was not reported in this way, but in that year, as in 1919, the irrigated land was practically all supplied with water from private wells.

TABLE 5.—ACREAGE, CLASSIFIED BY CHARACTER OF ENTERPRISE: 1920.

ITEM.	Total acreage.	CHARACTER OF ENTERPRISE.		
		Individual and partnership.	Cooperative.	Commercial.
Acreage irrigated	143,946	140,471	1,075	2,400
Acreage enterprises were capable of irrigating	179,013	175,238	1,275	2,400
Acreage included in enterprises	246,480	242,380	1,500	2,600

ACREAGE, BY DRAINAGE BASIN.

In Table 6 the acreage figures are presented by the drainage basins in which the land lies. The figures for Arkansas have not been presented in this form in the report of any previous census, consequently no comparisons can be made. The rice-growing industry in Arkansas has been developed since 1902, when a special census was taken, for which the results were presented by drainage basins.

TABLE 6.—ACREAGE IRRIGATED, CLASSIFIED BY DRAINAGE BASIN: 1919.

DRAINAGE BASIN.	Area irrigated in 1919 (acres).	Area included in enterprises, 1920 (acres).	Area enterprises were capable of irrigating in 1920 (acres).
Total	143,946	246,480	179,013
Red River	500	500	500
Ouachita River	42	140	105
White River	74,918	131,546	95,709
Arkansas River	63,521	100,296	76,779
St. Francis River	4,965	14,198	5,920

CAPITAL INVESTED AND COST OF OPERATION AND MAINTENANCE.

TABLE 7.—CAPITAL INVESTED IN IRRIGATION ENTERPRISES: 1910 AND 1920.

CENSUS YEAR.	Amount.	AVERAGE PER ACRE.	
		Amount.	Per cent of increase.
1920	$7,183,322	$49.13	221.8
1910	587,834	12.47	.....

TABLE 8.—CAPITAL INVESTED, CLASSIFIED BY DATE OF BEGINNING.

DATE OF BEGINNING.	Amount.	Per cent of total.	Average per acre.
Total	$7,183,322	100.0	$40.13
1899-1899	93,111	1.3	36.78
1900-1904	25,026	0.3	45.50
1905-1909	459,542	6.4	32.13
1910-1914	2,276,584	31.7	37.18
1915-1919	3,302,402	46.0	41.75
Not reported	1,026,567	14.3	46.28

TABLE 9.—CAPITAL INVESTED, 1920, AND COST OF OPERATION AND MAINTENANCE, 1919, CLASSIFIED BY SOURCE OF WATER SUPPLY.

[When water is pumped, cost of operation and maintenance includes cost of fuel and attendance.]

CLASS.	CAPITAL INVESTED, 1920.			OPERATION AND MAINTENANCE, 1919.	
	Amount.	Per cent of total.	Average per acre.	Area for which cost is reported (acres).	Average cost per acre.[1]
Total	$7,183,322	100.0	$40.13	99,255	$13.67
Streams, gravity	3,874	0.1	17.61		
Streams, pumped	96,430	1.3	14.65	2,309	7.06
Wells, pumped	7,028,773	97.8	41.70	93,471	14.06
Lakes, pumped	9,500	0.1	10.00	450	11.78
Stored storm water	1,500	(2)	27.27	40	10.00
Streams, gravity, and pumped wells	8,500	0.1	28.33	170	30.15
Other mixed	34,725	0.5	14.75	1,815	4.16

[1] Based on area irrigated in 1919. [2] Less than one-tenth of 1 per cent.

TABLE 10.—CAPITAL INVESTED, 1920, AND COST OF OPERATION AND MAINTENANCE, 1919, CLASSIFIED BY CHARACTER OF ENTERPRISE.

[When water is pumped, cost of operation and maintenance includes cost of fuel and attendance.]

CLASS.	CAPITAL INVESTED, 1920.		OPERATION AND MAINTENANCE, 1919.	
	Amount.	Per cent of total.	Area for which cost is reported (acres).	Average cost per acre.[1]
Total	$7,183,322	100.0	99,255	$13.67
Individual and partnership	7,073,297	98.5	99,255	13.67
Cooperative	60,013	0.8		
Commercial	50,012	0.7		

[1] Based on area irrigated in 1919.

TABLE 11.—CAPITAL INVESTED, CLASSIFIED BY DRAINAGE BASIN: 1920.

DRAINAGE BASIN.	1920
Total	$7,183,322
Red River	20,006
Ouachita River	1,100
White River	3,992,967
Arkansas River	2,950,522
St. Francis River	218,727

DRAINAGE OF IRRIGATED LAND.

The acreages reported in Table 12 relate to lands within the boundaries of irrigation projects, and do not include lands within the vicinity of these projects. "Additional acreage needing drainage" includes all lands so reported by the owners of the enterprises, and includes lands producing partial crops as well as those wholly unproductive.

TABLE 12.—ACREAGE WITHIN IRRIGATION ENTERPRISES FOR WHICH DRAINS HAVE BEEN INSTALLED AND ADDITIONAL ACREAGE IN NEED OF DRAINAGE: 1920.

Number of enterprises reporting land drained or needing drainage	134
Acreage included in enterprises reporting land drained or needing drainage	37,574
Acreage for which drains have been installed	27,350
Additional acreage needing drainage	2,821
Per cent that acreage for which drains have been installed is of total acreage included in enterprises reporting drainage	72.8
Per cent that acreage for which drains have been installed is of total acreage included in irrigation enterprises in the state	11.1
Per cent that acreage for which drains have been installed plus that needing drainage is of total acreage included in irrigation enterprises in the state	12.2

QUANTITY OF WATER USED.

The quantity of water used in 1919 was reported on only part of the irrigation schedules, and the figures given vary greatly. None of the water used in 1919 was measured, and quantities are probably taken from the rated capacities of the pumps and the time the pumps were operated. While the data are incomplete, the reports represent sufficient acreages to serve as bases for reliable averages.

TABLE 13.—QUANTITY OF WATER USED IN 1919.

Average volume of water entering canals	second-feet	550
Area irrigated in 1919	acres	12,685
Average number of acres per second-foot		23
Total quantity of water entering canals	acre-feet	50,859
Area irrigated in 1919	acres	12,720
Average quantity per acre	acre-feet	4.0
Total quantity of water delivered	acre-feet	13,089
Area irrigated in 1919	acres	5,189
Average quantity per acre	acre-feet	2.5

IRRIGATION WORKS.

TABLE 14.—IRRIGATION WORKS, CLASSIFIED BY DATE OF BEGINNING.

DATE OF BEGINNING.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.		Pipe lines, length (miles).	PUMPED WELLS.		PUMPING PLANTS.			
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).		Number.	Capacity (gallons per minute).	Number.	Engine capacity (horse-power).	Pumps. Number.	Pumps. Capacity (gallons per minute).
Total	63	17	84	1,205	68	50	18	16	20	0.4	1,089	1,470,147	1,041	58,332	1,121	1,654,097
1890-1899											8	9,400	7	460	8	6,400
1900-1904											3	4,200	3	185	3	4,200
1905-1909	1	1	9	67	15	1	2	3			90	196,650	79	4,547	80	144,450
1910-1914	13	4	37	210	29	20	10	6			389	499,100	371	29,036	398	591,200
1915-1919	49	12	36	916	21	29	6	6		0.4	459	633,655	462	26,744	476	692,005
Not reported			2	12	3			1	20		150	217,742	119	6,360	156	215,842

TABLE 15.—IRRIGATION WORKS, CLASSIFIED BY CHARACTER OF ENTERPRISE: 1920.

CLASS.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.		Pipe lines, length (miles).	PUMPED WELLS.		PUMPING PLANTS.			
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).		Number.	Capacity (gallons per minute).	Number.	Engine capacity (horse-power).	Pumps. Number.	Pumps. Capacity (gallons per minute).
Total	63	17	84	1,205	68	50	18	16	20	0.4	1,089	1,470,147	1,041	58,332	1,121	1,654,097
Individual and partnership	63	17	82	1,160	59	50	18	16	20	0.4	1,081	1,455,647	1,031	57,502	1,111	1,620,097
Cooperative											8	14,500	8	530	8	14,000
Commercial			2	45	9								2	300	2	20,000

TABLE 16.—IRRIGATION WORKS, CLASSIFIED BY DRAINAGE BASIN: 1920.

DRAINAGE BASIN.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.		Pipe lines, length (miles).	PUMPED WELLS.		PUMPING PLANTS.				
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).		Number.	Capacity (gallons per minute).	Number.	Engine capacity (horse-power).	Pumps. Number.	Pumps. Capacity (gallons per minute).	Average lift (feet).
Total	63	17	84	1,205	68	50	18	16	20	0.4	1,089	1,470,147	1,041	58,332	1,121	1,654,097	50
Red River											3	1,200	1		3	2,800	35
Ouachita River	1		1							0.4							
White River	62	14	58	1,067	49	40	11	5			626	820,368	564	30,537	633	858,688	50
Arkansas River		3	24	136	19	10	7	11	20		404	575,509	404	25,572	421	714,459	53
St. Francis River			1	2							56	73,050	52	2,223	64	78,450	31

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910.

[Per cent not shown when base is less than 100 or when per cent is more than 1,000.]

		THE STATE.	Arkansas.	Clay.[1]	Craighead.	Cross.	Jackson.[1]	Lawrence.[1]
1	Number of all farms in 1920	232,604	2,121	3,335	3,549	2,507	3,227	2,759
2	Number of farms reporting irrigation for rice growing in 1919	1,166	609	4	26	40	2	11
3	Per cent of all farms	0.5	28.7	0.1	0.7	1.6	0.1	0.4
4	Number of farms reporting irrigation for rice growing in 1909	232	102	.....	(2)	(2)	.....	.....
5	Per cent of increase, 1909-1919	402.6	497.1	.....	.....	.....	.....	.....
	LAND AND FARM AREA.							
6	Approximate land area ... acres	33,616,000	640,000	418,560	439,680	396,160	405,760	378,880
7	All land in farms ... acres	17,456,736	282,097	215,298	204,899	144,134	221,310	220,054
8	Improved land in farms ... acres	9,210,556	195,910	136,989	141,459	82,529	129,382	126,953
9	Area irrigated for rice growing in 1919 ... acres	143,946	76,511	345	3,190	3,410	810	889
10	Per cent of improved land in farms	1.6	39.1	0.2	2.3	4.1	0.6	0.7
11	Area irrigated for rice growing in 1909 ... acres	27,733	13,250	.....	100	60	.....	.....
12	Per cent of increase, 1909-1919	418.7	477.4	.....	.....	.....	.....	.....
13	Area enterprises were capable of irrigating in 1920 ... acres	179,913	89,546	905	5,047	4,655	875	2,145
14	Area enterprises were capable of irrigating in 1910 ... acres	47,138	29,240	.....	200	120	.....	.....
15	Per cent of increase, 1910-1920	279.8	342.4	.....	.....	.....	.....	.....
16	Area included in enterprises in 1920 ... acres	246,480	117,822	1,040	6,869	11,830	900	3,725
17	Area included in enterprises in 1910 ... acres	52,883	22,485	.....	260	120	.....	.....
18	Per cent of increase, 1910-1920	366.1	424.0	.....	.....	.....	.....	.....
	IRRIGATION WORKS.							
	Independent enterprises:							
19	Number, 1920	944	454	4	44	35	2	13
20	Number, 1910	310	127	.....	2	1	.....	.....
	Main ditches:							
21	Number, 1920	84	17	5	12	.....	1	17
22	Number, 1910	217	176	.....	2	.....	.....	.....
23	Length, 1920 ... miles	68	22	7	6	.....	1	11
24	Length, 1910 ... miles	131	73	.....	2	.....	.....	.....
25	Capacity, 1920 ... second-feet	1,205	166	15	820	.....	5	89
26	Capacity, 1910 ... second-feet	.....	.....	.....	.....	.....	.....	.....
	Laterals:							
27	Number, 1920	56	4	.....	.....	.....	.....	35
28	Number, 1910	.....	.....	.....	.....	.....	.....	.....
29	Length, 1920 ... miles	18	4	.....	.....	.....	.....	9
30	Length, 1910 ... miles	.....	.....	.....	.....	.....	.....	.....
	Reservoirs:							
31	Number, 1920	16	.....	.....	.....	.....	.....	2
32	Number, 1910	19	7	.....	1	.....	.....	.....
33	Capacity, 1920 ... acre-feet	29	.....	.....	.....	.....	.....	.....
34	Capacity, 1910 ... acre-feet	3	.....	.....	1	.....	.....	.....
	Pumped wells:							
35	Number, 1920	1,089	496	4	63	41	3	13
36	Number, 1910	367	119	.....	2	1	.....	.....
37	Capacity, 1920 ... gallons per minute	1,470,147	373,524	9,700	66,000	63,650	8,250	26,000
38	Capacity, 1910 ... gallons per minute	268,829	22,835	.....	13,500	1,200	.....	.....
	Pumping plants:							
39	Number, 1920	1,041	497	4	51	36	3	13
40	Number, 1910	315	128	.....	2	1	.....	.....
41	Engine capacity, 1920 ... horsepower	58,332	29,299	180	1,987	2,013	220	425
42	Engine capacity, 1910 ... horsepower	12,440	5,298	.....	50	40	.....	.....
43	Pump capacity, 1920 ... gallons per minute	1,654,697	749,974	9,000	67,500	61,350	5,250	25,200
44	Pump capacity, 1910 ... gallons per minute	436,492	173,205	.....	13,500	1,200	.....	.....
45	Average lift, 1920 ... feet	50	61	20	30	27	42	20
	CAPITAL INVESTED.							
46	Capital invested to Jan 1, 1920 ... dollars	7,183,322	3,492,301	47,414	140,375	174,628	43,000	47,950
47	Capital invested to July 1, 1910 ... dollars	597,834	89,219	.....	5,950	1,500	.....	.....
48	Per cent of increase, 1910-1920	.....	.....	.....	.....	.....	.....	.....
49	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	40.13	39.00	52.39	27.81	37.51	49.14	22.35
50	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	12.47	4.46	.....	29.75	12.50	.....	.....
	ESTIMATED FINAL COST.							
51	Estimated final cost of existing enterprises in 1920 ... dollars	7,283,322	3,564,791	47,414	140,375	174,628	43,000	48,450
52	Estimated final cost of existing enterprises in 1910 ... dollars	612,834	118,219	.....	5,950	1,500	.....	.....
53	Per cent of increase, 1910-1920	.....	.....	.....	.....	.....	.....	.....
54	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	29.55	30.26	45.59	20.44	14.76	47.78	13.01
55	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	11.59	5.12	.....	22.88	12.50	.....	.....

[1] No irrigation reported in 1909.

[2] Not shown in report for 1910.

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910—Continued.

[Per cent not shown when base is less than 100 or when per cent is more than 1,000.]

		Lonoke.	Monroe.[1]	Poinsett.	Prairie.	St. Francis.	Woodruff.	Other counties.
1	Number of all farms in 1920	5,596	3,305	2,257	2,413	4,386	2,853	194,096
2	Number of farms reporting irrigation for rice growing in 1919	166	3	77	165	26	18	19
3	Per cent of all farms	3.0	0.1	3.4	6.8	0.6	0.6	(2)
4	Number of farms reporting irrigation for rice growing in 1909	58	.....	16	35	9	5	7
5	Per cent of increase, 1909–1919	.....	.....	.....	.....	.....	.....	.....
	LAND AND FARM AREA.							
6	Approximate land area ... acres	516,480	385,920	461,440	423,680	401,920	369,280	28,378,240
7	All land in farms ... acres	320,088	150,929	127,124	238,994	190,175	163,395	14,979,243
8	Improved land in farms ... acres	217,981	101,215	78,191	153,830	133,540	104,386	7,588,191
9	Area irrigated for rice growing in 1919 ... acres	24,941	1,135	10,310	10,225	6,840	3,838	1,502
10	Per cent of improved land in farms	11.4	1.1	13.2	6.6	5.1	3.7	(2)
11	Area irrigated for rice growing in 1909 ... acres	7,223	.....	978	3,587	1,450	725	380
12	Per cent of increase, 1909–1919	245.3	.....	954.2	185.1	371.7	429.4	295.3
13	Area enterprises were capable of irrigating in 1920 ... acres	30,788	1,565	12,850	13,216	9,355	5,245	2,821
14	Area enterprises were capable of irrigating in 1910 ... acres	12,651	.....	1,975	6,045	2,720	1,230	1,955
15	Per cent of increase, 1910–1920	143.4	.....	550.6	118.6	243.9	326.4	44.3
16	Area included in enterprises in 1920 ... acres	34,502	2,733	26,578	16,900	10,490	9,915	3,176
17	Area included in enterprises in 1910 ... acres	14,335	.....	2,920	6,255	2,865	1,340	2,395
18	Per cent of increase, 1910–1920	140.7	.....	819.2	170.3	266.1	639.9	37.8
	IRRIGATION WORKS.							
	Independent enterprises:							
19	Number, 1920	145	6	197	70	28	30	6
20	Number, 1910	88	.....	23	37	14	11	7
	Main ditches:							
21	Number, 1920	24	2	2	.....	1	.....	3
22	Number, 1910	19	.....	4	10	5	4	3
23	Length, 1920 ... miles	16	.....	.....	.....	3	.....	2
24	Length, 1910 ... miles	13	.....	20	5	9	3	6
25	Capacity, 1920 ... second-feet	81	8	5	.....	12	.....	4
26	Capacity, 1910 ... second-feet	.....	.....	.....	.....	.....	.....	.....
	Laterals:							
27	Number, 1920	9	2	.....	.....	.....	.....	.....
28	Number, 1910	.....	.....	.....	.....	.....	.....	.....
29	Length, 1920 ... miles	5	.....	.....	.....	.....	.....	.....
30	Length, 1910 ... miles	.....	.....	.....	.....	.....	.....	.....
	Reservoirs:							
31	Number, 1920	14	.....	.....	.....	.....	.....	.....
32	Number, 1910	8	.....	2	.....	.....	.....	1
33	Capacity, 1920 ... acre-feet	20	.....	.....	.....	.....	.....	.....
34	Capacity, 1910 ... acre-feet	2	.....	.....	.....	.....	.....	.....
	Pumped wells:							
35	Number, 1920	149	8	128	79	58	38	9
36	Number, 1910	91	.....	24	39	15	12	4
37	Capacity, 1920 ... gallons per minute	272,850	11,400	108,600	92,415	104,358	59,200	14,200
38	Capacity, 1910 ... gallons per minute	121,745	.....	19,467	44,077	21,365	14,640	10,000
	Pumping plants:							
39	Number, 1920	152	7	117	77	46	31	7
40	Number, 1910	90	.....	24	38	13	12	7
41	Engine capacity, 1920 ... horsepower	9,745	330	4,997	4,431	3,175	1,445	385
42	Engine capacity, 1910 ... horsepower	3,530	.....	561	1,504	615	542	500
43	Pump capacity, 1920 ... gallons per minute	279,150	11,400	173,850	92,165	96,358	59,900	16,000
44	Pump capacity, 1910 ... gallons per minute	128,085	.....	21,160	46,077	21,365	14,640	15,570
45	Average lift, 1920 ... feet	43	73	33	39	33	45	23
	CAPITAL INVESTED.							
46	Capital invested to Jan. 1, 1920 ... dollars	1,272,693	76,674	404,158	787,275	425,414	192,550	78,800
47	Capital invested to July 1, 1910 ... dollars	230,714	.....	31,600	128,682	51,552	22,715	24,902
48	Per cent of increase, 1910–1920	451.6	.....	.....	511.9	725.2	747.7	216.4
49	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	41.34	48.99	31.45	59.57	45.47	36.71	27.93
50	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	18.24	.....	16.00	21.29	18.95	18.47	12.74
	ESTIMATED FINAL COST.							
51	Estimated final cost of existing enterprises in 1920 ... dollars	1,297,493	76,674	404,158	789,275	425,414	192,550	79,300
52	Estimated final cost of existing enterprises in 1910 ... dollars	230,714	.....	31,600	128,682	51,552	22,715	24,902
53	Per cent of increase, 1910–1920	462.4	.....	.....	513.4	725.2	747.7	218.4
54	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	37.61	28.05	15.21	46.70	40.55	19.42	24.97
55	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	16.09	.....	16.82	20.58	17.99	16.95	10.80

[1] No irrigation reported in 1909.

[2] Less than one-tenth of 1 per cent.

CALIFORNIA.

INTRODUCTION.

The following pages present the statistics of irrigation for the state of California collected at the census of 1920. Statistics of acreage irrigated, of acreage, yield, and value of crops grown on irrigated land, and of cost of operation and maintenance relate to the year 1919; other items relate to the year 1920. Throughout the report figures for the census of 1910 are given for purposes of comparison; and, for the purpose of showing the historical development of irrigation, items which have been reported in censuses previous to 1910 are presented.

Statistics of number of farms irrigated and of acreage, yield, and value of crops grown on irrigated land were collected in the general census of agriculture. All other statistics were obtained in a special canvass of irrigation enterprises.

TABLE 1.—SUMMARY FOR THE STATE: 1920 AND 1910.

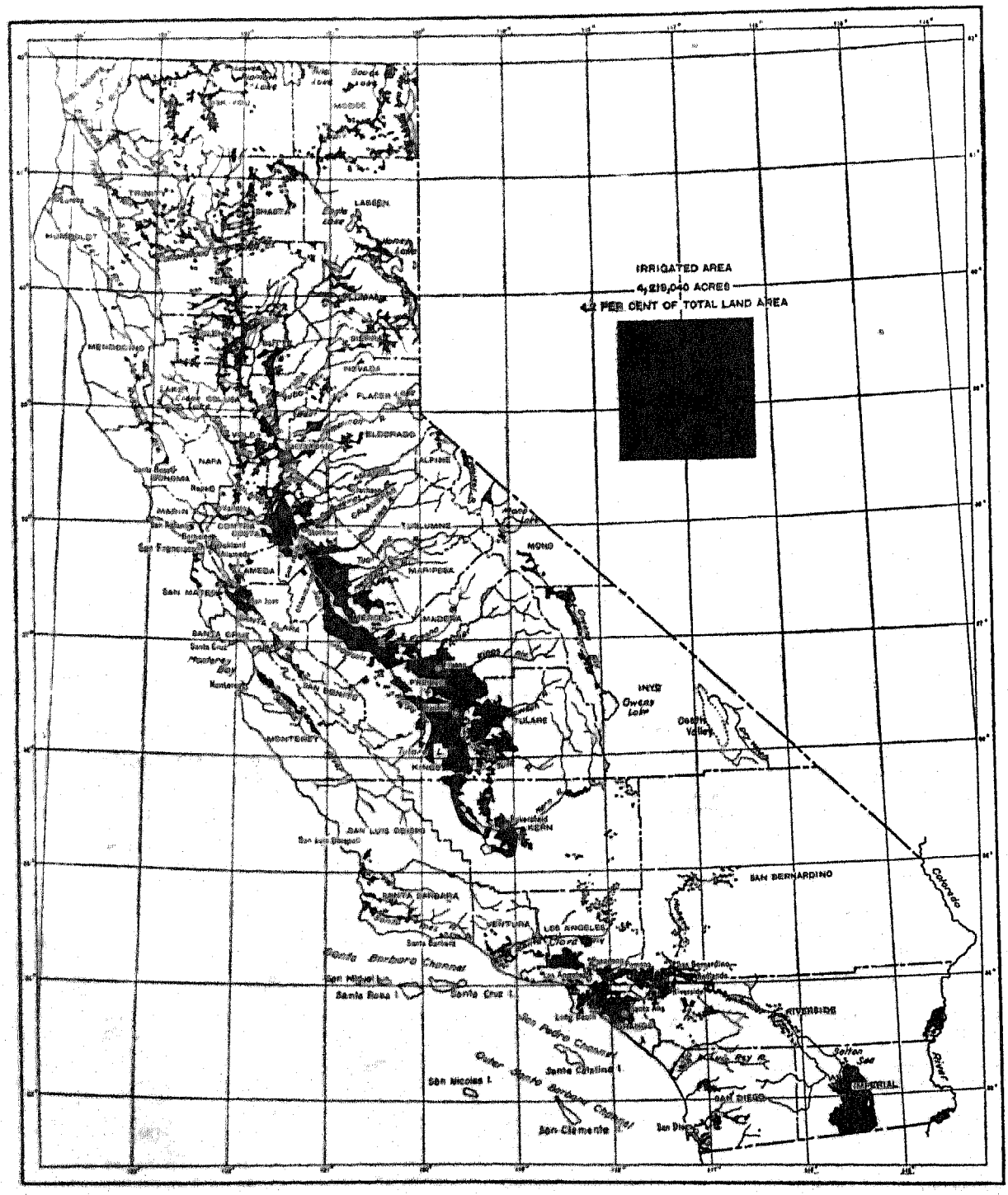
ITEM.	CENSUS OF—		INCREASE.[1]	
	1920	1910	Amount.	Per cent.
Number of all farms	117,670	88,197	29,473	33.4
Approximate land area of the state ... acres	99,617,280	99,617,280	.....	.....
All land in farms ... acres	29,365,667	27,931,444	1,434,223	5.1
Improved land in farms ... acres	11,878,339	11,389,894	488,445	4.3
Number of farms irrigated	67,391	39,352	28,039	71.3
Area irrigated ... acres	4,219,040	2,664,104	1,554,936	58.4
Area enterprises were capable of irrigating ... acres	5,894,466	3,619,378	2,275,088	62.9
Area included in enterprises ... acres	7,805,207	5,490,360	2,314,847	42.2
Per cent irrigated:				
Number of all farms	57.3	44.6	12.7	.....
Approximate land area of the state	4.2	2.7	1.5	.....
Land in farms	14.4	9.5	4.9	.....
Improved land in farms	35.5	23.4	12.1	.....
Excess of area enterprises were capable of irrigating over area irrigated ... acres	1,675,426	955,274	720,152	75.4
Excess of area included in enterprises over area irrigated ... acres	3,586,167	2,826,256	759,911	26.9
Area of irrigated land reported as available for settlement ... acres	533,981	(2)	.....	.....
Capital invested	$194,886,388	$72,580,030	$122,306,358	168.5
Average per acre enterprises were capable of irrigating	$33.06	$20.05	$13.01	64.9
Estimated final cost of existing enterprises	$225,799,123	$84,392,344	$141,406,779	167.6
Average per acre included in enterprises	$28.93	$15.37	$13.56	88.2
Average cost of operation and maintenance per acre	$4.40	$1.54	$2.86	185.7
IRRIGATION WORKS.				
Number of enterprises	24,115	13,970	10,145	72.6
Number of main ditches	6,040	8,590	−2,550	−29.7
Length of main ditches ... miles	14,437	12,620	1,817	14.4
Capacity of main ditches ... second-feet	115,237	89,597	25,640	28.6
Number of lateral ditches	9,190	6,143	3,047	49.6
Length of lateral ditches ... miles	12,947	8,509	4,438	52.2
Number of reservoirs	3,030	1,583	1,447	91.4
Capacity of reservoirs ... acre-feet	1,091,394	743,269	348,125	46.8
Number of flowing wells	1,415	2,361	−946	−40.1
Capacity of flowing wells ... gallons per minute	287,187	477,343	−190,156	−39.8
Number of pumped wells	25,401	10,724	14,677	136.9
Capacity of pumped wells ... gallons per minute	10,608,476	4,119,575	6,488,901	157.5
Number of pumping plants	21,561	9,297	12,264	131.9
Engine capacity ... horsepower	386,200	128,143	258,057	201.4
Pump capacity ... gallons per minute	16,773,692	5,276,298	11,497,394	217.9
Average lift ... feet	41	(2)	41	.....

[1] A minus sign (−) denotes decrease.

[2] Not reported in 1910.

CALIFORNIA

APPROXIMATE LOCATION AND EXTENT OF IRRIGATED LAND.



CLIMATIC CONDITIONS.

In California both the amount and the seasonal distribution of precipitation have an important influence on the necessity for irrigation. The state has a very wide range in amount of precipitation, the average annual amount reaching about 60 inches in the northwestern part of the state and only 2 or 3 inches in the southeastern part. Throughout the state there is a well-defined wet season during the winter months and an almost entire absence of rainfall in the summer months. The latter condition makes irrigation necessary for the growing of summer crops in some sections where the total precipitation would be sufficient if more evenly distributed throughout the year, while the concentration of the year's precipitation in a short period makes it possible to grow some crops, particularly grain, without irrigation where it would not be possible if the rainfall were distributed through the year.

That part of the state lying north of San Francisco Bay, except a part of the Sacramento Valley, receives more than 20 inches of precipitation annually, and crops are grown both with and without irrigation, while the part of the state south of San Francisco Bay, except in the high mountains, receives less than 20 inches, and irrigation is generally practiced, although some crops are grown without it.

In Sacramento Valley the average annual precipitation is between 15 and 20 inches, but practically all of this occurs in the winter. Grain crops are generally grown without irrigation, and alfalfa, rice, and orchards are irrigated.

In San Joaquin Valley the average annual precipitation is from 5 to 14 inches, and here most crops except grain are generally irrigated; while there are large areas of irrigated grain.

In the southeastern part of the state desert conditions are found, the average annual precipitation being from 2 to 5 inches, and no crops can be grown without irrigation.

Along the coast of southern California the precipitation is from 15 to 20 inches, and crops are quite generally grown both with and without irrigation.

In the Sierra Nevada Mountains the snowfall in the winter is very heavy, and this maintains a good summer flow in most of the streams.

The summer of 1919 was one of the driest on record and in some sections, especially in the San Joaquin Valley, this occasioned a shortage of water for irrigation.

WATER SUPPLY FOR IRRIGATION.

In northern California, except the Sacramento Valley, the supply of water available for irrigation is limited, and the area irrigated is small.

In the Sacramento Valley water is taken from the Sacramento and its tributaries, and while there is a shortage at times there is a very large supply of flood water available for storage.

In the San Joaquin Valley, where the larger part of the irrigated land of the state is located, the water supply comes principally from San Joaquin River and its tributaries from the east which rise in the high Sierras. These rivers carry large volumes of water during the rainy season and in the early summer when the snow in the mountains is melting, but have a low discharge in the summer, so that there is usually a shortage of water in this season. While some storage has been provided, there is opportunity for much more, and efforts are being made to have the owners of existing enterprises combine to build reservoirs and coordinate their canal systems in such a way as to save the flood waters and make the largest use of them. Natural overflow and seepage from irrigation have brought the ground water near the surface in many places, and during recent years many wells have been sunk and water is pumped from them to supplement the supply from streams when they are low. There is opportunity for a large extension of irrigation from this source as well as from the storage of flood waters. In 1919 the water supply in this section was unusually short, and much land usually irrigated was not watered.

In the coast region of southern California there are many short streams rising in the coast range and discharging into the Pacific. In some sections there is little opportunity for storage, and a large part of the water goes unused. In this section, as well as in other parts of the state, there are many wells, both flowing and pumped. The heavy draft on the underground supplies has lowered the ground water to such an extent that many wells that once flowed are now pumped, and the lift in pumped wells has greatly increased. This condition is being remedied to some extent by spreading the flood waters over the gravelly lands where the streams emerge from the mountains, so that some of the water will find its way into the underground supply rather than waste down the stream channels.

Similar work is proposed for the Coachella Valley, in southeastern California, where small areas are watered from wells.

Imperial Valley is supplied from Colorado River. Although the water supply in the river is usually sufficient there is sometimes difficulty in getting the water from the river into the canal because of silting. Plans for storage and for relocating the canal are under discussion. A large area of land in this valley is available for cultivation and a large quantity of water is available for storage. There are other opportunities in California to use water from Colorado River, where it forms the boundary between California and Arizona, and some land has been irrigated. Here, as in the Imperial Valley, the water supply is ample if storage is provided for the surplus flood waters.

Colorado River extends into or borders seven states, and there are conflicting claims as to the use of its waters that are delaying the construction of reservoirs. Attempts are being made to settle these conflicts through a compact between the states. Such a compact has been authorized by Congress.

FARMS AND ACREAGE IRRIGATED.

TABLE 2.—NUMBER OF FARMS AND ACREAGE IRRIGATED: 1890 TO 1920.

CENSUS YEAR.	FARMS IRRIGATED			AREA IRRIGATED.				
	Number.	Per cent of increase.	Per cent of all farms.	Acres.	Per cent of increase.	Per cent of total land area.	Per cent of land in farms.	Per cent of improved land in farms.
1920	67,391	71.3	37.3	4,219,040	58.4	4.2	14.4	35.5
1910	39,332	53.2	44.6	2,664,104	84.2	2.7	9.5	23.4
1900	25,675	57.9	35.4	1,446,114	44.0	1.5	5.0	12.1
1890	15,732	.....	20.0	1,004,253	.....	1.0	4.7	8.2

TABLE 3.—ACREAGE, CLASSIFIED BY DATE OF BEGINNING OF ENTERPRISES SUPPLYING WATER FOR IRRIGATION.

DATE OF BEGINNING.	Number of enterprises.	Area included in enterprises, 1920 (acres).	AREA IRRIGATED IN 1919.		Area enterprises were capable of irrigating in 1920 (acres).
			Acres.	Per cent of acreage in enterprises.	
Total	24,115	7,805,267	4,219,040	54.1	5,894,466
Before 1860	258	219,261	108,209	49.3	134,969
1860-1869	338	152,858	88,485	57.9	116,015
1870-1879	519	1,903,946	1,039,552	53.0	1,573,635
1880-1889	941	573,569	347,055	60.6	392,478
1890-1899	788	757,611	404,133	53.3	625,592
1900-1904	1,195	628,448	456,201	72.6	558,366
1905-1909	1,554	498,171	290,026	58.2	359,131
1910-1914	6,792	1,356,209	649,375	47.9	925,067
1915-1919	7,573	1,229,576	541,506	44.4	849,319
Not reported	4,277	435,237	292,963	67.3	356,874

TABLE 4.—ACREAGE, CLASSIFIED BY SOURCE OF WATER SUPPLY: 1919 AND 1909.

CLASS.	AREA IRRIGATED (ACRES).				Area enterprises were capable of irrigating in 1920 (acres).	Area included in enterprises, 1920 (acres).
	1919	1909	Increase.[1]			
			Amount.	Per cent.		
Total	4,219,040	2,664,104	1,554,936	58.4	5,894,466	7,805,267
Streams, gravity	2,564,446	2,216,787	347,659	15.7	3,627,290	4,499,148
Streams, pumped	295,673	29,965	265,708	886.7	480,926	664,287
Streams, pumped and gravity	60,278	(2)	60,278	.....	62,913	84,768
Wells, pumped	826,846	276,595	550,251	198.9	1,068,229	1,488,213
Wells, flowing	17,653	74,126	−56,473	−76.2	21,826	24,739
Wells, flowing and pumped	23,561	(2)	23,561	.....	27,318	57,788
Lakes, gravity	48,084	15,896	32,188	202.5	48,321	159,827
Lakes, pumped	4,158	2,574	1,584	61.9	4,429	14,067
Springs	27,698	31,779	−4,081	−12.8	36,285	56,227
Stored storm water	28,351	19,410	8,941	24.0	29,681	38,846
City water	515	(2)	515	.....	877	887
Sewage	1,385	(2)	1,385	.....	1,398	2,189
Streams, gravity, and pumped wells	87,897	(2)	87,897	.....	99,277	127,691
Streams, gravity, and flowing wells	4,255	(2)	4,255	.....	5,114	5,686
Other mixed	228,424	(2)	228,424	.....	371,033	560,304
Other and not reported	7,897	(2)	7,897	.....	9,549	19,820

[1] A minus sign (−) denotes decrease. [2] Not included in classification in 1909.

ACREAGE, BY CHARACTER OF ENTERPRISE.

California was the first state to enact an irrigation district law containing the provision for issuing bonds that are a lien on the lands within the districts. The so-called "Wright Act," containing this provision, was enacted in 1887, and has served as a basis for practically all irrigation district legislation in the United States. Many districts were organized under this act, only a few of which, however, have survived to the present time.

Prior to the enactment of the Wright Act there were some districts created by special act, and there was a special law providing for the organization of districts, without the bonding power, in Los Angeles County.

The Wright Act was amended and reenacted in 1897, the new law being known as the "Bridgeford Act." This law has been amended in various particulars by almost every legislature since its passage, but is still in force.

In 1915 there was enacted a law creating a State Irrigation Board, which was empowered to organize "water districts" under state supervision, rather than county supervision, as was done under the older laws, but this law has been declared unconstitutional by the state supreme court.

Many irrigation districts in California have been organized to build irrigation works, and some have taken over works built by other agencies. The lands in the Imperial Valley have been organized into an irrigation district, which controls the diversion works and the main canal, while mutual companies control the distributing canals. This land is reported under "Cooperative" in Table 5.

California accepted the conditions of the Federal Carey Act (act of Aug. 18, 1894) in 1915, providing for a "Carey Act Commission" and for the organization of "state irrigation districts" to reclaim Carey Act lands. However, no land is reported as irrigated under this law.

In 1917 California enacted a "land settlement" law, providing for the building of irrigation works and other improvements, including dwellings, etc., by the state, and the sale of the farms created on long-time and easy terms to settlers. Only one enterprise had advanced far enough to be reported in the Fourteenth Census, and this appears under "State" in Table 5. Other projects have been begun.

Most of the cooperative enterprises reported in Table 5 are mutual water companies supplying water to members only.

Commercial companies in California are subject to control by the state railroad commission as to rates charged and conditions of service.

TABLE 5.—ACREAGE, CLASSIFIED BY CHARACTER OF ENTERPRISE: 1920 AND 1910.

ITEM AND CLASS.	CENSUS OF—		INCREASE.[1]	
	1920	1910	Acres.	Per cent.
ACREAGE IRRIGATED.				
Total	4,219,040	2,664,104	1,554,936	58.4
Individual and partnership	1,502,870	961,136	541,734	56.4
Cooperative	1,215,696	779,020	436,676	56.1
Irrigation district	577,168	173,793	403,375	232.1
Commercial	873,499	746,265	127,234	17.0
U. S. Reclamation Service	36,622	400	36,222	.....
U. S. Indian Service	697	3,490	−2,793	−80.0
State	2,936	(2)	2,936	.....
City	6,213	(2)	6,213	.....
Other	3,064	(2)	3,064	.....
Not reported	275	(2)	275	.....
ACREAGE ENTERPRISES WERE CAPABLE OF IRRIGATING.				
Total	5,894,466	3,619,378	2,275,088	62.9
Individual and partnership	1,919,663	1,131,951	787,712	69.6
Cooperative	1,705,647	984,570	721,077	73.2
Irrigation district	899,785	294,108	605,677	205.9
Commercial	1,307,968	1,204,059	103,909	8.6
U. S. Reclamation Service	42,805	1,200	41,605	.....
U. S. Indian Service	986	3,490	−2,504	−71.7
State	4,210	(2)	4,210	.....
City	9,073	(2)	9,073	.....
Other	4,054	(2)	4,054	.....
Not reported	275	(2)	275	.....
ACREAGE INCLUDED IN ENTERPRISES.				
Total	7,805,207	5,490,360	2,314,847	42.2
Individual and partnership	2,698,798	1,512,511	1,186,287	78.4
Cooperative	2,148,711	1,388,435	760,276	54.8
Irrigation district	1,101,220	606,351	494,869	81.6
Commercial	1,778,135	1,965,063	−186,928	−9.5
U. S. Reclamation Service	47,669	14,200	33,469	235.7
U. S. Indian Service	5,252	3,800	1,452	38.2
State	6,259	(2)	6,259	.....
City	10,645	(2)	10,645	.....
Other	8,168	(2)	8,168	.....
Not reported	350	(2)	350	.....

[1] A minus sign (—) denotes decrease. Per cent not shown when more than 1,000.
[2] Not included in classification in 1910.

ACREAGE, BY CHARACTER OF WATER RIGHTS.

The laws of California relating to water rights are summarized in the following paragraphs:

In 1850 California adopted the common law of England, but without specific mention of water rights.

The first legislation in California relating to water rights was the act of 1872. This act provided that rights to water "flowing in a river or stream or down a canyon or ravine may be acquired by appropriation in the manner provided by law"; that the appropriation must be for some useful or beneficial purpose; that as between appropriators the "first in time is the first in right"; and that the appropriator must post a notice at the point of intended diversion and file a copy in the county records. This law was in effect until 1913.

The constitution of the state, adopted in 1879, contained the following section relating to water rights: "The use of all waters now appropriated, or that may hereafter be appropriated, for sale, rental, or distribution is hereby declared to be a public use, and subject to the regulation and control of the state, in the manner to be prescribed by law." (Art. XIV.)

While the constitution and laws provide for rights being acquired by appropriation, the courts of the state have recognized riparian rights under the law of 1850 referred to above. (Lux *v.* Haggins, 69 Cal., 255.)

In 1913 California adopted a new system of public control of the use of water and attempted to eliminate the conflict between riparian rights and right by appropriation by providing that owners of riparian lands must put water to use in order to retain their rights. The section of the law relating to this point is as follows: "Section 11. All water or the use of water which has never been appropriated, or which has been heretofore appropriated and which has not been in process, from the date of the initial act of appropriation, of being put, with due diligence in proportion to the magnitude of the work necessary properly to utilize for the purpose of such appropriation such water or the use of water, or which has not been put, or which has ceased to be put to some useful or beneficial purpose, or which may hereafter be appropriated and cease to be put, to the useful or beneficial purpose for which it was appropriated, or which in the future may be appropriated and not be, in the process of being put, from the date of the initial act of the appropriation, to the useful or beneficial purpose for which it was appropriated, with due diligence in proportion to the magnitude of the work necessary properly to utilize for the purpose of such appropriation, such water or the use of water, is hereby declared to be unappropriated. And all waters flowing in any river, stream, canyon, ravine, or other natural channel, excepting so far as such waters have been or are being applied to useful and beneficial purpose upon, or in so far as such waters are or may be reasonably needed for useful, and beneficial purposes upon lands riparian thereto, or otherwise appropriated, is and are hereby declared to be public waters of the state of California and subject to appropriation in accordance with the provisions of the act. If any portion of the waters of any stream shall not be put to a useful or beneficial purpose to or upon lands riparian to such stream for any continuous period of 10 consecutive years after the passage of this act, such nonapplication shall be deemed to be conclusive presumption that the use of such portions of the waters of such stream is not needed upon said riparian lands for any useful or beneficial purpose; and such portion of the waters of any stream so nonapplied, unless otherwise appropriated for a useful or beneficial purpose, is hereby declared to be in the use of the state and subject to appropriation in accordance with the provisions of this act."

The new law created a water commission, and provided that parties wishing to take water should apply to the water commission for permission to do so, and that the commission should issue licenses on completion of the works in accordance with the permits.

The law of 1913 provided also for the preparation by the commission of findings regarding rights to water, which were to be filed with the courts and were to serve as bases for adjudications of water rights. This part of the law was amended in 1917, changing the procedure and providing that the findings of the commission shall be filed with the courts, and shall be issued as decrees by the courts, after hearings and such changes as the courts may make. After a decree is rendered the commission is to issue to each claimant a certificate setting forth his rights as determined by the court.

An act of 1917 provided that after three years' nonuse of water for the purpose for which it was appropriated or adjudicated "such unused water shall revert to the public and shall be regarded as unappropriated public water."

The portion of the law of 1913 relating to the acquiring of rights is in operation, but the commission is delaying any action for adjudication of rights until the expiration of 10 years from the passage of the act, when rights attaching to riparian lands but not utilized will have expired under the terms of the act.

TABLE 6.—ACREAGE IRRIGATED, CLASSIFIED BY CHARACTER OF RIGHTS UNDER WHICH WATER IS RECEIVED: 1919 AND 1909.

CLASS.	1919		1909, per cent of total.
	Acres.	Per cent of total.	
Total	4,219,040	100.0	100.0
Appropriation and use	479,361	11.4	47.3
Notice filed and posted	704,608	16.7	16.6
Adjudicated by court	982,157	23.3	28.0
Permit from state	80,484	1.9	(1)
Certificate or license from state	23,484	0.6	(1)
Riparian rights	240,512	5.7	8.2
Underground	863,613	20.5	(2)
Other and mixed	396,703	9.4	(2)
Not reported	448,118	10.6	(2)

[1] No provision for permits or licenses from state in 1909.
[2] All land for which the class of water rights was not reported was included in "Appropriation and use."

ACREAGE, BY DRAINAGE BASIN.

The report of a special census taken in 1902 presented all data by drainage basins rather than by counties. The results of the census of 1920 have been tabulated on the same basis, and the data for 1902 are presented for purposes of comparison. For no other census have the results been tabulated in this form. The acreage reported for each drainage basin in 1919 comprises all the irrigated land in that drainage basin, including that watered from springs and wells. In the 1902 results the acreages irrigated from springs and wells were not reported for the smaller tributary streams, but the acreages for the tributaries were included in those reported for the main streams. This area is so small, however, that the comparison of the areas reported for the tributary streams is not seriously affected.

TABLE 7.—ACREAGE IRRIGATED, CLASSIFIED BY DRAINAGE BASIN: 1919 AND 1902.

DRAINAGE BASIN.	AREA IRRIGATED (ACRES).			Area included in enterprises, 1920 (acres).	Area enterprises were capable of irrigating in 1920 (acres).
	1919	1902	Per cent of increase.[1]		
Total	4,219,040	1,706,720	146.9	7,805,267	5,894,466
Colorado River	447,384	10,000	.....	621,615	494,975
Independent streams, northern California	139,861	125,779	11.2	229,336	193,255
Carson River	4,439	4,663	−4.8	7,027	4,819
Long Valley Creek	12,543	4,000	206.9	18,840	15,951
Mono Lake and tributaries	4,190	3,818	9.7	78,377	45,760
Susan River	31,784	23,533	35.1	36,225	33,213
Walker River	39,261	52,975	−25.9	42,295	40,355
Other independent streams	47,624	[2] 36,710	29.7	84,372	53,057
Independent streams, southern California	200,818	59,358	238.3	346,831	267,998
Mohave River	4,608	540	753.3	21,523	6,530
Owens River	144,024	51,902	177.5	260,147	182,748
San Jacinto River	20,809	5,040	314.1	34,974	22,263
Whitewater River	14,843	(2)	.....	37,604	22,282
Other independent streams	16,674	[2] 1,876	788.8	52,583	24,135
Pacific Ocean streams north of San Francisco Bay	66,901	56,272	17.3	146,070	85,098
Klamath River	62,555	52,769	18.6	122,853	70,275
Russian River	3,945	314	862.7	12,475	4,200
Other Pacific Ocean streams north of San Francisco Bay	421	[2] 3,249	−87.0	10,742	10,623
Pacific Ocean streams south of San Francisco Bay	543,285	279,549	94.4	931,490	692,847
Pajaro River	19,771	14,157	39.7	33,620	25,769
Salinas River	48,097	10,604	353.6	60,969	37,456
Santa Maria River	9,625	1,544	523.3	22,860	20,460
Santa Ynez River	3,491	1,493	133.8	10,062	8,645
Santa Clara River	28,270	14,214	98.9	43,205	30,216
Los Angeles River	59,672	5,319	.....	82,057	73,606
San Gabriel River	127,146	33,766	276.6	161,757	145,622
Santa Ana River	185,366	70,492	163.2	281,630	218,735
San Diego River	8,812	5,136	71.5	14,039	10,799
Other Pacific Ocean streams south of San Francisco Bay	53,305	[2] 122,930	−56.4	120,628	71,149
Sacramento River and tributaries	640,950	206,312	210.7	1,204,769	864,605
Sacramento River direct	194,397	10,942	.....	439,249	298,748
Pit River	89,984	72,672	24.9	129,984	107,478
Cow Creek	6,468	2,321	161.4	12,488	7,445
Cottonwood Creek	2,572	1,608	60.0	21,016	4,112
Battle Creek	3,966	2,042	12.3	6,300	5,168
Stony Creek	26,509	4,110	675.2	45,143	36,191
Feather River	142,841	67,111	112.8	196,726	167,463
Yuba River	19,473	(2)	.....	69,674	23,492
Cache Creek	24,541	3,736	556.4	35,498	31,212
American River	47,156	10,112	366.3	82,605	52,842
Other tributaries of Sacramento River	66,993	[2] 31,388	177.2	155,396	122,513

[1] A minus sign (−) denotes decrease. Per cent not shown when more than 1,000.
[2] Includes springs and wells. [3] Not reported separately in 1902.

TABLE 7.—ACREAGE IRRIGATED, CLASSIFIED BY DRAINAGE BASIN: 1919 AND 1902—Continued.

DRAINAGE BASIN.	AREA IRRIGATED (ACRES).			Area included in enterprises, 1920 (acres).	Area enterprises were capable of irrigating in 1920 (acres).
	1919	1902	Per cent of increase.[1]		
San Joaquin River and tributaries	2,165,694	932,931	125.5	4,294,966	3,248,919
San Joaquin River direct	642,261	129,647	395.4	1,083,862	873,300
Kern River	200,641	116,189	72.7	432,481	299,665
Tulare Lake	70,134	(2)	.....	204,860	147,444
Tule River	61,223	(2)	.....	175,777	109,412
Kaweah River	149,932	(2)	.....	356,703	299,474
Kings River	552,601	596,091	−7.3	1,052,406	895,263
Fresno River	12,414	10,729	15.7	30,004	14,016
Merced River	65,151	19,636	231.8	222,715	71,709
Tuolumne River	165,533	(2)	.....	298,418	250,425
Stanislaus River	75,359	13,840	444.5	155,453	111,192
Calaveras River	13,323	(2)	.....	21,598	16,489
Mokelumne River	36,848	5,558	563.0	155,480	72,144
Cosumnes River	3,259	(2)	.....	9,011	6,405
Other tributaries of San Joaquin River	55,015	[3] 41,241	33.4	96,198	81,981
Tributaries of San Francisco Bay, other than Sacramento and San Joaquin Rivers	76,947	38,549	99.6	100,730	86,779
Coyote Creek	25,092	8,483	195.8	30,979	26,526
Guadalupe River	29,248	6,547	346.7	34,549	31,008
Other tributaries of San Francisco Bay	22,607	[3] 23,519	−3.9	35,202	29,245

[1] A minus sign (−) denotes decrease.
[2] Not reported separately in 1902.
[3] Includes springs and wells.

CAPITAL INVESTED AND COST OF OPERATION AND MAINTENANCE.

TABLE 8.—CAPITAL INVESTED IN IRRIGATION ENTERPRISES: 1890 TO 1920.

CENSUS YEAR.	Amount.	Per cent of increase.	AVERAGE PER ACRE.	
			Amount.	Per cent of increase.
1920	$194,886,388	168.5	$33.06	64.9
1910	72,580,030	278.4	20.05	51.1
1900	19,181,610	47.5	13.27	2.5
1890	13,004,817	.....	12.95	.....

TABLE 9.—CAPITAL INVESTED, 1920, AND COST OF OPERATION AND MAINTENANCE, 1919, CLASSIFIED BY SOURCE OF WATER SUPPLY.

[When water is pumped, cost of operation and maintenance includes cost of fuel and attendance.]

CLASS.	CAPITAL INVESTED, 1920.			OPERATION AND MAINTENANCE, 1919.	
	Amount.	Per cent of total.	Average per acre.	Area for which cost is reported (acres).	Average cost per acre.[1]
Total	$194,886,388	100.0	$33.06	3,714,361	$4.40
Streams, gravity	78,139,147	40.1	21.54	2,275,082	2.06
Streams, pumped	16,267,561	8.3	33.83	267,826	5.10
Streams, pumped and gravity	3,084,098	1.6	49.02	60,137	1.93
Wells, pumped	54,057,185	27.7	50.60	724,593	10.40
Wells, flowing	807,353	0.4	36.99	4,341	5.91
Wells, flowing and pumped	1,776,156	0.9	65.02	20,426	7.63
Lakes, pumped	90,081	(2)	20.34	3,783	1.66
Lakes, gravity	674,320	0.3	13.96	41,962	0.39
Springs	1,298,308	0.7	35.78	21,635	2.21
Stored storm water	6,593,659	3.4	222.15	18,963	4.25
City water	61,655	(2)	69.62	58	24.05
Sewage	59,959	(2)	42.89	1,286	11.25
Streams, gravity, and pumped wells	10,001,650	5.1	100.74	67,779	15.62
Streams, gravity, and flowing wells	1,264,530	0.6	247.27	1,860	28.93
Other mixed	19,906,271	10.2	53.65	196,886	5.36
Other and not reported	805,115	0.4	84.31	7,744	16.13

[1] Based on area irrigated in 1919. [2] Less than one-tenth of 1 per cent.

TABLE 10.—CAPITAL INVESTED, CLASSIFIED BY DATE OF BEGINNING.

DATE OF BEGINNING.	Amount.	Per cent of total.	Average per acre.
Total	$194,886,388	100.0	$33.06
Before 1860	6,802,109	3.5	50.40
1860-1869	2,589,615	1.3	22.32
1870-1879	16,475,201	8.5	10.47
1880-1889	19,046,449	9.8	48.53
1890-1899	31,330,191	16.1	50.08
1900-1904	19,106,308	9.8	34.22
1905-1909	15,252,978	7.8	42.47
1910-1914	41,765,878	21.4	45.00
1915-1919	32,996,398	16.9	38.85
Not reported	9,521,261	4.9	26.68

TABLE 11.—CAPITAL INVESTED, CLASSIFIED BY DRAINAGE BASIN: 1920 AND 1902.

DRAINAGE BASIN.	1920	1902	INCREASE.[1]	
			Amount.	Per cent.
Total	$194,886,388	$23,772,157	$171,114,231	719.8
Colorado River	14,833,041	500,000	14,333,041	.....
Independent streams, northern California	6,257,200	629,548	5,627,652	893.9
Carson River	40,385	22,939	17,446	76.1
Long Valley Creek	171,642	16,345	155,297	950.1
Mono Lake and tributaries	5,363,858	15,200	5,348,658	.....
Susan River	242,426	203,205	39,221	19.3
Walker River	37,575	196,445	−158,870	−80.9
Other independent streams	401,314	[2] 175,414	225,900	128.8
Independent streams, southern California	12,493,213	1,354,970	11,138,243	.....
Mohave River	616,769	114,800	501,969	437.3
Owens River	5,785,132	408,875	5,376,257	.....
San Jacinto River	2,139,257	775,000	1,364,257	176.0
Whitewater River	2,242,944	([3])	2,242,944	.....
Other independent streams	1,709,111	[2] 56,295	1,652,816	.....
Pacific Ocean streams north of San Francisco Bay	2,378,513	304,952	2,073,561	680.0
Klamath River	1,690,958	281,896	1,409,062	499.9
Russian River	162,630	2,463	160,167	.....
Other Pacific Ocean streams north of San Francisco Bay	524,925	[2] 20,593	504,332	.....
Pacific Ocean streams south of San Francisco Bay	53,456,601	9,509,767	43,946,834	462.1
Pajaro River	1,248,343	168,593	1,079,750	640.4
Salinas River	2,570,331	101,960	2,468,371	.....
Santa Maria River	573,194	32,380	540,814	.....
Santa Ynez River	284,037	33,745	250,292	741.7
Santa Clara River	2,211,473	374,151	1,837,322	491.1
Los Angeles River	5,508,490	309,611	5,198,789	.....
San Gabriel River	12,862,319	772,597	12,089,722	.....
Santa Ana River	19,918,550	1,919,531	17,999,019	937.7
San Diego River	1,789,124	32,100	1,757,024	.....
Other Pacific Ocean streams south of San Francisco Bay	6,490,830	[2] 5,765,099	725,731	12.6
Sacramento River and tributaries	28,833,106	1,882,227	26,950,879	.....
Sacramento River direct	11,830,374	49,368	11,781,006	.....
Pit River	799,913	274,671	525,242	191.2
Cow Creek	126,946	15,246	111,700	732.7
Cottonwood Creek	573,601	124,473	449,128	360.8
Battle Creek	95,139	34,796	60,343	173.4
Stony Creek	1,539,614	42,250	1,497,364	.....
Feather River	3,937,380	869,841	3,067,539	352.7
Yuba River	2,518,770	([3])	2,518,770	.....
Cache Creek	916,477	28,115	888,362	.....
American River	2,890,114	112,758	2,777,356	.....
Other tributaries of Sacramento River	3,604,778	[2] 330,709	3,274,069	990.0
San Joaquin River and tributaries	71,694,653	9,103,242	62,591,411	687.6
San Joaquin River direct	9,224,164	1,504,238	7,719,926	513.2
Kern River	17,573,637	796,340	16,777,297	.....
Tulare Lake	3,910,620	([3])	3,910,620	.....
Tule River	2,842,495	([3])	2,842,495	.....
Kaweah River	6,186,840	([3])	6,186,840	.....
Kings River	8,145,446	2,976,688	5,168,758	173.6
Fresno River	415,385	400,514	14,871	3.7
Merced River	3,812,235	1,542,834	2,269,401	147.1
Tuolumne River	7,173,802	([3])	7,173,802	.....
Stanislaus River	7,840,486	968,964	6,871,522	709.2
Calaveras River	818,995	([3])	818,995	.....
Mokelumne River	1,675,137	305,239	1,369,898	448.8
Cosumnes River	153,899	([3])	153,899	.....
Other tributaries of San Joaquin River	1,921,512	[2] 608,425	1,313,087	215.8
Tributaries of San Francisco Bay, other than Sacramento and San Joaquin Rivers	4,940,061	487,451	4,452,610	913.4
Coyote Creek	1,453,138	43,345	1,409,793	.....
Guadalupe River	1,883,049	75,795	1,807,254	.....
Other tributaries of San Francisco Bay	1,603,874	[2] 368,311	1,235,563	335.5

[1] A minus sign (−) denotes decrease. Per cent not shown when more than 1,000.
[2] Includes springs and wells. [3] Not reported separately in 1902.

TABLE 12.—CAPITAL INVESTED, 1920, AND COST OF OPERATION AND MAINTENANCE, 1919, CLASSIFIED BY CHARACTER OF ENTERPRISE.

[When water is pumped, cost of operation and maintenance includes cost of fuel and attendance.]

CLASS.	CAPITAL INVESTED, 1920.		OPERATION AND MAINTENANCE, 1919.	
	Amount.	Per cent of total.	Area for which cost is reported (acres).	Average cost per acre.[1]
Total	$194,886,388	100.0	3,714,361	$4.46
Individual and partnership	57,616,716	29.6	1,135,770	6.28
Cooperative	48,899,448	25.1	1,074,361	4.45
Irrigation district	33,985,301	17.4	566,654	3.42
Commercial	44,996,723	23.1	854,574	2.39
U. S. Reclamation Service	2,398,220	1.2	25,300	1.56
U. S. Indian Service	55,556	([2])	423	4.96
State	224,909	0.1	191	17.54
City	1,401,320	0.7	4,026	19.52
Other	5,277,490	2.7	3,062	6.14
Not reported	30,705	([2])	.....	.....

[1] Based on area irrigated in 1919. [2] Less than one-tenth of 1 per cent.

DRAINAGE OF IRRIGATED LAND.

The acreages reported in Table 13 relate to lands within the boundaries of irrigation projects, and do not include lands within the vicinity of these projects. "Additional acreage needing drainage" includes all lands so reported by the owners of the enterprises, and includes lands producing partial crops as well as those wholly unproductive.

TABLE 13.—ACREAGE WITHIN IRRIGATION ENTERPRISES FOR WHICH DRAINS HAVE BEEN INSTALLED AND ADDITIONAL ACREAGE IN NEED OF DRAINAGE: 1920.

Number of enterprises reporting land drained or needing drainage	545
Acreage included in enterprises reporting land drained or needing drainage	1,623,330
Acreage for which drains have been installed	319,573
Additional acreage needing drainage	409,933
Per cent that acreage for which drains have been installed is of total acreage included in enterprises reporting drainage	19.7
Per cent that acreage for which drains have been installed is of total acreage included in irrigation enterprises in the state	4.1
Per cent that acreage for which drains have been installed plus that needing drainage is of total acreage included in irrigation enterprises in the state	9.3

QUANTITY OF WATER USED.

The quantity of water used in 1919 was reported on only part of the irrigation schedules, and the figures given vary greatly. In order that proper values may be assigned to the figures given, those representing measurements and those representing estimates are reported separately in Table 14. While the data are incomplete, the reports represent sufficient acreages to serve as bases for reliable averages.

TABLE 14.—QUANTITY OF WATER USED IN 1919.

ITEM.	Total.	Measured.	Not measured.
Average volume of water entering canals, second-feet	29,110	13,190	15,920
Area irrigated in 1919 ... acres	1,511,038	1,137,205	373,833
Average number of acres per second-foot	52	86	23
Total quantity of water entering canals, acre-feet	14,793,933	10,581,929	4,212,004
Area irrigated in 1919 ... acres	2,167,485	1,785,976	381,509
Average quantity per acre ... acre-feet	6.8	5.9	11.0
Total quantity of water delivered ... acre-feet	3,409,367	1,627,316	1,782,051
Area irrigated in 1919 ... acres	1,438,699	751,327	687,372
Average quantity per acre ... acre-feet	2.4	2.2	2.6

IRRIGATION WORKS.

TABLE 15.—IRRIGATION WORKS, CLASSIFIED BY DATE OF BEGINNING.

DATE OF BEGINNING.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.	
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).
Total	2,070	435	6,040	115,237	14,437	9,190	12,947	3,030	1,091,394
Before 1860	187	63	339	4,672	2,263	438	730	98	108,552
1860-1869	169	23	434	4,105	935	224	136	19	3,635
1870-1879	208	29	667	23,774	2,482	1,524	2,855	60	77,015
1880-1889	313	62	627	14,078	1,258	437	500	142	107,142
1890-1899	296	42	561	14,618	1,538	1,347	1,399	159	110,318
1900-1904	190	36	334	17,730	792	504	2,160	163	175,719
1905-1909	119	49	321	6,201	438	510	873	236	91,012
1910-1914	161	61	1,052	19,494	2,468	1,708	2,490	750	207,616
1915-1919	144	75	1,011	11,314	1,170	1,781	1,625	897	202,442
Not reported	261	33	694	8,343	1,093	817	179	506	7,943

DATE OF BEGINNING.	Pipe lines, length (miles).	FLOWING WELLS.		PUMPED WELLS.		PUMPING PLANTS.			
		Number.	Capacity (gallons per minute).	Number.	Capacity (gallons per minute).	Number.	Engine capacity (horse-power).	Pumps.	
								Number.	Capacity (gallons per minute).
Total	6,885.9	1,415	287,187	25,491	10,608,476	21,561	386,200	24,134	16,773,692
Before 1860	61.3	9	1,227	17	8,668	18	311	23	11,813
1860-1869	14.3	36	2,926	20	32,959	22	257	22	35,219
1870-1879	234.1	48	22,126	58	41,461	53	1,523	62	46,063
1880-1889	711.3	107	15,266	257	115,851	202	11,387	301	804,228
1890-1899	321.6	120	16,240	744	261,613	468	11,455	578	348,468
1900-1904	233.7	183	29,239	1,339	526,339	1,014	20,273	1,153	651,768
1905-1909	743.7	128	20,409	2,448	1,064,097	1,885	34,876	2,156	1,251,035
1910-1914	2,019.2	261	65,505	8,539	3,608,435	7,180	128,041	8,038	4,668,351
1915-1919	1,848.4	190	60,518	8,410	3,695,797	7,568	138,609	8,375	6,808,125
Not reported	208.9	343	52,729	2,569	1,343,256	3,151	39,468	3,426	2,148,622

TABLE 16.—IRRIGATION WORKS, CLASSIFIED BY CHARACTER OF ENTERPRISE: 1920.

CLASS.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.	
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).
Total	2,070	435	6,040	115,237	14,437	9,190	12,947	3,030	1,091,394
Individual and partnership	1,797	333	5,343	34,298	7,116	4,351	2,641	2,655	549,335
Cooperative	153	32	269	32,698	2,547	1,699	3,252	191	57,226
Irrigation district	29	18	104	19,426	1,006	1,309	3,381	21	153,060
Commercial	91	62	168	26,687	3,659	1,753	3,495	137	245,750
U. S. Reclamation Service	4	1	5	787	65	31	155	1	51,000
U. S. Indian Service	5	.....	10	1,108	17	35	15	2	.....
State	1	4	2	38	16	.....	.....	7	293
City	.....	2	.....	.....	.....	2	1	11	30
Other	.....	3	9	195	11	10	7	5	34,700

CLASS.	Pipe lines, length (miles).	FLOWING WELLS.		PUMPED WELLS.		PUMPING PLANTS.			
		Number.	Capacity (gallons per minute).	Number.	Capacity (gallons per minute).	Number.	Engine capacity (horse-power).	Pumps.	
								Number.	Capacity (gallons per minute).
Total	6,885.9	1,415	287,187	25,491	10,608,476	21,561	386,200	24,134	16,773,692
Individual and partnership	5,757.4	1,390	225,799	24,131	9,790,608	20,821	311,505	22,823	14,038,640
Cooperative	1,792.3	10	33,954	922	571,860	579	50,990	938	1,438,994
Irrigation district	620.6	2	.....	97	83,270	36	13,416	161	513,150
Commercial	693.4	16	25,885	185	126,709	94	8,615	158	741,375
U. S. Reclamation Service	.....	.....	.....	1	400	3	263	4	3,250
U. S. Indian Service	12.5	15	1,539	17	2,568	4	120	13	2,568
State	11.9	.....	.....	13	3,706	7	161	9	4,850
City	28.8	.....	.....	29	26,644	13	1,090	27	28,245
Other	1.6	2	100	6	2,720	4	40	6	2,620

TABLE 17.—IRRIGATION WORKS, CLASSIFIED BY DRAINAGE BASIN: 1920.

DRAINAGE BASIN.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.	
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).
Total	2,670	455	6,040	115,237	14,437	9,190	12,947	3,030	1,091,304
Colorado River	3	1	47	6,577	498	494	1,990	.....	.....
Independent streams, northern California	215	22	574	5,145	866	396	172	54	116,574
Carson River	15	1	18	52	20	14	1	2	4
Long Valley Creek	59	2	102	585	131	90	44	6	857
Mono Lake and tributaries	4	3	21	525	26	11	8	3	34,700
Susan River	93	7	82	1,861	215	114	45	15	63,949
Walker River	7	.....	64	925	161	3	5	5	10,000
Other independent streams	37	9	287	1,197	315	164	69	23	7,064
Independent streams, southern California	32	18	381	8,724	446	410	988	284	132,308
Mohave River	2	.....	21	189	23	9	4	18	27
Owens River	6	4	53	1,598	138	5	4	20	26,006
San Jacinto River	7	11	32	251	50	28	14	94	105,688
Whitewater River	3	.....	12	57	47	15	2	41	50
Other independent streams	14	3	263	6,629	188	353	964	111	537
Pacific Ocean streams north of San Francisco Bay	469	38	971	5,850	1,083	323	479	84	95,351
Klamath River	448	23	925	5,716	1,058	284	113	70	95,054
Russian River	9	10	18	23	8	25	364	10	142
Other Pacific Ocean streams north of San Francisco Bay	12	5	28	111	17	14	2	4	155
Pacific Ocean streams south of San Francisco Bay	197	82	716	9,418	928	1,281	419	925	68,969
Pajaro River	29	9	94	278	66	81	29	19	5,995
Salinas River	7	4	140	553	117	403	98	21	73
Santa Maria River	1	1	16	69	13	25	3	8	36
Santa Ynez River	9	8	18	227	10	10	4	16	2,502
Santa Clara River	15	3	38	191	49	56	30	20	2,741
Los Angeles River	11	3	79	266	81	191	78	164	4,950
San Gabriel River	18	1	54	3,940	89	61	47	129	7,168
Santa Ana River	39	12	123	2,096	302	139	34	139	3,514
San Diego River	4	2	11	.....	.....	5	4	63	18,904
Other Pacific Ocean streams south of San Francisco Bay	64	39	143	1,798	201	310	92	336	23,086
Sacramento River and tributaries	859	200	1,821	23,514	4,574	1,743	1,955	220	348,435
Sacramento River direct	6	3	192	5,803	585	559	693	24	285
Pit River	322	63	489	5,160	730	150	78	63	202,877
Cow Creek	40	.....	64	367	118	30	23	1	.....
Cottonwood Creek	16	1	41	147	78	19	30	8	6,300
Battle Creek	26	.....	71	358	114	17	4	.....	.....
Stony Creek	44	5	63	1,590	81	22	130	4	54,001
Feather River	221	52	332	4,399	455	424	130	12	243
Yuba River	41	33	136	1,235	481	65	96	32	56,672
Cache Creek	6	3	20	1,197	87	30	115	4	181
American River	51	31	109	1,264	1,498	135	374	53	30,682
Other tributaries of Sacramento River	86	9	304	1,994	347	292	282	19	194
San Joaquin River and tributaries	269	85	1,452	55,628	5,995	4,394	6,904	1,419	329,522
San Joaquin River direct	23	2	176	11,431	1,237	1,203	2,103	120	1,937
Kern River	17	11	142	6,273	427	156	140	188	60,469
Tulare Lake	28	.....	67	562	161	290	661	671	110,553
Tule River	44	2	115	2,465	428	209	155	118	523
Kaweah River	19	1	95	5,133	339	271	497	72	2,348
Kings River	27	5	128	17,194	892	465	981	67	6,116
Fresno River	5	.....	7	314	5	6	107	19	263
Merced River	17	1	159	2,171	476	597	290	9	8,019
Tuolumne River	17	15	110	5,834	626	835	907	12	86,007
Stanislaus River	12	13	59	1,444	199	142	813	17	42,526
Calaveras River	22	8	129	224	86	53	12	25	17
Mokelumne River	31	25	126	1,598	1,024	62	153	33	678
Cosumnes River	6	.....	13	103	55	2	15	2	.....
Other tributaries of San Joaquin River	3	2	126	882	111	213	130	66	10,066
Tributaries of San Francisco Bay, other than Sacramento and San Joaquin Rivers	26	9	78	381	45	149	40	44	235
Coyote Creek	6	.....	6	24	5	.....	.....	3	1
Guadalupe River	8	.....	12	271	21	4	20	.....	.....
Other tributaries of San Francisco Bay	12	9	60	86	19	145	20	41	234

TABLE 17.—IRRIGATION WORKS, CLASSIFIED BY DRAINAGE BASIN: 1920—Continued.

DRAINAGE BASIN.	Pipe lines, length (miles).	FLOWING WELLS. Number.	FLOWING WELLS. Capacity (gallons per minute).	PUMPED WELLS. Number.	PUMPED WELLS. Capacity (gallons per minute).	PUMPING PLANTS. Number.	PUMPING PLANTS. Engine capacity (horsepower).	PUMPING PLANTS. Pumps. Number.	PUMPING PLANTS. Pumps. Capacity (gallons per minute).	PUMPING PLANTS. Average lift (feet).
Total	6,885.9	1,415	297,187	25,401	10,608,476	21,561	386,200	24,134	16,773,692	41
Colorado River	0.4			1	900	2	73	2	2,000	42
Independent streams, northern California	8.6	75	6,647	30	13,144	27	552	28	28,411	35
Carson River	0.5									
Long Valley Creek	2.1			1	480	3	9	3	1,180	17
Susan River	2.0			1	75	4	34	4	3,460	23
Other independent streams	4.0	75	6,647	28	12,589	20	509	21	23,774	37
Independent streams, southern California	799.7	208	51,386	1,087	404,122	843	15,093	892	433,667	58
Mohave River	28.8	31	4,874	88	45,477	86	2,145	86	45,960	80
Owens River	388.5	23	537	9	4,088	12	137	12	4,558	24
San Jacinto River	145.0	9	115	236	66,833	183	3,546	203	76,386	73
Whitewater River	77.5	242	36,960	325	121,466	235	3,212	247	126,356	41
Other independent streams	120.9	63	9,000	429	166,258	327	6,053	344	180,407	57
Pacific Ocean streams north of San Francisco Bay	52.4	4		167	35,194	186	3,858	190	168,163	22
Klamath River	19.1	3		*14	4,375	43	2,695	47	111,709	13
Russian River	27.2	1		99	30,234	128	1,058	128	51,239	23
Other Pacific Ocean streams north of San Francisco Bay	6.1			4	585	15	105	15	5,215	17
Pacific Ocean streams south of San Francisco Bay	4,041.4	713	194,294	7,068	3,964,724	5,203	129,331	6,071	3,694,090	57
Pajaro River	93.2	17	2,600	688	186,255	370	7,083	417	203,845	35
Salinas River	169.6	18	3,808	697	422,195	239	10,085	286	424,002	25
Santa Maria River	28.9	13	2,700	118	66,393	62	2,934	78	204,534	47
Santa Ynez River	28.7	7	1,540	60	16,401	61	1,611	84	199,630	30
Santa Clara River	154.0	1	700	136	92,049	125	5,126	161	102,184	67
Los Angeles River	528.2	45	24,963	849	443,036	745	16,208	825	458,932	52
San Gabriel River	822.9	160	28,363	1,094	557,934	825	25,675	951	579,153	72
Santa Ana River	924.5	360	62,693	1,816	1,002,743	1,523	45,345	1,836	1,048,090	61
San Diego River	145.2	1	8	533	54,216	319	2,313	374	65,462	56
Other Pacific Ocean streams south of San Francisco Bay	1,146.2	91	37,549	1,137	223,502	934	12,951	1,059	408,258	59
Sacramento River and tributaries	361.2	36	2,957	3,598	1,473,602	3,430	64,163	3,898	4,184,240	26
Sacramento River direct	61.2			514	279,456	655	28,625	807	2,616,658	24
Pit River	2.9	14	693	4	395	36	440	36	32,886	18
Cow Creek	0.4					11	87	11	8,955	14
Cottonwood Creek	0.6					9	100	10	7,565	33
Battle Creek	0.3			2	750	3	63	4	3,300	25
Stony Creek	17.5			68	40,451	61	759	66	45,959	25
Feather River	117.3	9	1,284	845	341,583	728	8,425	828	394,677	22
Yuba River	6.2	2	30	8	2,725	9	1,572	11	2,751	35
Cache Creek	0.4			144	91,211	75	1,524	76	92,391	24
American River	77.8			163	93,694	172	2,358	190	95,838	26
Other tributaries of Sacramento River	76.6	11	950	1,760	623,337	1,671	20,210	1,859	883,260	30
San Joaquin River and tributaries	1,396.6	145	48,828	11,149	4,911,280	9,973	136,911	10,951	7,400,131	34
San Joaquin River direct	184.8	49	15,155	1,531	668,420	1,481	30,086	1,639	1,295,475	25
Kern River	83.1	17	12,850	441	219,674	384	6,676	405	223,606	47
Tulare Lake	264.9	24	8,253	1,190	434,565	906	12,841	1,069	1,330,434	59
Tule River	162.7	2	251	1,146	493,272	974	11,329	1,083	995,319	45
Kaweah River	289.7	3	17	2,136	842,685	1,734	21,932	1,930	876,254	41
Kings River	239.3	34	10,000	2,547	1,193,710	2,283	25,426	2,397	1,225,607	23
Fresno River	6.3	1	200	145	79,255	134	1,520	144	82,738	33
Merced River	5.2	1	75	216	120,465	213	2,774	235	157,865	21
Tuolumne River	14.4	1	400	63	53,880	66	1,231	69	59,360	33
Stanislaus River	41.0			34	26,490	36	1,158	41	73,140	26
Calaveras River	29.4	6	220	565	189,181	544	4,358	585	200,337	26
Mokelumne River	82.2	2	25	769	356,156	694	8,309	765	451,434	33
Cosumnes River	5.5			117	50,870	111	1,788	131	84,740	28
Other tributaries of San Joaquin River	11.1	5	382	390	193,257	413	7,483	458	343,822	28
Tributaries of San Francisco Bay, other than Sacramento and San Joaquin Rivers	264.6	74	13,675	2,451	795,510	1,897	36,219	2,102	862,987	55
Coyote Creek	60.2	14	3,450	821	246,483	657	12,407	725	312,320	50
Guadalupe River	99.3	51	7,700	725	242,912	512	13,480	572	278,221	67
Other tributaries of San Francisco Bay	105.1	9	1,925	905	216,115	728	10,332	805	272,446	50

CROPS.

TABLE 18.—ACREAGE, YIELD, AND VALUE OF PRINCIPAL CROPS GROWN ON IRRIGATED LAND, AND COMPARISONS WITH TOTALS FOR THE STATE: 1919 AND 1909.

[Totals for the state, used in making comparisons, are shown in state bulletin on agriculture.]

	Crop.	Area harvested.					Quantity harvested.					
		1919		1909			1919			1909		
		Acres.	Per cent of total for state.	Acres.	Per cent of total for state.	Per cent of increase.[1]	Unit.	Amount.	Per cent of total for state.	Amount.	Per cent of total for state.	Per cent of increase.[1]
	Cereals:											
1	Corn	56,958	48.8	17,802	34.3	220.0	Bu.	1,964,828	57.0	491,978	38.6	299.4
2	Oats	9,359	6.4	5,903	3.1	58.5	Bu.	266,878	9.0	205,727	5.0	29.7
3	Winter wheat	85,245	9.2	22,603	4.7	491.6	Bu.	1,636,503	11.2	408,706	6.6	476.0
4	Spring wheat	48,330	29.9				Bu.	717,549	31.8			
5	Barley	128,812	13.0	77,785	6.5	65.6	Bu.	3,299,308	15.1	1,844,971	7.0	78.8
6	Rye	2,546	13.8	107	1.5		Bu.	29,294	15.8	1,265	1.8	
7	Kafir, milo, etc.	124,092	73.9	(2)			Bu.	3,253,711	80.3	(2)		
8	Rough rice	130,367	100.0	(2)			Bu.	6,926,313	100.0	(2)		
9	Mixed crops	1,633	59.2	(2)			Bu.	58,300	78.5	(2)		
	Other grains and seeds:											
10	Clover and alfalfa seed[3]	2,319	18.0	2,570	29.3	−9.8	Bu.	9,702	23.7	5,911	24.5	64.1
11	Dry beans, navy, etc.	148,379	31.5	11,384	7.2		Bu.	2,459,350	37.5	244,624	7.3	905.4
12	Dry peas (Canada)	1,504	7.2	290	9.8	418.6	Bu.	24,850	13.6	9,902	17.2	151.0
13	Sugar-beet seed	503	71.4	(2)			Lbs.	138,000	51.8	(2)		
14	Flower and vegetable seed	3,234	22.9	(2)			Lbs.	2,056,510	27.6	(2)		
	Hay and forage:											
15	Timothy alone	2,919	22.5	8,026	58.5	−63.6	Tons	4,936	25.5	11,236	56.2	−56.1
16	Timothy and clover mixed	38,786	74.2	20,886	44.7	85.8	Tons	54,806	72.8	34,177	46.7	60.4
17	Clover alone	4,882	32.1	1,176	13.8	315.1	Tons	6,396	26.0	2,689	13.2	137.9
18	Alfalfa	556,656	77.5	366,692	75.7	51.8	Tons	1,967,529	81.6	1,280,105	78.1	53.7
19	Other tame grasses	15,863	31.8	6,504	7.0	143.9	Tons	22,676	33.7	10,656	8.7	112.8
20	Annual legumes cut for hay	3,055	11.8	191,187	6.3	46.7	Tons	3,726	12.4	146,013	7.2	39.1
21	Small grains cut for hay	145,337	13.4				Tons	199,432	15.4			
22	Wild, salt, or prairie grasses	85,603	48.0	153,672	60.7	−44.3	Tons	96,722	52.1	189,964	67.6	−49.1
23	Silage crops	16,244	55.0	(2)			Tons	119,291	57.4	(2)		
24	Corn cut for forage	5,069	37.1	(2)			Tons	12,946	51.9	(2)		
25	Kafir, sorghum, etc., for forage	7,418	51.1	(2)			Tons	14,667	59.8	(2)		
26	Root crops for forage	634	9.4	(2)			Tons	5,712	4.5	(2)		
	Vegetables:											
27	Potatoes	29,698	46.9	32,735	48.4	−9.3	Bu.	4,502,597	54.8	5,180,006	52.7	−13.1
28	Sweet potatoes and yams	5,858	76.8	(2)			Bu.	659,734	76.1	(2)		
29	Cabbages	3,279	60.5	(2)								
30	Cantaloupes and muskmelons	13,800	64.3	(2)								
31	Celery	2,605	48.7	(2)								
32	Cucumbers	477	26.7	(2)								
33	Beans (green)	1,564	37.9	(2)								
34	Peas (green)	2,258	27.4	(2)								
35	Lettuce	4,266	69.7	(2)								
36	Onions	5,801	68.2	(2)								
37	Corn (sweet)	2,219	42.2	(2)								
38	Tomatoes	16,997	54.1	(2)								
39	Watermelons	3,979	54.2	(2)								
40	Asparagus	9,626	55.2	(2)								
41	Cauliflower	2,262	64.4	(2)								
42	Peppers (green)	4,255	87.4	(2)								
43	Pumpkins	544	48.1	(2)								
44	Spinach	867	36.1	(2)								
	Miscellaneous crops:											
45	Sugar beets grown for sugar	55,720	63.1	14,657	18.6	280.2	Tons	422,427	63.3	171,494	20.3	146.3
46	Cotton	83,963	96.2	(2)			Bales	44,681	96.3	(2)		
47	Broom corn	883	40.5	(2)			Lbs.	351,760	44.4	(2)		
48	Hops	2,172	26.8	(2)			Lbs.	3,691,623	29.3	(2)		
	Small fruits:											
49	Strawberries	1,465	29.5	(2)			Qts.	5,143,533	47.6	(2)		
	Orchard fruits:											
50	Apples	[4] 804,683	25.7	(2)			Bu.	1,335,057	17.0	(2)		
51	Peaches	[4] 5,662,239	62.5	(2)			Bu.	10,318,362	64.6	(2)		
52	Pears	[4] 1,017,060	44.1	(2)			Bu.	1,783,951	45.1	(2)		
53	Plums and prunes	[4] 3,841,678	43.8	(2)			Bu.	6,542,548	49.6	(2)		
54	Cherries	[4] 284,569	43.3	(2)			Bu.	326,449	49.9	(2)		
55	Apricots	[4] 1,630,763	44.2	(2)			Bu.	2,608,136	44.1	(2)		
56	Quinces	[4] 12,403	48.0	(2)			Bu.	18,315	58.3	(2)		
57	**Grapes**	[5] 73,217,234	47.8	74,984			Lbs.	1,128,175,200	54.9	(2)		
	Subtropical fruits:											
58	Oranges	[4] 8,678,956	84.3	(2)			Boxes	18,725,602	86.6	(2)		
59	Lemons	[4] 2,299,716	79.7	(2)			Boxes	5,776,149	88.2	(2)		
60	Grapefruit (pomeloes)	[4] 193,819	83.9	(2)			Boxes	393,923	84.7	(2)		
61	Figs	[4] 246,384	49.0	(2)			Lbs.	10,074,552	46.2	(2)		
62	Alligator pears (avocados)	[4] 10,674	89.6	(2)			Crates	7,294	92.1	(2)		
63	Dates	[4] 14,406	83.3	(2)			Lbs.	118,311	81.6	(2)		
64	Olives	[4] 536,543	58.9	(2)			Lbs.	12,264,764	69.8	(2)		
65	Japanese persimmons	[4] 5,510	39.8	(2)			Bu.	9,500	44.3	(2)		
66	Pomegranates	[4] 14,710	60.6	(2)			Lbs.	590,091	61.9	(2)		
	Nuts:											
67	Almonds	[4] 464,071	19.3	(2)			Lbs.	3,190,813	20.3	(2)		
68	Walnuts (English or Persian)	[4] 616,372	48.4	(2)			Lbs.	30,210,494	51.1	(2)		

[1] A minus sign (−) denotes decrease. Per cent not shown when more than 1,000.
[2] Not reported separately in 1909.
[3] Excluding red clover seed (1919).
[4] Number of trees of bearing age.
[5] Number of vines of bearing age.

TABLE 18.—ACREAGE, YIELD, AND VALUE OF PRINCIPAL CROPS GROWN ON IRRIGATED LAND, AND COMPARISONS WITH TOTALS FOR THE STATE: 1919 AND 1909—Continued.

[Totals for the state, used in making comparisons, are shown in state bulletin on agriculture.]

	CROP.	Unit.	Average yield per acre, 1919: For state.	On non-irrigated land.	On irrigated land: Average.	Per cent of average for state.	Per cent of average on nonirrigated land.	Value: 1919: Amount.	Per cent of total for state.	1909: Amount.	Per cent of total for state.	Per cent of increase.[1]
	Cereals:											
1	Corn	Bu.	29.5	24.8	34.5	116.9	139.1	$5,340,208	57.0	$440,312	40.9	658.6
2	Oats	Bu.	20.2	19.6	28.5	141.1	145.4	266,878	9.0	137,160	5.2	94.6
3	Winter wheat	Bu.	15.8	15.5	19.2	121.5	123.9	3,583,942	11.2	428,668	6.8	.....
4	Spring wheat	Bu.	13.9	13.5	14.8	106.5	109.6	1,571,432	31.8			
5	Barley	Bu.	22.2	21.7	25.6	115.3	118.0	5,278,893	15.1	1,097,541	6.4	381.0
6	Rye	Bu.	10.1	9.9	11.5	113.9	116.2	54,194	15.8	1,133	1.7	.....
7	Kafir, milo, etc.	Bu.	24.1	18.2	28.2	108.7	144.0	5,531,309	80.3	(2)	.....	.....
8	Rough rice	Bu.	53.1	.....	53.1	100.0	.....	20,432,627	100.0	(2)	.....	.....
9	Mixed crops	Bu.	26.9	14.1	35.7	132.7	253.2	81,620	78.5	(2)	.....	.....
	Other grains and seeds:											
10	Clover and alfalfa seed[3]	Bu.	3.2	3.0	4.2	131.3	140.0	203,742	23.7	53,829	26.8	278.5
11	Dry beans, navy, etc.	Bu.	13.9	12.7	16.6	119.4	130.7	11,558,944	37.5	378,770	6.0	.....
12	Dry peas (Canada)	Bu.	8.7	8.1	16.5	189.7	203.7	88,218	13.6	15,331	15.2	475.4
13	Sugar-beet seed	Lbs.	378.7	639.8	274.4	72.5	42.9	96,660	51.8	(2)	.....	.....
14	Flower and vegetable seed	Lbs.	386.7	312.9	635.9	164.4	203.2	2,056,510	37.6	(2)	.....	.....
	Hay and forage:											
15	Timothy alone	Tons.	1.50	1.44	1.69	112.7	117.4	93,784	25.5	90,083	48.5	4.1
16	Timothy and clover mixed	Tons.	1.44	1.52	1.41	97.9	92.8	1,013,911	72.8	316,993	50.4	219.9
17	Clover alone	Tons.	1.62	1.76	1.31	80.9	74.4	118,326	26.0	40,429	19.0	192.7
18	Alfalfa	Tons.	3.36	2.75	3.53	105.1	128.4	44,269,402	81.6	9,983,370	76.3	343.4
19	Other tame grasses	Tons.	1.35	1.32	1.43	105.9	108.3	396,830	33.7	112,097	8.8	254.0
20	Annual legumes cut for hay	Tons.	1.16	1.15	1.22	105.2	106.1	74,520	12.4	1,532,681	6.4	210.6
21	Small grains cut for hay	Tons.	1.19	1.17	1.37	115.1	117.1	4,686,652	15.4			
22	Wild, salt, or prairie grasses	Tons.	1.04	0.96	1.13	108.7	117.7	1,354,108	52.1	1,194,716	58.9	13.3
23	Silage crops	Tons.	7.04	6.67	7.34	104.3	110.0	1,133,264	57.4	(2)	.....	.....
24	Corn cut for forage	Tons.	1.83	1.40	2.55	139.3	182.1	181,244	51.9	(2)	.....	.....
25	Kafir, sorghum, etc., for forage	Tons.	1.69	1.39	1.98	117.2	142.4	220,005	59.8	(2)	.....	.....
26	Root crops for forage	Tons.	18.67	19.67	9.01	48.3	45.8	94,248	4.5	(2)	.....	.....
	Vegetables:											
27	Potatoes	Bu.	129.8	119.6	151.6	116.8	137.1	10,355,973	54.8	2,440,931	50.0	324.3
28	Sweet potatoes and yams	Bu.	113.6	117.0	112.6	99.1	96.2	1,517,388	76.1	(2)	.....	.....
29	Cabbages	.....	.....	.....	.....	.....	.....	547,205	57.4	(2)	.....	.....
30	Cantaloupes and muskmelons	.....	.....	.....	.....	.....	.....	2,753,155	70.7	(2)	.....	.....
31	Celery	.....	.....	.....	.....	.....	.....	721,521	47.5	(2)	.....	.....
32	Cucumbers	.....	.....	.....	.....	.....	.....	87,701	28.0	(2)	.....	.....
33	Beans (green)	.....	.....	.....	.....	.....	.....	292,953	56.1	(2)	.....	.....
34	Peas (green)	.....	.....	.....	.....	.....	.....	387,079	36.1	(2)	.....	.....
35	Lettuce	.....	.....	.....	.....	.....	.....	1,190,363	70.4	(2)	.....	.....
36	Onions	.....	.....	.....	.....	.....	.....	2,009,151	71.3	(2)	.....	.....
37	Corn (sweet)	.....	.....	.....	.....	.....	.....	197,015	42.9	(2)	.....	.....
38	Tomatoes	.....	.....	.....	.....	.....	.....	2,121,514	59.3	(2)	.....	.....
39	Watermelons	.....	.....	.....	.....	.....	.....	327,028	52.8	(2)	.....	.....
40	Asparagus	.....	.....	.....	.....	.....	.....	1,653,081	62.6	(2)	.....	.....
41	Cauliflower	.....	.....	.....	.....	.....	.....	437,886	68.3	(2)	.....	.....
42	Peppers (green)	.....	.....	.....	.....	.....	.....	632,101	83.9	(2)	.....	.....
43	Pumpkins	.....	.....	.....	.....	.....	.....	18,753	48.0	(2)	.....	.....
44	Spinach	.....	.....	.....	.....	.....	.....	128,516	41.1	(2)	.....	.....
	Miscellaneous crops:											
45	Sugar beets grown for sugar	Tons.	7.56	7.51	7.58	100.3	100.9	5,491,551	63.3	839,561	19.5	554.1
46	Cotton	Bales.	0.53	0.52	0.53	100.0	101.9	8,891,519	96.3	(2)	.....	.....
47	Broom corn	Lbs.	363.6	346.0	398.3	109.5	117.1	28,136	44.4	(2)	.....	.....
48	Hops	Lbs.	1,553.3	1,499.9	1,699.6	109.4	113.3	1,919,644	29.3	(2)	.....	.....
	Small fruits:											
49	Strawberries	Qts.	2,172.9	1,614.3	3,510.9	161.6	217.5	1,028,707	47.6	(2)	.....	.....
	Orchard fruits:											
50	Apples	Bu.	[4] 2.5	[4] 2.8	[4] 1.7	68.0	60.7	2,069,338	17.0	(2)	.....	.....
51	Peaches	Bu.	[4] 1.8	[4] 1.7	[4] 1.8	100.0	105.9	19,088,970	64.6	(2)	.....	.....
52	Pears	Bu.	[4] 1.7	[4] 1.7	[4] 1.8	105.9	105.9	3,211,112	45.1	(2)	.....	.....
53	Plums and prunes	Bu.	[4] 1.5	[4] 1.4	[4] 1.7	113.3	121.4	14,066,478	49.6	(2)	.....	.....
54	Cherries	Bu.	[4] 1.0	[4] 0.9	[4] 1.1	110.0	122.2	1,305,796	49.9	(2)	.....	.....
55	Apricots	Bu.	[4] 1.6	[4] 1.6	[4] 1.6	100.0	100.0	5,216,272	44.1	(2)	.....	.....
56	Quinces	Bu.	[4] 1.2	[4] 1.0	[4] 1.5	125.0	150.0	36,630	58.3	(2)	.....	.....
57	**Grapes**	Lbs.	[5] 13.4	[5] 11.6	[5] 15.4	114.9	132.8	36,101,606	54.9	3,038,435	28.0	.....
	Subtropical fruits:											
58	Oranges	Boxes.	[4] 2.1	[4] 1.8	[4] 2.2	104.8	122.2	58,049,366	86.6	(2)	.....	.....
59	Lemons	Boxes.	[4] 2.3	[4] 1.3	[4] 2.5	108.7	192.3	16,750,832	88.2	(2)	.....	.....
60	Grape fruit (pomelos)	Boxes.	[4] 2.6	[4] 1.9	[4] 2.6	100.0	105.3	787,846	84.7	(2)	.....	.....
61	Figs	Lbs.	[4] 43.3	[4] 45.6	[4] 40.8	94.2	89.5	1,007,455	46.2	(2)	.....	.....
62	Alligator pears (avocados)	Crates.	[4] 9.7	[4] 9.5	[4] 9.7	100.0	140.0	58,352	92.1	(2)	.....	.....
63	Dates	Lbs.	[4] 8.4	[4] 8.2	[4] 8.2	97.6	99.1	23,662	81.6	(2)	.....	.....
64	Olives	Lbs.	[4] 19.3	[4] 14.2	[4] 22.9	118.7	161.3	981,181	69.8	(2)	.....	.....
65	Japanese persimmons	Bu.	[4] 1.5	[4] 1.4	[4] 1.7	113.3	121.4	38,600	44.3	(2)	.....	.....
66	Pomegranates	Lbs.	[4] 39.3	[4] 38.1	[4] 40.1	102.0	105.2	35,405	61.9	(2)	.....	.....
	Nuts:											
67	Almonds	Lbs.	[4] 6.5	[4] 6.4	[4] 6.9	106.2	107.8	797,703	20.3	(2)	.....	.....
68	Walnuts (English or Persian)	Lbs.	[4] 46.4	[4] 43.9	[4] 49.0	105.6	111.6	9,063,148	51.1	(2)	.....	.....

[1] Per cent not shown when more than 1,000.
[2] Not reported separately in 1909.
[3] Excluding red clover seed (1919).
[4] Yield per tree.
[5] Yield per vine.

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910.

[A minus sign (−) denotes decrease. Per cent not shown when base is less than 100 or when per cent is more than 1,000.]

		THE STATE.	Alameda.	Alpine.	Amador.	Butte.	Calaveras.	Colusa.	Contra Costa.	Eldorado.
1	Number of all farms in 1920	[1] 117,670	2,778	21	479	2,219	606	816	1,675	729
2	Number of farms irrigated in 1919	67,391	473	18	101	989	306	325	131	393
3	Per cent of all farms	57.3	17.0	85.7	21.1	44.6	50.5	39.8	7.8	53.9
4	Number of farms irrigated in 1909	39,352	50	32	73	556	154	112	78	244
5	Per cent of increase, 1909–1919	71.3	.....	.....	.....	77.9	98.7	190.2	.....	61.1
	LAND AND FARM AREA.									
6	Approximate land area ... acres	[1] 99,617,280	468,480	496,640	384,640	1,086,720	657,280	729,600	456,960	1,111,680
7	All land in farms ... acres	[1] 29,365,667	359,742	10,042	312,166	464,625	366,195	428,417	375,065	240,265
8	Improved land in farms ... acres	[1] 11,878,339	195,324	4,306	59,986	253,745	58,957	302,429	238,360	43,413
9	Area irrigated in 1919 ... acres	4,219,040	9,346	4,459	326	93,550	2,859	44,097	32,079	6,731
10	Per cent of improved land in farms	35.5	5.0	103.6	0.5	36.9	4.8	14.6	13.9	15.5
11	Area irrigated in 1909 ... acres	2,664,104	1,859	2,349	826	28,754	1,275	4,276	26,256	5,122
12	Per cent of increase, 1909–1919	58.4	402.7	33.1	−60.5	225.4	124.2	931.3	23.2	31.4
13	Area enterprises were capable of irrigating in 1920 ... acres	5,894,466	13,357	4,819	489	114,754	33,828	69,149	46,482	9,833
14	Area enterprises were capable of irrigating in 1910 ... acres	3,619,378	1,872	2,399	3,975	115,075	3,161	16,541	32,562	5,501
15	Per cent of increase, 1910–1920	62.9	613.5	41.3	−87.7	−0.3	970.2	318.0	42.7	78.7
16	Area included in enterprises in 1920 ... acres	7,805,207	16,543	7,027	1,093	123,524	42,693	88,948	67,876	16,848
17	Area included in enterprises in 1910 ... acres	5,490,360	2,605	3,435	4,139	233,500	3,919	18,783	32,640	20,264
18	Per cent of increase, 1910–1920	42.2	535.0	104.6	−73.6	−47.1	974.1	373.6	108.0	−16.9
19	Area of irrigated land reported as available for settlement ... acres	533,981	.....	.....	.....	4,566	2,960	.....	8,000	.....
	IRRIGATION WORKS.									
	Independent enterprises:									
20	Number, 1920	24,115	264	15	35	197	140	99	56	91
21	Number, 1910	13,970	53	21	49	144	159	45	185	50
	Main ditches:									
22	Number, 1920	6,040	48	18	23	74	144	84	11	52
23	Number, 1910	8,590	49	25	55	135	148	38	176	56
24	Length, 1920 ... miles	14,437	12	20	64	225	247	258	186	1,268
25	Length, 1910 ... miles	12,620	21	34	185	270	124	44	172	285
26	Capacity, 1920 ... second-feet	115,237	23	52	53	2,731	496	2,695	339	390
27	Capacity, 1910 ... second-feet	89,597	605	179	255	2,028	206	531	60	445
	Laterals:									
28	Number, 1920	9,190	142	14	3	151	52	100	111	46
29	Number, 1910	6,143	.....	3	12	145	32	10	.....	25
30	Length, 1920 ... miles	12,947	19	1	30	27	131	126	175	110
31	Length, 1910 ... miles	8,509	.....	1	56	170	31	7	.....	55
	Reservoirs:									
32	Number, 1920	3,030	10	2	18	8	47	2	1	35
33	Number, 1910	1,583	52	.....	14	27	29	.....	1	22
34	Capacity, 1920 ... acre-feet	1,091,394	1	4	196	30	10,935	51,000	5	19,966
35	Capacity, 1910 ... acre-feet	743,269	3	.....	369	360	12,629	.....	1	711
	Flowing wells:									
36	Number, 1920	1,415	.....	.....	.....	.....	5	.....	2	.....
37	Number, 1910	2,361	.....	.....	.....	.....	6	.....	1	.....
38	Capacity, 1920 ... gallons per minute	287,187	.....	.....	.....	.....	65	.....	.....	.....
39	Capacity, 1910 ... gallons per minute	477,343	.....	.....	.....	.....	40	.....	143	.....
	Pumped wells:									
40	Number, 1920	25,401	382	.....	4	153	29	66	49	6
41	Number, 1910	10,724	56	.....	.....	46	7	3	28	.....
42	Capacity, 1920 ... gallons per minute	10,608,476	95,329	.....	150	53,896	1,205	48,735	5,897	780
43	Capacity, 1910 ... gallons per minute	4,119,575	3,740	.....	.....	29,686	844	977	1,239	.....
	Pumping plants:									
44	Number, 1920	21,561	290	.....	9	157	32	103	56	6
45	Number, 1910	9,297	57	.....	1	46	9	12	20	.....
46	Engine capacity, 1920 ... horsepower	386,200	3,797	.....	34	2,863	234	6,931	3,236	15
47	Engine capacity, 1910 ... horsepower	128,143	384	.....	5	555	44	516	751	.....
48	Pump capacity, 1920 ... gallons per minute	16,773,692	112,508	.....	1,890	115,696	7,986	528,610	74,004	830
49	Pump capacity, 1910 ... gallons per minute	5,276,298	5,019	.....	100	32,391	1,094	51,365	128,947	.....
50	Average lift, 1920 ... feet	41	40	.....	32	24	41	25	44	37
	CAPITAL INVESTED.									
51	Capital invested to Jan. 1, 1920 ... dollars	194,886,385	530,053	40,385	91,295	3,383,646	1,315,617	2,594,164	1,380,210	499,269
52	Capital invested to July 1, 1910 ... dollars	72,580,030	57,156	7,493	265,608	1,251,894	121,033	76,112	90,503	346,939
53	Per cent of increase, 1910–1920	168.5	827.4	439.0	−65.6	174.7	987.0	.....	.....	43.9
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	33.06	39.68	8.38	186.70	29.49	38.89	37.52	29.69	50.77
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	20.05	30.53	2.20	66.85	10.71	38.29	4.60	2.78	63.07
	ESTIMATED FINAL COST.									
56	Estimated final cost of existing enterprises in 1920 ... dollars	225,799,123	538,538	41,385	91,295	3,776,271	1,329,119	2,881,964	1,387,960	702,269
57	Estimated final cost of existing enterprises in 1910 ... dollars	84,392,344	57,156	7,493	265,608	1,381,894	121,033	76,112	90,503	346,939
58	Per cent of increase, 1910–1920	167.6	842.2	452.3	−65.6	173.3	998.1	.....	.....	102.4
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	28.93	32.55	5.89	83.55	30.57	31.58	32.40	23.46	41.68
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	15.37	21.94	2.18	64.17	5.92	30.88	4.05	2.77	17.12

[1] Includes Del Norte County, for which no irrigation is reported.

County Table.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910—Continued.

[A minus sign (—) denotes decrease. Per cent not shown when base is less than 100 or when per cent is more than 1,000.]

		Fresno.	Glenn.	Humboldt.	Imperial.	Inyo.	Kern.	Kings.	Lake.	Lassen.
1	Number of all farms in 1920	8,917	1,320	1,736	2,843	521	2,020	2,171	771	606
2	Number of farms irrigated in 1919	7,792	897	53	2,707	329	1,474	1,634	71	306
3	Per cent of all farms	87.4	68.0	3.0	95.2	63.1	73.0	75.3	9.2	50.5
4	Number of farms irrigated in 1909	5,316	196	33	1,250	408	876	1,126	43	355
5	Per cent of increase, 1909–1919	46.7	357.7	.....	116.6	−19.4	68.3	45.1	.....	−13.8
	LAND AND FARM AREA.									
6	Approximate land area ... acres	3,808,000	835,680	2,288,000	2,616,960	6,394,240	5,121,920	741,760	792,320	2,899,840
7	All land in farms ... acres	1,319,531	524,407	717,174	347,485	140,029	1,497,045	505,553	241,899	741,220
8	Improved land in farms ... acres	672,591	336,482	98,994	319,708	39,904	390,932	259,639	45,355	140,887
9	Area irrigated in 1919 ... acres	547,587	195,004	355	415,304	74,958	223,593	187,868	1,107	53,884
10	Per cent of improved land in farms	81.4	31.2	0.4	133.7	187.8	57.2	72.4	2.4	38.2
11	Area irrigated in 1909 ... acres	422,318	3,661	268	190,711	65,163	190,034	190,949	582	77,079
12	Per cent of increase, 1909–1919	36.1	.....	70.7	117.8	15.0	17.7	−1.6	90.2	−30.1
13	Area enterprises were capable of irrigating in 1920 ... acres	838,948	126,992	500	457,815	79,771	329,773	376,906	1,517	71,582
14	Area enterprises were capable of irrigating in 1910 ... acres	560,326	16,894	333	242,000	71,815	217,418	289,523	828	89,815
15	Per cent of increase, 1910–1920	49.6	655.7	50.2	89.2	11.1	51.7	30.2	83.2	−20.3
16	Area included in enterprises in 1920 ... acres	1,098,735	282,399	664	530,855	97,998	475,645	490,835	1,831	85,873
17	Area included in enterprises in 1910 ... acres	633,652	220,464	966	375,000	92,319	402,806	310,523	1,268	149,530
18	Per cent of increase, 1910–1920	73.4	−8.3	−31.3	41.6	6.2	18.1	58.1	44.4	−42.6
19	Area of irrigated land reported as available for settlement ... acres	67,667	4,745	.....	1,800	4,300	524	14,000	.....	3,000
	IRRIGATION WORKS.									
	Independent enterprises:									
20	Number, 1920	2,968	213	33	17	87	875	345	70	175
21	Number, 1910	975	116	33	9	188	244	77	43	233
	Main ditches:									
22	Number, 1920	196	86	27	46	56	165	98	38	208
23	Number, 1910	254	50	33	12	184	178	27	44	295
24	Length, 1920 ... miles	1,329	181	34	537	132	445	396	18	404
25	Length, 1910 ... miles	831	136	26	117	396	441	137	26	368
26	Capacity, 1920 ... second-feet	10,765	2,515	290	16,575	1,368	6,314	13,586	242	2,732
27	Capacity, 1910 ... second-feet	6,299	1,659	145	3,250	2,752	9,990	4,840	90	2,248
	Laterals:									
28	Number, 1920	1,044	168	4	395	5	224	323	22	231
29	Number, 1910	688	554	4	179	326	118	51	21	263
30	Length, 1920 ... miles	2,002	329	6	2,690	4	149	387	1	114
31	Length, 1910 ... miles	1,354	1,073	2	890	168	257	159	2	116
	Reservoirs:									
32	Number, 1920	72	9	3	.....	18	536	20	9	31
33	Number, 1910	8	12	5	.....	1	51	37	3	29
34	Capacity, 1920 ... acre-feet	141	8	6	.....	1,006	61,183	6,063	181	194,422
35	Capacity, 1910 ... acre-feet	402	45,909	7	.....	11,300	1,601	111	2	169,552
	Flowing wells:									
36	Number, 1920	59	.....	.....	.....	23	27	13	7	10
37	Number, 1910	3	.....	.....	.....	10	25	75	1	.....
38	Capacity, 1920 ... gallons per minute	18,400	.....	.....	.....	537	17,643	2,180	950	233
39	Capacity, 1910 ... gallons per minute	450	.....	.....	.....	500	12,283	19,436	75	.....
	Pumped wells:									
40	Number, 1920	2,281	263	.....	1	9	983	498	17	4
41	Number, 1910	855	195	2	.....	1	140	20	3	.....
42	Capacity, 1920 ... gallons per minute	1,280,347	176,251	.....	900	4,088	415,412	202,967	5,545	1,305
43	Capacity, 1910 ... gallons per minute	443,024	26,464	105	.....	100	90,618	8,700	272	.....
	Pumping plants:									
44	Number, 1920	2,130	215	3	1	13	869	346	33	11
45	Number, 1910	888	77	1	.....	1	114	18	11	2
46	Engine capacity, 1920 ... horsepower	32,361	3,214	36	38	137	12,504	5,225	241	93
47	Engine capacity, 1910 ... horsepower	8,990	896	3	.....	5	2,846	174	49	90
48	Pump capacity, 1920 ... gallons per minute	1,442,263	1,065,729	2,096	900	4,558	1,219,402	283,339	13,111	6,990
49	Pump capacity, 1910 ... gallons per minute	515,380	62,449	105	.....	100	90,668	12,759	4,577	6,100
50	Average lift, 1920 ... feet	22	23	11	70	24	53	23	18	22
	CAPITAL INVESTED.									
51	Capital invested to Jan. 1, 1920 ... dollars	8,067,930	5,586,804	37,298	14,223,585	2,487,561	18,419,752	3,989,358	116,286	519,656
52	Capital invested to July 1, 1910 ... dollars	1,898,490	1,519,561	29,027	4,955,272	962,698	1,788,635	687,381	12,124	884,965
53	Per cent of increase, 1910–1920	325.0	267.7	28.5	187.0	158.4	929.8	480.4	859.1	−41.3
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	9.63	43.99	74.60	31.07	31.18	55.86	10.58	76.66	7.26
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	3.39	90.43	87.17	20.48	13.41	8.23	2.37	14.64	9.85
	ESTIMATED FINAL COST.									
56	Estimated final cost of existing enterprises in 1920 ... dollars	9,249,614	7,283,303	37,798	14,223,585	2,607,111	18,829,815	4,362,178	216,346	583,456
57	Estimated final cost of existing enterprises in 1910 ... dollars	1,898,490	3,716,976	29,027	5,884,182	962,698	1,788,635	687,381	12,124	1,034,965
58	Per cent of increase, 1910–1920	387.2	95.9	30.2	143.4	170.8	952.7	534.6	.....	−43.6
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	8.42	35.98	56.92	29.98	26.60	39.59	8.89	118.16	6.79
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	3.00	16.84	30.05	15.69	10.43	4.44	2.21	9.56	6.92

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910—Continued.

[A minus sign (−) denotes decrease. Per cent not shown when base is less than 100 or when per cent is more than 1,000.]

		Los Angeles.	Madera.	Marin.	Mariposa.	Mendocino.	Merced.	Modoc.	Mono.	Monterey.	Napa.
1	Number of all farms in 1920	12,444	1,402	718	267	1,759	2,846	743	74	1,712	1,428
2	Number of farms irrigated in 1919	9,102	930	14	48	92	2,334	441	66	451	39
3	Per cent of all farms	73.1	66.3	1.9	18.1	5.2	82.0	59.4	89.2	26.3	2.7
4	Number of farms irrigated in 1909	4,669	158	6	56	39	1,417	437	76	258	36
5	Per cent of increase, 1909–1919	94.9	488.6	.....	.....	.....	64.7	0.9	.....	74.8	.....
	LAND AND FARM AREA.										
6	Approximate land area ... acres	2,633,600	1,351,680	338,560	935,320	2,364,960	1,276,800	2,446,720	1,999,200	2,131,200	591,120
7	All land in farms ... acres	882,333	536,725	290,148	235,849	923,087	1,122,550	596,757	42,634	1,104,948	293,925
8	Improved land in farms ... acres	483,096	262,971	87,846	49,587	101,220	506,582	168,251	8,740	298,320	116,723
9	Area irrigated in 1919 ... acres	248,412	100,220	564	66	1,255	212,851	82,845	46,012	47,326	660
10	Per cent of improved land in farms	51.4	38.1	0.6	0.1	1.2	42.0	49.2	.....	11.9	0.6
11	Area irrigated in 1909 ... acres	145,586	38,705	67	376	371	151,998	82,075	49,627	15,006	1,191
12	Per cent of increase, 1909–1919	70.6	158.9	.....	−82.4	238.3	40.0	0.9	−6.1	214.4	−44.6
13	Area enterprises were capable of irrigating in 1920 ... acres	319,368	118,672	794	89	11,566	288,157	89,801	89,325	56,139	1,284
14	Area enterprises were capable of irrigating in 1910 ... acres	183,596	51,230	71	546	590	248,676	89,476	50,007	27,176	2,035
15	Per cent of increase, 1910–1920	74.0	131.6	.....	−83.7	.....	15.9	0.4	78.6	106.6	−36.9
16	Area included in enterprises in 1920 ... acres	364,574	161,032	713	109	11,686	457,494	112,200	121,878	59,659	1,405
17	Area included in enterprises in 1910 ... acres	241,794	82,321	71	787	1,365	281,719	124,166	84,973	29,914	2,443
18	Per cent of increase, 1910–1920	50.8	95.6	.....	−85.8	756.1	62.4	−9.6	43.4	99.4	−42.5
19	Area of irrigated land reported as available for settlement ... acres	6,100	.....	.....	.....	.....	212,500	.....	40,000	.....	.....
	IRRIGATION WORKS.										
	Independent enterprises:										
20	Number, 1920	1,863	689	4	9	64	479	376	73	189	32
21	Number, 1910	1,567	35	6	48	37	135	388	77	117	35
	Main ditches:										
22	Number, 1920	414	29	.....	5	23	233	470	101	120	6
23	Number, 1910	601	34	5	49	33	45	446	85	106	26
24	Length, 1920 ... miles	232	63	.....	3	13	684	655	223	108	1
25	Length, 1910 ... miles	930	79	5	21	19	261	637	172	228	8
26	Capacity, 1920 ... second-feet	5,059	2,066	.....	6	86	3,972	3,078	1,526	528	20
27	Capacity, 1910 ... second-feet	2,296	1,515	21	28	49	4,478	2,907	1,243	1,905	25
	Laterals:										
28	Number, 1920	621	34	.....	.....	28	763	175	15	398	.....
29	Number, 1910	494	30	.....	.....	8	353	490	101	23	3
30	Length, 1920 ... miles	221	126	.....	.....	365	552	191	14	98	.....
31	Length, 1910 ... miles	500	294	.....	.....	6	352	175	65	32	3
	Reservoirs:										
32	Number, 1920	411	107	1	3	10	64	71	12	9	3
33	Number, 1910	279	3	1	8	7	10	32	.....	10	3
34	Capacity, 1920 ... acre-feet	37,591	418	3	.....	296	20,651	80,285	44,740	54	1
35	Capacity, 1910 ... acre-feet	993	12,341	1	3	10	15,603	33,993	.....	2	13
	Flowing wells:										
36	Number, 1920	123	8	1	.....	.....	13	71	.....	1	1
37	Number, 1910	376	.....	.....	.....	.....	29	45	.....	.....	.....
38	Capacity, 1920 ... gallons per minute	41,336	2,100	.....	.....	.....	3,212	5,607	.....	400	1,000
39	Capacity, 1910 ... gallons per minute	70,818	.....	.....	.....	.....	2,567	1,256	.....	.....	.....
	Pumped wells:										
40	Number, 1920	2,223	733	7	.....	14	543	7	10	606	11
41	Number, 1910	1,673	33	1	2	6	78	2	.....	102	2
42	Capacity, 1920 ... gallons per minute	1,131,797	189,455	208	.....	1,839	299,395	675	5,919	407,319	9,005
43	Capacity, 1910 ... gallons per minute	871,143	26,518	150	49	2,296	52,008	44	.....	196,236	300
	Pumping plants:										
44	Number, 1920	1,854	701	4	.....	39	539	11	9	203	31
45	Number, 1910	1,361	25	6	2	10	108	2	.....	124	17
46	Engine capacity, 1920 ... horsepower	45,752	8,307	19	.....	481	6,094	146	214	9,631	314
47	Engine capacity, 1910 ... horsepower	30,632	604	48	1	65	1,505	2	.....	5,338	115
48	Pump capacity, 1920 ... gallons per minute	1,166,131	396,483	325	.....	18,424	349,560	3,250	5,919	406,617	21,126
49	Pump capacity, 1910 ... gallons per minute	872,718	26,318	1,160	49	3,586	93,239	44	.....	260,513	7,751
50	Average lift, 1920 ... feet	60	33	27	.....	33	22	30	34	33	24
	CAPITAL INVESTED.										
51	Capital invested to Jan. 1, 1920 ... dollars	21,038,616	1,351,854	15,731	3,786	582,640	6,614,674	663,660	5,679,375	2,450,643	70,168
52	Capital invested to July 1, 1910 ... dollars	7,817,023	512,098	3,380	13,440	30,297	3,748,211	301,040	64,282	495,916	53,948
53	Per cent of increase, 1910–1920	169.1	164.0	365.4	−71.8	.....	76.5	120.5	.....	394.2	30.1
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	65.88	11.39	22.35	42.54	50.38	22.96	7.39	63.57	43.64	54.65
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	42.60	10.00	47.61	24.62	51.35	15.07	3.36	1.29	18.25	26.51
	ESTIMATED FINAL COST.										
56	Estimated final cost of existing enterprises in 1920 ... dollars	23,271,909	1,366,599	15,731	3,786	588,040	13,106,429	760,435	7,045,875	2,460,643	72,668
57	Estimated final cost of existing enterprises in 1910 ... dollars	9,266,023	512,098	3,380	13,440	30,297	3,748,211	316,040	64,282	578,916	53,948
58	Per cent of increase, 1910–1920	151.2	166.9	365.4	−71.8	.....	249.7	140.6	.....	325.0	34.7
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	63.83	8.49	22.06	34.73	50.32	28.65	6.78	57.81	41.25	51.72
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	38.32	6.22	47.61	17.52	22.20	13.30	2.55	0.76	19.35	22.08

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910—Continued.

[A minus sign (—) denotes decrease. Per cent not shown when base is less than 100.]

		Nevada.	Orange.	Placer.	Plumas.	Riverside.	Sacramento.	San Benito.	San Bernardino.	San Diego.	San Francisco.
1	Number of all farms in 1920	481	4,189	1,286	136	3,949	2,975	945	4,023	3,200	74
2	Number of farms irrigated in 1919	311	3,846	814	108	2,670	1,747	349	3,350	1,698	23
3	Per cent of all farms	64.7	91.8	63.6	72.0	67.6	58.7	36.9	83.3	53.1	31.1
4	Number of farms irrigated in 1909	200	2,215	618	151	2,174	1,053	240	2,463	890	25
5	Per cent of increase, 1909-1919	3.7	73.6	31.7	—28.5	22.8	65.9	45.4	36.0	90.8	.....
	LAND AND FARM AREA.										
6	Approximate land area ... acres	623,360	308,800	903,040	1,659,520	4,622,720	629,120	890,880	12,912,000	2,701,440	26,880
7	All land in farms ... acres	196,441	325,768	232,153	101,653	676,293	555,503	539,378	415,738	925,192	1,295
8	Improved land in farms ... acres	26,196	200,945	136,455	34,223	348,538	399,024	122,606	175,272	262,646	840
9	Area irrigated in 1919 ... acres	3,441	87,330	27,520	22,532	106,212	72,960	12,468	105,306	24,996	372
10	Per cent of improved land in farms	13.1	43.5	20.2	66.5	30.5	18.3	10.2	60.1	9.5	44.3
11	Area irrigated in 1909 ... acres	3,839	55,056	16,845	36,662	71,436	53,683	7,186	70,278	24,944	383
12	Per cent of increase, 1909-1919	—10.4	58.6	63.4	—37.6	48.7	35.9	73.5	49.8	0.2	—2.9
13	Area enterprises were capable of irrigating in 1920 ... acres	5,002	102,976	27,520	25,478	128,788	103,271	17,186	120,798	32,148	412
14	Area enterprises were capable of irrigating in 1910 ... acres	4,259	63,436	23,365	37,529	103,233	69,970	13,790	86,107	31,205	383
15	Per cent of increase, 1910-1920	17.4	60.8	17.8	—32.1	24.8	47.6	24.6	40.3	3.0	7.6
16	Area included in enterprises in 1920 ... acres	5,001	113,026	40,000	28,265	226,927	141,275	23,017	184,024	68,401	412
17	Area included in enterprises in 1910 ... acres	5,267	71,444	61,751	37,901	210,452	74,588	20,067	152,415	45,535	383
18	Per cent of increase, 1910-1920	6.3	58.2	—35.2	—25.4	7.8	89.4	14.7	20.7	50.2	7.6
19	Area of irrigated land reported as available for settlement ... acres	.....	.....	.....	.....	11,240	15,086	1,700	.....	7,500	.....
	IRRIGATION WORKS.										
	Independent enterprises:										
20	Number, 1920	96	1,012	64	102	807	1,159	217	622	637	33
21	Number, 1910	103	619	35	127	610	889	109	521	384	39
	Main ditches:										
22	Number, 1920	96	34	38	116	91	134	88	96	50	.....
23	Number, 1910	116	209	35	147	301	213	64	291	288	24
24	Length, 1920 ... miles	342	82	131	135	235	269	64	141	137	.....
25	Length, 1910 ... miles	236	189	194	201	500	238	61	466	259	7
26	Capacity, 1920 ... second-feet	454	780	657	1,369	2,649	1,937	264	1,291	1,653	.....
27	Capacity, 1910 ... second-feet	372	876	437	1,176	2,825	1,556	366	1,315	1,464	11
	Laterals:										
28	Number, 1920	33	116	53	213	221	254	80	81	107	.....
29	Number, 1910	46	115	45	62	262	5	12	237	244	.....
30	Length, 1920 ... miles	3	73	216	66	196	148	29	30	18	.....
31	Length, 1910 ... miles	32	245	198	16	288	8	33	283	140	.....
	Reservoirs:										
32	Number, 1920	25	27	17	1	201	7	19	99	134	.....
33	Number, 1910	24	10	29	.....	131	2	6	83	68	27
34	Capacity, 1920 ... acre-feet	50,021	1,044	10,112	240	113,996	698	5,996	1,399	22,142	.....
35	Capacity, 1910 ... acre-feet	26,438	189	53,354	.....	58,440	352	5,302	96,969	26,845	2
	Flowing wells:										
36	Number, 1920	3	385	.....	6	306	.....	4	124	5	1
37	Number, 1910	.....	368	.....	3	553	.....	.....	79	.....	.....
38	Capacity, 1920 ... gallons per minute	38	34,199	.....	476	69,110	.....	600	20,310	231	.....
39	Capacity, 1910 ... gallons per minute	.....	92,689	.....	504	90,331	.....	.....	21,825	.....	.....
	Pumped wells:										
40	Number, 1920	5	1,151	31	.....	837	1,433	365	675	1,122	48
41	Number, 1910	5	586	2	.....	792	1,168	87	449	438	39
42	Capacity, 1920 ... gallons per minute	146	549,010	4,522	.....	378,010	480,229	104,860	400,293	147,860	1,725
43	Capacity, 1910 ... gallons per minute	48	260,947	289	.....	289,472	260,303	25,822	209,747	110,807	4,444
	Pumping plants:										
44	Number, 1920	8	1,602	44	2	628	1,465	183	583	651	48
45	Number, 1910	4	453	5	.....	405	1,192	54	402	363	39
46	Engine capacity, 1920 ... horsepower	38	24,495	276	170	15,473	17,283	4,009	20,120	5,190	154
47	Engine capacity, 1910 ... horsepower	12	8,575	30	.....	11,067	5,059	677	10,700	2,857	89
48	Pump capacity, 1920 ... gallons per minute	494	604,739	8,131	9,000	404,046	788,172	114,360	423,835	161,517	1,807
49	Pump capacity, 1910 ... gallons per minute	848	286,603	1,294	.....	346,788	335,666	29,452	233,136	112,256	4,444
50	Average lift, 1920 ... feet	31	51	29	10	58	28	34	82	52	83
	CAPITAL INVESTED.										
51	Capital invested to Jan. 1, 1920 ... dollars	1,190,790	6,591,903	1,162,774	228,717	12,473,520	3,810,695	754,861	8,738,603	4,948,939	70,831
52	Capital invested to July 1, 1910 ... dollars	1,569,628	1,948,246	2,798,740	107,118	5,648,469	1,452,471	177,924	9,416,960	3,753,127	21,975
53	Per cent of increase, 1910-1920	—24.1	238.7	—58.5	111.7	120.8	162.4	324.3	—7.2	31.9	222.3
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	238.06	63.70	42.25	8.99	96.85	36.90	43.92	72.34	153.94	171.92
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	368.40	30.69	119.78	2.85	54.72	20.76	12.90	109.36	120.27	57.38
	ESTIMATED FINAL COST.										
56	Estimated final cost of existing enterprises in 1920 ... dollars	1,190,790	6,756,015	1,163,209	228,717	14,796,051	4,291,620	767,701	8,938,516	5,592,954	70,831
57	Estimated final cost of existing enterprises in 1910 ... dollars	1,569,628	1,948,246	2,798,740	107,118	5,648,469	1,452,471	267,924	13,038,449	3,767,127	21,975
58	Per cent of increase, 1910-1920	—24.1	246.9	—58.4	111.7	139.6	195.5	186.5	—31.4	48.5	222.3
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	212.60	59.79	29.08	8.02	65.20	30.38	33.35	48.57	81.77	171.92
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	297.90	27.27	45.32	2.83	27.08	19.47	13.35	85.55	82.73	57.38

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910—Continued.

[A minus sign (—) denotes decrease. Per cent not shown when base is less than 100.]

		San Joaquin.	San Luis Obispo.	San Mateo.	Santa Barbara.	Santa Clara.	Santa Cruz.	Shasta.	Sierra.	Siskiyou.	Solano.
1	Number of all farms in 1920	4,500	1,806	624	1,485	5,016	1,759	949	77	1,052	1,358
2	Number of farms irrigated in 1919	3,047	143	205	437	2,649	145	598	62	584	278
3	Per cent of all farms	67.7	7.9	32.9	29.4	52.8	8.2	63.0	80.5	55.5	20.5
4	Number of farms irrigated in 1909	1,452	91	75	137	1,101	106	639	94	636	150
5	Per cent of increase, 1909–1919	109.8	.....	.....	219.0	140.6	36.8	—6.4	.....	—8.2	85.3
	LAND AND FARM AREA.										
6	Approximate land area ... acres	926,720	2,133,760	296,080	1,753,600	849,920	278,400	2,469,120	590,720	4,003,840	526,080
7	All land in farms ... acres	706,308	1,377,536	117,109	869,781	576,812	144,751	565,235	60,667	537,396	408,288
8	Improved land in farms ... acres	509,403	402,259	77,736	210,353	296,860	67,856	105,470	21,607	168,621	299,264
9	Area irrigated in 1919 ... acres	183,923	5,302	7,142	16,335	70,312	1,294	50,215	15,292	65,602	23,650
10	Per cent of improved land in farms	36.7	1.3	9.2	7.8	34.0	1.9	48.5	70.8	39.4	7.9
11	Area irrigated in 1909 ... acres	59,811	1,687	3,648	12,012	37,637	1,201	33,604	17,504	60,391	3,640
12	Per cent of increase, 1909–1919	207.5	214.3	95.8	36.0	86.8	7.7	52.1	—12.6	8.8	555.1
13	Area enterprises were capable of irrigating in 1920 ... acres	231,125	10,872	8,164	54,408	75,348	2,069	58,993	15,873	70,987	28,702
14	Area enterprises were capable of irrigating in 1910 ... acres	77,083	2,416	3,653	13,572	50,909	1,313	36,564	17,505	66,856	7,160
15	Per cent of increase, 1910–1920	199.8	350.0	123.5	153.5	47.9	57.6	61.1	—9.3	6.2	300.9
16	Area included in enterprises in 1920 ... acres	324,404	11,229	9,449	37,795	86,761	2,700	110,382	18,547	130,654	36,078
17	Area included in enterprises in 1910 ... acres	173,563	2,539	3,983	13,603	60,149	2,232	72,653	18,249	79,161	8,192
18	Per cent of increase, 1910–1920	86.9	342.3	137.2	177.8	44.3	21.0	51.9	1.6	65.0	340.4
19	Area of irrigated land reported as available for settlement ... acres	.....	.....	.....	.....	.....	.....	15,600	.....	2,300	.....
	IRRIGATION WORKS.										
	Independent enterprises:										
20	Number, 1920	1,233	128	206	275	1,561	67	396	70	455	251
21	Number, 1910	1,206	65	85	108	842	97	472	100	572	122
	Main ditches:										
22	Number, 1920	256	38	15	55	26	11	385	87	714	36
23	Number, 1910	298	51	57	76	458	81	446	119	595	20
24	Length, 1920 ... miles	1,089	20	7	31	30	2	550	80	850	45
25	Length, 1910 ... miles	208	42	58	75	228	41	678	150	688	22
26	Capacity, 1920 ... second-feet	2,609	53	13	312	328	7	3,970	282	4,255	111
27	Capacity, 1910 ... second-feet	5,415	84	458	140	1,511	161	3,150	2,304	2,576	101
	Laterals:										
28	Number, 1920	417	5	54	47	8	1	118	48	316	52
29	Number, 1910	49	5	.....	4	39	.....	130	4	172	.....
30	Length, 1920 ... miles	888	.....	.....	7	21	.....	151	15	109	35
31	Length, 1910 ... miles	192	3	.....	5	27	.....	81	1	41	.....
	Reservoirs:										
32	Number, 1920	25	15	157	83	8	10	12	1	29	4
33	Number, 1910	73	8	3	32	142	55	10	3	26	3
34	Capacity, 1920 ... acre-feet	36,037	21	1,244	14,052	21	38	6,312	.....	4,591	.....
35	Capacity, 1910 ... acre-feet	134,014	52	33	13	9	1,228	3,903	8	107	1
	Flowing wells:										
36	Number, 1920	3	19	17	33	80	1	3	.....	8	4
37	Number, 1910	.....	4	.....	7	438	2	2	.....	.....	.....
38	Capacity, 1920 ... gallons per minute	180	3,808	25,723	4,341	13,675	125	150	.....	1,950	.....
39	Capacity, 1910 ... gallons per minute	.....	70	.....	250	119,816	10	290	.....	.....	.....
	Pumped wells:										
40	Number, 1920	1,376	161	229	296	2,159	44	4	1	26	322
41	Number, 1910	1,618	12	40	113	800	58	34	.....	3	125
42	Capacity, 1920 ... gallons per minute	630,607	35,862	27,009	101,925	649,247	11,076	1,340	500	9,995	145,982
43	Capacity, 1910 ... gallons per minute	432,281	4,416	3,956	24,520	287,068	8,383	6,550	.....	250	70,338
	Pumping plants:										
44	Number, 1920	1,371	119	251	235	1,572	59	51	1	45	281
45	Number, 1910	1,304	31	59	65	587	76	61	.....	10	127
46	Engine capacity, 1920 ... horsepower	18,987	1,692	2,219	5,657	33,721	685	594	.....	2,903	4,547
47	Engine capacity, 1910 ... horsepower	7,582	155	421	1,442	9,494	384	418	.....	69	1,862
48	Pump capacity, 1920 ... gallons per minute	997,850	62,519	26,400	543,273	780,874	19,378	47,896	500	125,674	199,892
49	Pump capacity, 1910 ... gallons per minute	553,134	12,116	8,341	37,135	338,915	16,324	31,937	.....	1,217	100,715
50	Average lift, 1920 ... feet	28	25	78	51	56	42	17	6	40	34
	CAPITAL INVESTED.										
51	Capital invested to Jan. 1, 1920 ... dollars	7,432,763	304,119	488,856	1,418,022	4,364,803	388,145	3,020,700	109,840	1,389,073	535,348
52	Capital invested to July 1, 1910 ... dollars	1,689,720	32,311	90,921	370,186	1,337,216	76,621	430,766	69,650	370,627	135,532
53	Per cent of increase, 1910–1920	339.9	841.2	437.7	283.1	226.4	406.6	601.2	44.7	328.8	295.0
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	32.16	27.97	59.88	41.21	57.93	187.60	51.28	6.35	22.29	18.65
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	21.92	13.37	24.39	27.28	26.25	58.36	11.78	3.98	5.54	18.93
	ESTIMATED FINAL COST.										
56	Estimated final cost of existing enterprises in 1920 ... dollars	7,516,649	317,729	491,356	1,498,233	4,551,153	388,645	3,344,079	101,940	1,814,803	560,348
57	Estimated final cost of existing enterprises in 1910 ... dollars	3,324,720	32,311	90,921	370,186	1,337,216	76,621	446,766	69,650	370,627	135,532
58	Per cent of increase, 1910–1920	126.1	883.3	440.4	304.7	240.3	407.2	658.7	46.4	389.7	313.4
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	23.17	28.30	52.00	39.64	52.46	143.94	30.30	5.50	13.89	15.53
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	19.16	12.73	22.83	27.21	22.24	34.33	6.07	3.82	4.68	16.54

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910—Continued.

[A minus sign (—) denotes decrease. Per cent not shown when base is less than 100 or when per cent is more than 1,000.]

		Sonoma.	Stanislaus.	Sutter.	Tehama.	Trinity.	Tulare.	Tuolumne.	Ventura.	Yolo.	Yuba.
1	Number of all farms in 1920	5,739	4,566	1,437	1,414	377	6,372	363	1,543	1,613	487
2	Number of farms irrigated in 1919	113	4,091	699	640	217	5,184	149	818	688	242
3	Per cent of all farms	2.0	89.6	48.6	45.3	57.6	81.4	41.0	53.0	42.7	49.7
4	Number of farms irrigated in 1909	38	1,911	39	366	201	3,048	157	489	333	112
5	Per cent of increase, 1909-1919		114.1		74.9	8.0	70.1	—5.1	67.3	106.6	116.1
	LAND AND FARM AREA.										
6	Approximate land area ... acres	1,012,480	928,000	389,120	1,872,000	1,981,440	3,107,840	1,401,600	1,189,120	648,960	404,480
7	All land in farms ... acres	748,147	748,678	288,940	1,124,502	139,290	1,084,234	220,730	384,865	398,165	228,797
8	Improved land in farms ... acres	251,730	477,871	232,670	232,722	15,078	544,598	35,380	189,924	300,094	98,997
9	Area irrigated in 1919 ... acres	2,126	197,249	47,305	23,153	5,810	398,662	2,892	31,716	42,493	20,773
10	Per cent of improved land in farms	0.8	41.3	20.4	9.9	38.5	73.2	8.2	16.7	14.2	21.0
11	Area irrigated in 1909 ... acres	631	84,915	1,173	14,281	6,324	265,404	2,035	25,273	11,754	3,073
12	Per cent of increase, 1909-1919	236.9	134.8		62.1	—8.1	50.2	42.1	25.5	261.5	576.0
13	Area enterprises were capable of irrigating in 1920 ... acres	3,091	309,362	96,984	38,415	9,041	658,386	2,943	35,875	65,440	24,049
14	Area enterprises were capable of irrigating in 1910 ... acres	761	141,785	1,361	22,167	7,127	337,938	2,083	49,407	14,697	6,401
15	Per cent of increase, 1910-1920	306.2	118.2		70.1	26.9	94.8	41.3	—27.4	345.3	275.7
16	Area included in enterprises in 1920 ... acres	11,256	375,270	102,945	44,670	15,010	764,733	25,371	50,737	104,716	71,995
17	Area included in enterprises in 1910 ... acres	951	340,914	1,959	36,020	9,513	466,735	5,958	56,357	55,967	46,322
18	Per cent of increase, 1910-1920		10.1		24.0	57.8	63.8	325.8	—10.0	87.1	55.4
19	Area of irrigated land reported as available for settlement ... acres		77,833		2,900		2,700			20,906	6,720
	IRRIGATION WORKS.										
	Independent enterprises:										
20	Number, 1920	93	196	487	333	222	3,570	53	130	254	78
21	Number, 1910	40	27	21	270	193	908	61	189	47	39
	Main ditches:										
22	Number, 1920	5	94	67	150	261	211	50	23	28	67
23	Number, 1910	32	23	13	136	208	752	62	148	8	36
24	Length, 1920 ... miles	2	667	160	193	245	770	63	42	139	188
25	Length, 1910 ... miles	21	153	6	164	228	1,033	153	177	87	128
26	Capacity, 1920 ... second-feet	6	6,150	1,168	1,111	1,536	8,018	251	169	1,641	786
27	Capacity, 1910 ... second-feet	14	3,074	27	1,325	882	6,526	245	627	214	398
	Laterals:										
28	Number, 1920	2	914	204	97	55	432	32	48	43	43
29	Number, 1910		34		41	41	577	11	53	8	13
30	Length, 1920 ... miles		1,074	182	226	15	1,252	130	30	155	105
31	Length, 1910 ... miles		274		40	13	629	24	87	83	87
	Reservoirs:										
32	Number, 1920	4	4	4	14	41	527	15	23	3	9
33	Number, 1910	3	5	6	43	30	63	9	32	5	5
34	Capacity, 1920 ... acre-feet		75,156	2	185	90,458	112,806	6,086	2,749	151	6,651
35	Capacity, 1910 ... acre-feet	1	30,616	1	311	427	1,226	10	80	2	80
	Flowing wells:										
36	Number, 1920	1	1	2			23		42		
37	Number, 1910				1		79	2	32		
38	Capacity, 1920 ... gallons per minute		400	800			7,173		11,435		
39	Capacity, 1910 ... gallons per minute				8		35,513	14	17,455		
	Pumped wells:										
40	Number, 1920	78	160	742	281	5	4,515	2	149	285	49
41	Number, 1910	11	3	18	141	1	794	4	157	58	11
42	Capacity, 1920 ... gallons per minute	28,381	84,205	319,535	96,585	695	1,776,335	25	86,734	166,698	30,551
43	Capacity, 1910 ... gallons per minute	6,831	950	6,616	16,275	750	237,420	16	64,829	29,409	1,605
	Pumping plants:										
44	Number, 1920	98	114	628	261	12	3,758	4	105	276	41
45	Number, 1910	27	21	19	165	3	739	7	126	46	11
46	Engine capacity, 1920 ... horsepower	614	4,803	19,541	2,190	69	45,032	12	5,592	8,852	2,365
47	Engine capacity, 1910 ... horsepower	134	707	124	751	34	7,864	89	2,976	981	62
48	Pump capacity, 1920 ... gallons per minute	33,534	232,785	826,630	106,285	3,990	2,331,179	25	94,130	549,814	29,852
49	Pump capacity, 1910 ... gallons per minute	16,763	185,950	6,616	39,680	1,920	244,318	765	72,704	69,694	1,605
50	Average lift, 1920 ... feet	19	31	21	27	15	43	36	82	26	24
	CAPITAL INVESTED.										
51	Capital invested to Jan. 1, 1920 ... dollars	107,314	9,630,519	2,931,118	1,048,950	206,875	12,529,432	965,667	2,691,027	2,003,591	1,486,598
52	Capital invested to July 1, 1910 ... dollars	13,801	4,051,870	18,800	263,035	173,414	5,634,379	180,474	2,262,205	311,660	198,268
53	Per cent of increase, 1910-1920	677.6	137.9		298.8	19.3	122.4	435.1	19.0	542.9	649.8
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	34.72	31.16	30.22	26.61	22.88	19.03	328.12	75.01	30.62	61.82
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	18.14	28.58	13.81	11.35	24.33	16.67	86.64	45.79	21.21	30.97
	ESTIMATED FINAL COST.										
56	Estimated final cost of existing enterprises in 1920 ... dollars	125,094	17,006,504	3,239,643	1,081,145	215,625	12,973,985	965,667	3,066,027	3,629,826	1,981,373
57	Estimated final cost of existing enterprises in 1910 ... dollars	13,801	5,528,870	18,800	342,555	173,414	5,643,379	180,474	2,317,205	311,660	198,268
58	Per cent of increase, 1910-1920	806.2	219.3		215.6	24.0	129.9	435.1	32.3		899.3
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	11.11	45.32	31.46	24.20	14.33	16.97	38.06	60.43	34.66	27.52
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	14.51	15.03	9.60	9.51	18.23	12.09	30.29	41.12	5.57	4.28

COLORADO.

INTRODUCTION.

The following pages present the statistics of irrigation for the state of Colorado collected at the census of 1920. Statistics of acreage irrigated, of acreage, yield, and value of crops grown on irrigated land, and of cost of operation and maintenance relate to the year 1919; other items relate to the year 1920. Throughout the report figures for the census of 1910 are given for purposes of comparison; and, for the purpose of showing the historical development of irrigation, items which have been reported in censuses previous to 1910 are presented.

Statistics of number of farms irrigated and of acreage, yield, and value of crops grown on irrigated land were collected in the general census of agriculture. All other statistics were obtained in a special canvass of irrigation enterprises.

TABLE 1.—SUMMARY FOR THE STATE: 1920 AND 1910.

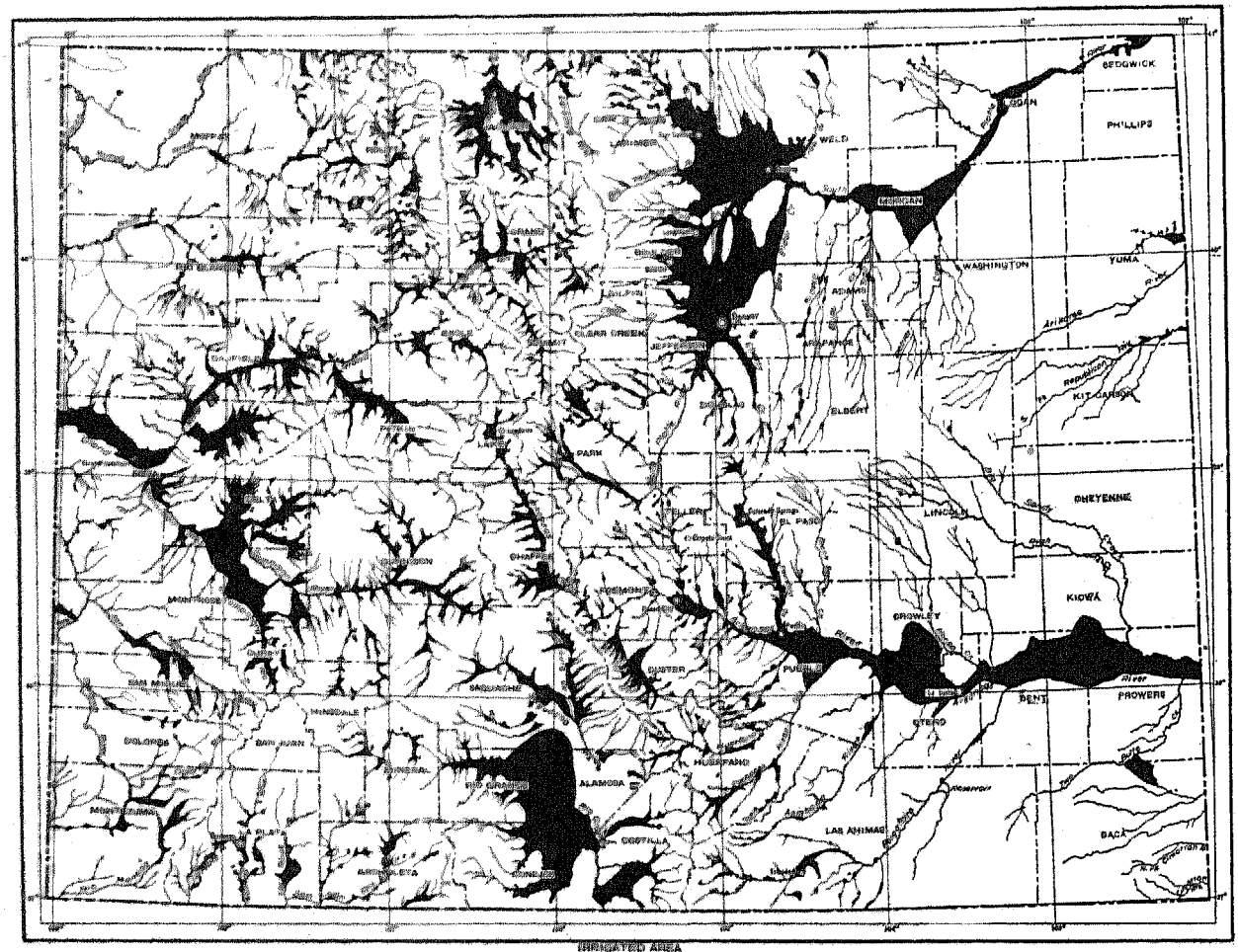
ITEM.	CENSUS OF—		INCREASE.[1]	
	1920	1910	Amount.	Per cent.
Number of all farms	59,934	46,170	13,764	29.8
Approximate land area of the state ... acres	66,341,120	66,341,120	.....	.....
All land in farms ... acres	24,462,014	13,532,113	10,929,901	80.8
Improved land in farms ... acres	7,744,757	4,302,101	3,442,656	80.0
Number of farms irrigated	28,756	25,857	2,899	11.2
Area irrigated ... acres	3,348,385	2,792,032	556,353	19.9
Area enterprises were capable of irrigating ... acres	3,855,348	3,990,166	−134,818	−3.4
Area included in enterprises ... acres	5,220,588	5,917,457	−696,869	−11.8
Per cent irrigated:				
Number of all farms	48.0	56.0	−8.0	.....
Approximate land area of the state	5.0	4.2	0.8	.....
Land in farms	13.7	20.6	−6.9	.....
Improved land in farms	43.2	64.9	−21.7	.....
Excess of area enterprises were capable of irrigating over area irrigated ... acres	506,963	1,198,134	−691,171	−57.7
Excess of area included in enterprises over area irrigated ... acres	1,872,203	3,125,425	−1,253,222	−40.1
Area of irrigated land reported as available for settlement ... acres	274,282	(2)	.....	.....
Capital invested	$88,302,442	$56,636,443	$31,665,999	55.9
Average per acre enterprises were capable of irrigating	$22.90	$14.19	$8.71	61.4
Estimated final cost of existing enterprises	$95,198,423	$76,443,239	$18,755,184	24.5
Average per acre included in enterprises	$18.24	$12.92	$5.32	41.2
Average cost of operation and maintenance per acre	$0.87	$0.75	$0.12	16.0
IRRIGATION WORKS.				
Number of enterprises	6,634	9,065	−2,431	−26.8
Number of main ditches	8,867	8,405	462	5.5
Length of main ditches ... miles	19,022	17,564	1,458	8.3
Capacity of main ditches ... second-feet	119,558	148,483	−28,925	−19.5
Number of lateral ditches	6,185	5,612	573	10.2
Length of lateral ditches ... miles	8,571	5,006	3,565	71.2
Number of reservoirs	979	1,084	−105	−9.7
Capacity of reservoirs ... acre-feet	2,406,372	2,646,593	−240,221	−9.1
Number of flowing wells	476	313	163	52.1
Capacity of flowing wells ... gallons per minute	20,139	41,989	−21,850	−52.0
Number of pumped wells	527	121	406	335.5
Capacity of pumped wells ... gallons per minute	210,094	53,564	156,530	292.2
Number of pumping plants	406	206	200	97.1
Engine capacity ... horsepower	8,635	7,969	666	8.4
Pump capacity ... gallons per minute	299,726	296,937	2,789	0.9
Average lift ... feet	23	(2)	23	.....

[1] A minus sign (−) denotes decrease.

[2] Not reported in 1910.

COLORADO

APPROXIMATE LOCATION AND EXTENT OF IRRIGATED LAND.



IRRIGATED AREA
3,346,095 ACRES
5 PER CENT OF TOTAL LAND AREA

CLIMATIC CONDITIONS.

The main ranges of the Rocky Mountains divide the state of Colorado approximately in half, east and west. In the mountainous section, through the middle of the state, the precipitation is heavy. Both east and west of the mountains it decreases. That part of the state east of the mountains consists of high plains sloping to the east, with a divide running from the base of the mountains to the eastern line of the state. From this divide the land slopes to the north toward South Platte River and to the south toward Arkansas River. The precipitation drops abruptly near the base of the mountains and gradually increases toward the east, the normal precipitation on the plains being between 12 and 15 inches, being highest on the divide between the South Platte and the Arkansas and lowest in the stream valleys. The heaviest precipitation occurs in the summer months. In all of the plains section some crops are grown without irrigation, but irrigation is practiced wherever water is available. In this part of the state the area of land susceptible of irrigation is practically unlimited, but the water supply is sufficient for only a small part of the land.

To the west of the main ranges of mountains the country is very much broken by short ranges of mountains and hills, and precipitation varies greatly with altitude and exposure. The valleys of the western slope have the smallest annual precipitation in the state, the normal being but 7 or 8 inches in the valley of Grand River and in the northwestern part of the state. In these lower valleys crops can not be grown successfully without irrigation. In this western half of the state the tillable land is limited to the comparatively narrow valleys, most of the remainder of the land being too rough for cultivation.

In the south central part of the state, on the headwaters of the Rio Grande, lies the San Luis Valley, which contains a large area of level land. The altitude is high, the seasons are short, and the normal precipitation is less than 10 inches. Toward the base of the mountains that surround the valley the precipitation is heavier and crops are grown without irrigation.

In the north central part of the state is a similar high valley on the headwaters of the North Platte. This valley is not so extensive as the San Luis Valley, and the rainfall is slightly greater.

For the state as a whole the precipitation for 1919 was slightly above the normal, but it was considerably below normal in the South Platte Valley and considerably above normal in the Arkansas Valley. On the western slope it was about normal.

The state has a large percentage of sunshine with a low relative humidity, making very favorable climatic conditions for crop growing, when sufficient moisture is available, from either rainfall or irrigation.

WATER SUPPLY FOR IRRIGATION.

From the high mountain mass in central Colorado streams flow in all directions. To the east the South Platte and the Arkansas flow across the plains into Nebraska and Kansas, respectively; to the south the Rio Grande flows into and through New Mexico; to the west flow the Grand and other streams that unite to form the Colorado; and to the north flows the North Platte, into and through Wyoming. On all these streams there is more or less controversy between water users in Colorado and those in the lower states. These mountains receive a heavy snowfall in winter, and the melting snows supply most of the spring and summer flow of the streams, although the summer rains help to keep up stream flow. All of the streams heading in the mountains have high floods in the early summer, with much reduced flow during the late summer and autumn. The floods supply abundant water for grain and hay crops that mature in June and July, but the growing of crops that have a long growing season and mature in the fall, such as potatoes, beets, orchard fruits, and alfalfa, requires storage of the flood and winter flow of the streams.

In the valleys of the South Platte and the Arkansas many reservoirs have been built, and most of the flood and winter flow is stored. These streams are typical plains streams, and in their natural condition lost in the sands in their courses across the plains much of the water flowing in them as they left the mountains. The irrigation of the lands along these rivers has caused a large inflow by seepage from the watered lands, resulting in a much better supply of water along their courses than was available before irrigation began. The storage of flood waters and return seepage have made possible a large extension of the irrigated areas on the lower reaches of these rivers.

On account of the limited area on the western slope susceptible of irrigation and the large flow of the streams there has not been so much necessity for storage, and consequently, there are few reservoirs.

The existence of an abundant supply of water on the western slope and an unlimited area of irrigable land on the plains has led to the diversion of some water from the streams on the western side of the mountains to the streams flowing onto the plains and to the formulation of plans for diverting much larger volumes. On the other hand, there are plans for storing the surplus water on the western slope for use on lands in Arizona and California that can be reached by canals from Colorado River.

Up to the present time there has been little occasion to use underground water for irrigation. No doubt large quantities of water can be pumped from wells.

On the plains there are many drainage channels which carry water during storms or when local snows are melting, but their supply is so uncertain that they are of little value for irrigation.

FARMS AND ACREAGE IRRIGATED.

TABLE 2.—NUMBER OF FARMS AND ACREAGE IRRIGATED: 1890 TO 1920.

CENSUS YEAR.	FARMS IRRIGATED.			AREA IRRIGATED.				
	Number.	Per cent of increase.	Per cent of all farms.	Acres.	Per cent of increase.	Per cent of total land area.	Per cent of land in farms.	Per cent of improved land in farms.
1920	28,756	11.2	48.0	3,348,385	19.9	5.0	13.7	43.2
1910	25,857	46.8	56.0	2,792,032	73.3	4.2	20.6	64.9
1900	17,613	82.3	71.3	1,611,271	86.9	2.4	17.0	70.9
1890	9,659	.....	58.9	860,735	.....	1.3	10.4	48.8

TABLE 3.—ACREAGE, CLASSIFIED BY DATE OF BEGINNING OF ENTERPRISES SUPPLYING WATER FOR IRRIGATION.

DATE OF BEGINNING.	Number of enterprises.	Area included in enterprises, 1920 (acres).	AREA IRRIGATED IN 1919.		Area enterprises were capable of irrigating in 1920 (acres).
			Acres.	Per cent of acreage in enterprises.	
Total	6,634	5,220,588	3,348,385	64.1	3,855,348
Before 1860	38	43,371	37,742	87.0	38,440
1860-1869	567	714,031	634,865	88.8	660,959
1870-1879	976	859,080	647,771	75.4	719,167
1880-1889	1,799	1,635,747	1,155,098	70.7	1,315,772
1890-1899	953	494,975	294,493	59.5	344,834
1900-1904	584	412,782	210,673	51.0	282,837
1905-1909	494	669,773	215,729	35.4	289,617
1910-1914	335	318,368	80,674	25.3	124,976
1915-1919	399	57,815	19,885	34.4	30,626
Not reported	365	75,149	51,495	68.5	57,149

TABLE 4.—ACREAGE, CLASSIFIED BY SOURCE OF WATER SUPPLY: 1919 AND 1909.

CLASS.	AREA IRRIGATED (ACRES).				Area enterprises were capable of irrigating in 1920 (acres).	Area included in enterprises, 1920 (acres).
	1919	1909	Increase.[1]			
			Amount.	Per cent.		
Total	3,348,385	2,792,032	556,353	19.9	3,855,348	5,220,588
Streams, gravity	3,028,787	2,745,035	283,752	10.3	3,465,037	4,459,303
Streams, pumped	12,747	13,248	−501	−3.8	26,256	26,699
Streams, pumped and gravity	9,430	(2)	9,430	.....	8,525	9,820
Wells, pumped	10,114	3,111	7,003	225.1	16,061	19,840
Wells, flowing	4,191	5,171	−980	−19.0	4,235	5,934
Wells, flowing and pumped	85	(2)	85	.....	166	2,045
Lakes, pumped	871	634	237	37.4	1,171	1,249
Lakes, gravity	2,867	422	2,445	579.4	3,889	5,247
Springs	10,856	8,320	2,536	30.5	13,677	18,711
Stored storm water	16,909	16,091	818	5.1	32,129	58,298
City water	11	(2)	11	.....	19	38
Sewage	195	(2)	195	.....	295	490
Streams, gravity, and pumped wells	16,258	(2)	16,258	.....	16,364	17,188
Streams, gravity, and flowing wells	67,880	(2)	67,880	.....	82,320	179,745
Other mixed	165,825	(2)	165,825	.....	187,157	413,973
Other and not reported	1,339	(2)	1,339	.....	1,583	2,038

[1] A minus sign (−) denotes decrease.
[2] Not included in classification in 1919.

ACREAGE, BY CHARACTER OF ENTERPRISE.

The original irrigation district law in Colorado was enacted in 1901, and it has been amended from time to time since that date. Generally, irrigation districts have been organized to take over works already built, but in Colorado this form of organization has been utilized to a considerable extent for building new works. In some instances they have taken over cooperative or commercial enterprises, but the larger part of the acreage credited to districts in Table 5 represents enterprises originally undertaken by districts.

In addition to supplying water to lands in its own projects, as shown in Table 5, the United States Reclamation Service works delivered water to about 8,500 acres in other enterprises under the terms of the Warren Act (act of Congress, Feb. 21, 1911).

The state of Colorado accepted the conditions of the Federal Carey Act (act of Congress, Aug. 18, 1894) in 1895, and has amended this law from time to time, but very little has been accomplished under this law.

Colorado undertook the construction of irrigation works by the use of convict labor, but this policy was abandoned and the works that were begun were turned over to other agencies.

The small area credited to the state in Table 5 belongs to a state institution and does not represent a scheme of state construction.

TABLE 5.—ACREAGE, CLASSIFIED BY CHARACTER OF ENTERPRISE: 1920 AND 1910.

ITEM AND CLASS.	CENSUS OF—		INCREASE.[1]	
	1920	1910	Acres.	Per cent.
ACREAGE IRRIGATED.				
Total	3,348,385	2,792,032	556,353	19.9
Individual and partnership	1,014,412	1,226,025	−211,613	−17.3
Cooperative	1,789,385	1,273,141	516,244	40.5
Irrigation district	248,409	115,304	133,105	115.4
Carey Act	2,430	485	1,945	401.0
Commercial	212,138	159,457	52,681	33.0
U. S. Reclamation Service	[2] 71,145	16,600	54,545	328.6
U. S. Indian Service	4,266	1,020	3,246	318.2
State	80	(3)	80	.....
City	5,825	(3)	5,825	.....
Not reported	295	(3)	295	.....
ACREAGE ENTERPRISES WERE CAPABLE OF IRRIGATING.				
Total	3,855,348	3,990,166	−134,818	−3.4
Individual and partnership	1,194,422	1,581,941	−387,519	−24.5
Cooperative	1,993,361	1,870,447	122,914	6.6
Irrigation district	269,504	207,570	61,934	29.8
Carey Act	15,000	6,085	8,915	146.5
Commercial	226,641	292,103	−65,462	−22.4
U. S. Reclamation Service	[2] 135,265	30,000	105,265	350.9
U. S. Indian Service	14,900	2,020	12,880	637.6
State	80	(3)	80	.....
City	5,825	(3)	5,825	.....
Not reported	350	(3)	350	.....
ACREAGE INCLUDED IN ENTERPRISES.				
Total	5,220,588	5,917,457	−696,869	−11.8
Individual and partnership	1,730,635	2,039,533	−308,898	−15.1
Cooperative	2,419,267	2,436,367	−17,100	−0.7
Irrigation district	504,973	487,370	17,603	3.6
Carey Act	34,000	59,480	−25,480	−42.8
Commercial	358,243	681,687	−323,444	−47.4
U. S. Reclamation Service	[2] 150,515	193,000	−42,485	−22.0
U. S. Indian Service	16,100	20,020	−3,920	−19.6
State	80	(3)	80	.....
City	6,425	(3)	6,425	.....
Not reported	350	(3)	350	.....

[1] A minus sign (−) denotes decrease.
[2] Does not include about 8,500 acres to which water is supplied under the Warren Act.
[3] Not included in classification in 1910.

ACREAGE, BY CHARACTER OF WATER RIGHTS.

The laws of Colorado relating to water rights are summarized in the following paragraphs:

The territory of Colorado was organized in 1861, and the first territorial legislature enacted a law declaring the right of persons holding land on the banks or margins or in the neighborhood of streams to use the water for purposes of irrigation, and providing for securing the right of way for ditches to lands not bordering the streams. The supreme court of the state has held that this is not a recognition of riparian rights, but rather of the right to take water away from the streams. (Crippen *v.* White, 28 Colo., p. 298.)

During the territorial period the legislature enacted many laws chartering ditch companies, and granting them the right to construct ditches and collect charges for supplying water, but it enacted no further general legislation.

The state of Colorado was admitted to the Union in 1876. The constitution of the state, adopted March 14, 1876, declared that "The water of every natural stream not heretofore appropriated within the state of Colorado is hereby declared to be the property of the public, and the same is dedicated to the use of the people of the state, subject to appropriation as hereinafter provided," and "The right to divert unappropriated waters of any natural stream for beneficial uses shall never be denied. Priority of appropriation shall give the better right as between those using the water for the same purpose."

In 1881 a law was enacted requiring parties building irrigation works to file in the county offices maps and statements describing their works and the intended use of water. This act was declared unconstitutional in 1899 (Lamar Canal Co. *v.* Amity Canal Co., 26 Colo., p. 370), but during the 18 years from its passage to 1899 many filings were made in the county offices throughout the state.

A law requiring the filing of maps and plans in the office of the state engineer was enacted in 1903, and this law, with various amendments, is still in force. This filing is not an application for permission to appropriate water, no such permits being required in Colorado.

Colorado was the pioneer state in providing a special procedure in the courts for defining rights to water. A law enacted in 1879 divided the state into districts, gave the district courts exclusive jurisdiction of water-right adjudications, and provided that on or before July 5, 1879, the district judges should appoint referees who were to bring actions to define all rights to water and formulate decrees. This law was superseded in 1881 by a law requiring all claimants to file statements of their claims with the clerks of the appropriate district courts on or before June 1, 1881, and providing that at any time after that date any one or more parties claiming water from any stream might petition the court having jurisdiction of the stream for an adjudication of all rights to water from that stream. This law, with provision for the defining of rights acquired after an adjudication, is still in force.

TABLE 6.—ACREAGE IRRIGATED, CLASSIFIED BY CHARACTER OF RIGHTS UNDER WHICH WATER IS RECEIVED: 1919 AND 1909.

CLASS.	1919		1909
	Acres.	Per cent of total.	Per cent of total.
Total	3,348,385	100.0	100.0
Appropriation and use	114,616	3.4	9.3
Notice filed and posted	209,262	6.2	5.1
Adjudicated by court	2,918,383	87.2	84.4
Underground	14,558	0.4	(1)
Other and mixed	12,275	0.4	(1)
Not reported	79,291	2.4	(1)

[1] All land for which the class of rights was not reported was included in "Appropriation and use."

ACREAGE, BY DRAINAGE BASIN.

The report of a special census taken in 1902 presented all data by drainage basins rather than by counties. The results of the census of 1920 have been tabulated on the same basis, and the data for 1902 are presented for purposes of comparison. For no other census have the results been tabulated in this form. The acreage reported for each drainage basin in 1919 comprises all the irrigated land in that drainage basin, including that watered from springs and wells. In the 1902 results the acreages irrigated from springs and wells were not reported for the smaller tributary streams, but the acreages for the tributaries were included in those reported for the main streams. This area is so small, however, that the comparison of the areas reported for the tributary streams is not seriously affected.

TABLE 7.—ACREAGE IRRIGATED, CLASSIFIED BY DRAINAGE BASIN: 1919 AND 1902.

DRAINAGE BASIN.	AREA IRRIGATED (ACRES).			Area included in enterprises, 1920 (acres).	Area enterprises were capable of irrigating in 1920 (acres).
	1919	1902	Per cent of increase.[1]		
Total	3,348,385	1,754,761	90.8	5,220,588	3,855,348
South Platte River and tributaries	1,179,880	661,981	78.2	1,667,384	1,280,347
South Platte River direct	345,130	218,527	57.9	509,912	379,720
Bear Creek	8,778	11,174	−21.4	12,093	10,373
Clear Creek	79,172	76,259	3.8	84,450	79,940
St. Vrain Creek	244,831	96,583	153.5	281,467	265,731
Big Thompson Creek	96,678	68,806	40.5	105,673	98,711
Big Beaver Creek	6,429	17,100	−62.4	11,825	10,699
Cache la Poudre River	263,708	145,203	81.6	287,963	278,613
Lone Tree Creek	2,968	(2)	.....	122,466	5,362
Crow Creek	1,945	(2)	.....	7,450	2,250
Other tributaries of South Platte River	130,241	[3] 28,329	359.7	193,985	146,948
Republican River and tributaries	8,441	5,097	65.6	15,507	10,407
Smoky Hill River and tributaries	30	(2)	.....	30	30
Arkansas River and tributaries	641,476	300,115	113.7	938,383	709,998
Arkansas River direct	421,051	212,341	98.3	490,580	438,378
South Fork	10,401	5,422	91.8	12,374	10,490
Fountain River	20,465	13,879	47.5	26,224	24,904
St. Charles River	11,855	3,432	245.4	22,310	13,791
Huerfano River	55,528	14,078	294.4	103,554	64,474
Apishapa River	8,292	4,089	102.8	65,615	11,430
Purgatoire or Las Animas River	43,533	19,702	121.0	51,172	47,402
Other tributaries of Arkansas River	70,351	[3] 27,181	158.8	153,704	98,199
Rio Grande and tributaries	608,924	303,985	100.3	1,063,656	746,610
Rio Grande direct	326,698	187,837	73.9	508,127	420,149
Saguache River	38,032	11,739	224.2	41,447	39,363
San Luis River	51,329	3,679	.....	175,871	68,309
Alamosa River	35,601	15,753	126.0	72,528	40,551
La Jara River	10,627	(2)	.....	15,424	12,005
Conejos River	88,676	44,035	101.4	115,867	95,680
Trinchera River	12,485	3,768	231.3	59,699	19,319
Other tributaries of Rio Grande	45,486	[3] 37,193	22.3	74,673	51,243
San Juan River and tributaries	87,228	34,757	151.0	152,934	103,675
San Juan River direct	1,451	1,947	−25.5	2,989	1,634
Los Pinos River	28,762	6,130	369.2	52,946	46,773
Animas River	17,819	6,889	158.7	38,043	19,519
La Plata River	17,174	6,972	146.3	20,473	17,935
Mancos River	9,040	5,115	76.7	18,149	9,494
Other tributaries of San Juan River	12,982	[3] 7,704	68.5	20,334	14,320

[1] A minus sign (−) denotes decrease. Per cent not shown when more than 1,000.
[2] Included in "Other tributaries" in 1902.
[3] Includes springs and wells.

TABLE 7.—ACREAGE IRRIGATED, CLASSIFIED BY DRAINAGE BASIN: 1919 AND 1902—Continued.

DRAINAGE BASIN.	AREA IRRIGATED (ACRES). 1919	1902	Per cent of increase.[1]	Area included in enterprises, 1920 (acres).	Area enterprises were capable of irrigating in 1920 (acres).
Grand River and tributaries	585,201	300,631	94.7	1,041,837	732,895
Grand River direct	71,958	37,878	90.0	125,422	101,249
Fraser River	9,331	2,676	248.7	27,040	10,795
Muddy Creek	5,056	4,105	23.0	7,255	5,075
Blue River	10,541	2,794	277.3	16,267	11,771
Eagle River	15,118	10,865	39.1	28,435	15,566
Roaring Fork	30,738	21,030	46.0	47,305	34,194
Plateau Creek	26,266	13,380	96.3	40,757	25,616
Gunnison River and tributaries	250,943	150,254	67.0	409,234	329,726
Gunnison River direct	16,813	9,969	68.8	21,649	19,969
Taylor River	560	12,048	−95.3	626	620
Tomichi Creek	21,752	10,152	114.3	30,298	23,068
North Fork River	31,606	17,174	80.5	57,199	33,891
Smith Fork River	15,314	5,954	157.2	31,240	25,600
Uncompahgre River	68,149	50,399	52.7	139,756	137,756
Other tributaries of Gunnison River	79,349	[2] 39,557	100.6	129,062	88,912
Rio Dolores	74,916	21,560	247.5	180,611	84,972
Other tributaries of Grand River	90,476	[2] 36,969	150.8	158,641	114,260
Green River and tributaries	94,803	82,451	14.9	165,270	115,921
Yampa River and tributaries	68,198	59,059	15.5	124,598	86,503
Yampa River direct	18,029	(3)	.....	28,221	18,832
Little Snake River	9,617	(3)	.....	16,242	12,449
Other tributaries of Yampa River	40,552	(3)	.....	80,135	55,222
White River	25,625	22,792	12.6	40,441	29,238
Other tributaries of Green River	180	[2] 640	−71.9	240	180
North Platte River and tributaries	143,192	65,744	117.7	285,628	155,485
North Platte River direct	2,520	(3)	.....	28,520	2,520
Laramie River	6,160	(3)	.....	6,425	6,160
Other tributaries of North Platte River	134,422	(3)	.....	205,683	146,805

[1] A minus sign (−) denotes decrease.
[2] Includes springs and wells.
[3] Included in "other tributaries" in 1902.

CAPITAL INVESTED AND COST OF OPERATION AND MAINTENANCE.

TABLE 8.—CAPITAL INVESTED IN IRRIGATION ENTERPRISES: 1890 TO 1920.

CENSUS YEAR.	Amount.	Per cent of increase.	AVERAGE PER ACRE. Amount.	Per cent of increase.
1920	$88,302,442	55.9	$22.90	61.4
1910	56,636,443	384.7	14.19	94.4
1900	11,758,708	84.6	7.30	2.1
1890	6,368,735	.....	7.15	.....

TABLE 9.—CAPITAL INVESTED, CLASSIFIED BY DATE OF BEGINNING.

DATE OF BEGINNING.	Amount.	Per cent of total.	Average per acre.
Total	$88,302,442	100.0	$22.90
Before 1860	265,660	0.3	6.91
1860–1869	14,410,037	16.3	21.60
1870–1879	8,159,179	9.2	11.68
1880–1889	17,159,419	19.4	13.03
1890–1899	7,043,688	8.0	23.43
1900–1904	14,101,894	16.0	35.90
1905–1909	14,192,032	16.1	49.01
1910–1914	11,479,877	13.0	62.08
1915–1919	530,899	0.6	17.99
Not reported	966,866	1.1	16.76

TABLE 10.—CAPITAL INVESTED, 1920, AND COST OF OPERATION AND MAINTENANCE, 1919, CLASSIFIED BY SOURCE OF WATER SUPPLY.

[When water is pumped, cost of operation and maintenance includes cost of fuel and attendance.]

CLASS.	CAPITAL INVESTED, 1920. Amount.	Per cent of total.	Average per acre.	OPERATION AND MAINTENANCE, 1919. Area for which cost is reported (acres).	Average cost per acre.[1]
Total	$88,302,442	100.0	$22.90	3,030,771	$0.87
Streams, gravity	68,852,430	78.0	19.87	2,729,530	0.82
Streams, pumped	2,490,900	2.8	122.97	11,617	9.49
Streams, pumped and gravity	397,392	0.4	41.72	9,430	2.34
Wells, pumped	375,277	0.4	23.37	9,350	4.54
Wells, flowing	55,251	0.1	12.75	3,847	0.52
Wells, flowing and pumped	5,300	(2)	33.12	85	4.73
Lakes, pumped	27,530	(2)	23.51	801	3.21
Lakes, gravity	84,935	0.1	25.67	1,751	1.14
Springs	188,920	0.2	13.81	7,695	1.20
Stored storm water	1,467,459	1.7	44.28	14,948	1.25
City water	97	(2)	5.11	11	1.82
Sewage	1,648	(2)	6.46	95	0.71
Streams, gravity, and pumped wells	190,454	0.2	11.50	15,913	0.75
Streams, gravity, and flowing wells	1,033,076	1.2	12.52	67,880	0.59
Other mixed	13,084,359	14.8	69.91	156,697	1.07
Other and not reported	47,355	0.1	25.15	1,121	1.69

[1] Based on area irrigated in 1919.
[2] Less than one-tenth of 1 per cent.

TABLE 11.—CAPITAL INVESTED, CLASSIFIED BY DRAINAGE BASIN: 1920 AND 1902.

DRAINAGE BASIN.	1920	1902	INCREASE.[1] Amount.	Per cent.
Total	$88,302,442	$14,769,561	$73,532,881	497.9
South Platte River and tributaries	36,019,471	4,786,288	31,233,183	652.6
South Platte River direct	9,111,900	2,003,610	7,108,290	354.8
Bear Creek	137,240	76,635	60,605	79.1
Clear Creek	862,209	404,775	457,434	113.0
St. Vrains Creek	9,298,122	398,650	8,899,472	.....
Big Thompson Creek	1,102,316	600,166	502,150	83.7
Big Beaver Creek	52,600	98,000	−45,400	−46.3
Cache la Poudre River	7,907,593	1,065,357	6,842,236	642.2
Lone Tree Creek	2,731,100	(3)	2,731,100	.....
Crow Creek	51,700	(3)	51,700	.....
Other tributaries of South Platte River	4,764,691	[2] 139,095	4,625,596	.....
Republican River and tributaries	89,463	63,782	25,681	40.3
Smoky Hill River and tributaries	1,200	(4)	1,200	.....
Arkansas River and tributaries	19,710,289	3,626,670	16,083,619	443.5
Arkansas River direct	10,989,245	2,951,550	8,037,695	272.3
South Fork	69,000	24,785	44,215	178.4
Fountain River	965,287	106,240	859,047	808.6
St. Charles River	241,884	22,060	219,824	996.5
Huerfano River	3,204,519	72,690	3,131,829	.....
Apishapa River	1,190,695	4,970	1,185,725	.....
Purgatoire or Las Animas River	491,450	151,413	340,037	224.6
Other tributaries of Arkansas River	2,558,209	[2] 292,962	2,265,247	773.2
Rio Grande and tributaries	4,825,660	1,979,939	2,845,721	143.7
Rio Grande direct	1,526,753	1,717,395	−190,642	−11.1
Saguache River	103,048	16,165	86,883	537.5
San Luis River	184,312	4,220	180,092	.....
Alamosa River	556,909	27,080	529,829	.....
La Jara River	30,275	.....	30,275	.....
Conejos River	564,739	68,242	496,497	727.6
Trinchera River	659,890	23,650	636,240	.....
Other tributaries of Rio Grande	1,199,734	[2] 123,187	1,076,547	873.9
San Juan River and tributaries	1,166,170	238,990	927,180	388.0
San Juan River direct	25,200	14,925	10,275	68.8
Los Pinos River	521,590	80,030	441,560	551.7
Animas River	323,638	55,770	267,868	480.3
La Plata River	94,613	38,185	56,428	147.8
Mancos River	35,477	14,910	20,567	137.9
Other tributaries of San Juan River	165,652	[2] 35,170	130,482	371.0

[1] A minus sign (−) denotes decrease. Per cent not shown when more than 1,000.
[2] Included in "other tributaries" in 1902.
[3] Includes springs and wells.
[4] None reported in 1902.

TABLE 11.—CAPITAL INVESTED, CLASSIFIED BY DRAINAGE BASIN: 1920 AND 1902—Continued.

DRAINAGE BASIN.	1920	1902	INCREASE.[1]	
			Amount.	Per cent.
Grand River and tributaries	$24,281,722	$3,547,697	$20,734,025	584.4
Grand River direct	5,923,462	477,950	5,445,512	.....
Fraser River	55,860	5,235	50,625	967.0
Muddy Creek	33,122	8,650	24,472	282.9
Blue River	116,608	21,359	95,249	445.9
Eagle River	109,012	75,570	33,442	44.3
Roaring Fork	407,266	163,170	244,096	149.6
Plateau Creek	341,755	60,635	281,120	463.3
Gunnison River and tributaries	10,745,767	1,351,906	9,393,861	694.9
Gunnison River direct	1,001,819	55,380	946,439	.....
Taylor River	6,900	64,985	−58,085	−89.4
Tomichi Creek	129,243	28,350	100,893	355.9
North Fork River	622,647	272,705	349,942	128.3
Smith Fork River	396,075	21,600	374,475	.....
Uncompahgre River	6,945,702	643,121	6,302,581	980.0
Other tributaries of Gunnison River	1,643,381	[2] 265,765	1,377,616	518.4
Rio Dolores	4,847,569	1,156,793	3,690,776	319.1
Other tributaries of Grand River	1,701,301	[2] 227,029	1,474,272	649.4
Green River and tributaries	1,372,889	382,895	989,994	258.6
Yampa River and tributaries	923,673	244,785	678,888	277.3
Yampa River direct	162,768	(3)	(3)	.....
Little Snake River	237,254	(3)	(3)	.....
Other tributaries of Yampa River	523,651	(3)	(3)	.....
White River	447,141	137,005	310,136	226.4
Other tributaries of Green River	2,075	[2] 1,105	970	87.8
North Platte River and tributaries	835,578	143,300	692,278	483.1
North Platte River direct	41,200	(3)	(3)	.....
Laramie River	51,800	(3)	(3)	.....
Other tributaries of North Platte River	742,578	(3)	(3)	.....

[1] A minus sign (−) denotes decrease. Per cent not shown when more than 1,000.
[2] Includes springs and wells.
[3] Main stream and tributaries shown as one item in 1902; consequently only increase for group as a whole can be shown.

TABLE 12.—CAPITAL INVESTED, 1920, AND COST OF OPERATION AND MAINTENANCE, 1919, CLASSIFIED BY CHARACTER OF ENTERPRISE.

[When water is pumped, cost of operation and maintenance includes cost of fuel and attendance.]

CLASS.	CAPITAL INVESTED, 1920.		OPERATION AND MAINTENANCE, 1919.	
	Amount.	Per cent of total.	Area for which cost is reported (acres).	Average cost per acre.[1]
Total	$88,302,442	100.0	3,030,771	$0.87
Individual and partnership	11,599,883	13.1	834,213	0.70
Cooperative	42,911,035	48.6	1,634,568	0.75
Irrigation district	16,269,026	18.4	248,409	1.50
Carey Act	1,205,988	1.4	2,420	2.88
Commercial	5,711,887	6.5	212,135	1.11
U. S. Reclamation Service	10,253,231	11.6	71,145	2.59
U. S. Indian Service	220,979	0.3	3,766	0.67
State	3,994	(2)	80	7.50
City	117,665	0.1	4,025	3.17
Not reported	8,754	(2)	.....	.....

[1] Based on area irrigated in 1919.
[2] Less than one-tenth of 1 per cent.

In classifying capital invested by type of enterprise the average capital invested per acre is not presented, for the reason that it is not possible to compute this correctly. The United States Reclamation Service supplies water to enterprises controlled by agencies of other classes shown in the table and a part of its expenditure is properly chargeable to those lands; but the area so served varies from time to time, and consequently it is not possible to tell how much should be charged to such lands or how it should be distributed among the various classes.

DRAINAGE OF IRRIGATED LAND.

The acreages reported in Table 13 relate to lands within the boundaries of irrigation projects, and do not include lands within the vicinity of these projects. "Additional acreage needing drainage" includes all lands so reported by the owners of the enterprises, and includes lands producing partial crops as well as those wholly unproductive.

TABLE 13.—ACREAGE WITHIN IRRIGATION ENTERPRISES FOR WHICH DRAINS HAVE BEEN INSTALLED AND ADDITIONAL ACREAGE IN NEED OF DRAINAGE: 1920.

Number of enterprises reporting land drained or needing drainage	420
Acreage included in enterprises reporting land drained or needing drainage	1,526,311
Acreage for which drains have been installed	113,899
Additional acreage needing drainage	220,711
Per cent that acreage for which drains have been installed is of total acreage included in enterprises reporting drainage	7.5
Per cent that acreage for which drains have been installed is of total acreage included in irrigation enterprises in the state	2.2
Per cent that acreage for which drains have been installed plus that needing drainage is of total acreage included in irrigation enterprises in the state	6.4

QUANTITY OF WATER USED.

The quantity of water used in 1919 was reported on only part of the irrigation schedules, and the figures given vary greatly. In order that proper values may be assigned to the figures given, those representing measurements and those representing estimates are reported separately in Table 14. While the data are incomplete, the reports represent sufficient acreages to serve as bases for reliable averages.

TABLE 14.—QUANTITY OF WATER USED IN 1919.

ITEM.	Total.	Measured.	Not measured.
Average volume of water entering canals, second-feet	37,146	14,558	22,588
Area irrigated in 1919 ... acres	2,174,612	1,373,031	801,581
Average number of acres per second-foot	59	94	35
Total quantity of water entering canals, acre-feet	13,877,202	4,848,103	9,029,189
Area irrigated in 1919 ... acres	2,446,702	1,752,587	694,115
Average quantity per acre ... acre-feet	5.7	2.8	13.0
Total quantity of water delivered ... acre-feet	3,233,531	1,832,530	1,401,001
Area irrigated in 1919 ... acres	1,504,593	1,089,659	414,934
Average quantity per acre ... acre-feet	2.1	1.7	3.4

IRRIGATION WORKS.

TABLE 15.—IRRIGATION WORKS, CLASSIFIED BY DATE OF BEGINNING.

DATE OF BEGINNING.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.	
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).
Total	3,647	803	8,867	119,558	19,022	6,185	8,571	979	2,406,372
Before 1860	35	2	47	1,275	137	55	53	1	938
1860-1869	302	64	704	15,096	2,233	914	1,509	60	217,180
1870-1879	799	84	1,114	17,903	3,252	710	1,340	109	252,248
1880-1889	1,035	179	2,593	35,668	7,472	1,920	2,509	196	462,018
1890-1899	360	147	1,204	12,981	2,511	859	643	187	153,435
1900-1904	226	68	740	12,289	1,599	521	713	98	304,827
1905-1909	294	112	631	13,065	1,799	379	992	142	868,305
1910-1914	183	79	557	5,161	1,007	421	423	109	107,673
1915-1919	75	39	350	4,162	325	184	60	41	27,570
Not reported	85	32	427	1,516	707	222	359	36	12,178

DATE OF BEGINNING.	Pipe lines, length (miles).	FLOWING WELLS.		PUMPED WELLS.		PUMPING PLANTS.			
		Number.	Capacity (gallons per minute).	Number.	Capacity (gallons per minute).	Number.	Engine capacity (horse-power).	Pumps.	
								Number.	Capacity (gallons per minute).
Total	217.3	476	20,139	527	210,094	406	8,635	435	299,726
Before 1860	0.5			1	700	1	10	1	700
1860-1869	30.5			4	2,100	5	68	5	3,100
1870-1879	2.1	22	599	1		4	77	4	2,711
1880-1889	13.1	306	12,100	15	9,838	18	240	22	14,807
1890-1899	7.8	30	859	19	10,200	18	361	18	16,131
1900-1904	19.7	35	1,095	28	11,575	29	310	36	20,805
1905-1909	196.9	20	320	37	35,549	42	3,883	55	46,024
1910-1914	24.9	29	3,104	132	48,714	115	1,639	115	79,954
1915-1919	5.8	17	782	268	84,256	155	2,116	160	106,544
Not reported	3.0	11	480	22	7,162	19	231	19	8,950

TABLE 16.—IRRIGATION WORKS, CLASSIFIED BY CHARACTER OF ENTERPRISE: 1920.

CLASS.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.	
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).
Total	3,647	803	8,867	119,558	19,022	6,185	8,571	979	2,406,372
Individual and partnership	3,153	479	8,135	54,191	12,195	3,438	2,441	644	567,316
Cooperative	429	250	594	48,985	5,324	1,991	4,144	293	951,984
Irrigation district	23	18	48	5,678	681	266	354	25	277,101
Carey Act	2	2	4	529	42	5	23	3	57,000
Commercial	17	13	38	6,816	468	316	1,035	13	552,947
U. S. Reclamation Service	16		11	2,898	217	144	518		
U. S. Indian Service	1		8	197	45	13	53		
State						10	2		
City	6	1	7	232	48			1	24
Not reported			2	41	2	2	1		

CLASS.	Pipe lines, length (miles).	FLOWING WELLS.		PUMPED WELLS.		PUMPING PLANTS.			
		Number.	Capacity (gallons per minute).	Number.	Capacity (gallons per minute).	Number.	Engine capacity (horse-power).	Pumps.	
								Number.	Capacity (gallons per minute).
Total	217.3	476	20,139	527	210,094	406	8,635	435	299,726
Individual and partnership	66.5	169	8,039	506	198,344	388	4,875	403	264,431
Cooperative	36.2	7	100	8	4,500	6	342	7	13,300
Irrigation district	10.5	206	12,000			4	2,525	11	3,500
Carey Act	41.2								
Commercial	44.6					1	600	7	25
U. S. Reclamation Service	11.8					1	125	1	11,220
U. S. Indian Service									
State				8	1,500	1	25	1	1,500
City	7.1								
Not reported				5	5,750	5	143	5	5,750

TABLE 17.—IRRIGATION WORKS, CLASSIFIED BY DRAINAGE BASIN: 1920.

DRAINAGE BASIN.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.	
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).
Total	3,647	803	8,867	119,158	19,022	6,185	8,871	979	2,406,372
South Platte River and tributaries	831	294	1,327	38,837	4,860	1,109	2,250	301	916,770
South Platte River direct	103	14	201	12,671	1,259	286	466	22	421,292
Bear Creek	29	7	37	359	51	27	8	7	916
Clear Creek	81	5	60	1,806	177	65	94	12	6,767
St. Vrain Creek	171	83	195	5,600	1,549	219	356	69	123,395
Big Thompson Creek	33	23	42	2,810	241	64	146	29	44,617
Big Beaver Creek	4	1	8	226	27	1	.....	3	103
Cache la Poudre River	98	89	232	8,379	568	313	1,016	91	237,538
Lone Tree Creek	.....	1	5	7	3	1	.....	1	12
Crow Creek	6	9	6	105	8	5	9	9	4,200
Other tributaries of South Platte River	306	62	541	4,871	874	128	135	67	77,930
Republican River and tributaries	25	7	33	672	67	47	39	4	30
Smoky Hill River and tributaries	.....	1	1	5	1	.....	.....	1	5
Arkansas River and tributaries	919	154	2,022	28,647	3,529	2,440	2,529	245	1,075,580
Arkansas River direct	58	29	198	10,418	990	1,379	1,820	33	395,162
South Fork	30	.....	65	348	122	42	25	.....	.....
Fountain River	6	9	113	1,046	219	64	21	36	13,246
St. Charles River	87	12	114	757	162	42	24	14	3,418
Huerfano River	285	22	336	4,336	581	506	350	40	111,627
Apishapa River	39	15	52	1,806	103	21	32	15	54,821
Purgatoire or Las Animas River	101	9	147	2,606	356	36	36	18	403,099
Other tributaries of Arkansas River	313	58	997	7,336	996	348	227	89	94,207
Rio Grande and tributaries	566	23	1,031	14,754	1,971	556	1,166	33	265,170
Rio Grande direct	47	8	101	5,599	387	141	608	9	53,678
Saguache River	132	.....	251	752	176	88	73	11	202
San Luis River	40	2	252	1,676	349	50	70	2	179
Alamosa River	30	2	39	1,331	142	32	56	2	31,750
La Jara River	30	.....	31	390	68	9	12	.....	.....
Conejos River	103	2	105	3,188	317	52	72	2	3,091
Trinchera River	27	2	25	159	182	7	4	2	25,500
Other tributaries of Rio Grande	137	7	227	1,675	349	177	271	5	150,860
San Juan River and tributaries	73	6	417	2,775	894	259	148	13	3,430
San Juan River direct	.....	1	17	97	32	18	2	2	105
Los Pinos River	5	.....	63	821	192	24	69	.....	.....
Animas River	31	.....	121	771	250	49	9	4	.....
La Plata River	19	2	55	426	138	45	46	1	15
Mancos River	11	.....	38	285	87	11	12	1	150
Other tributaries of San Juan River	7	3	123	375	195	121	10	5	3,160
Grand River and tributaries	821	234	2,634	24,926	5,430	1,440	1,992	289	120,590
Grand River direct	9	5	69	2,541	361	264	233	4	475
Fraser River	14	2	61	352	112	2	1	2	10
Muddy Creek	49	10	50	254	64	.....	.....	10	1,727
Blue River	40	3	143	467	172	34	7	7	89
Eagle River	12	4	122	449	202	10	10	8	106
Roaring Fork	17	4	240	1,314	413	163	58	13	804
Plateau Creek	2	41	104	790	213	127	81	45	15,972
Gunnison River and tributaries	388	118	1,210	12,419	2,257	388	601	140	47,521
Gunnison River direct	14	1	63	1,168	151	35	19	1	120
Taylor River	.....	.....	4	15	6	.....	.....	.....	.....
Tomichi Creek	157	1	258	1,731	279	7	5	1	.....
North Fork River	19	17	128	1,154	306	87	76	26	11,134
Smith Fork River	5	9	46	562	119	21	38	9	1,265
Uncompahgre River	26	4	180	2,402	446	151	359	5	220
Other tributaries of Gunnison River	167	86	521	5,387	950	87	104	98	34,782
Rio Dolores	87	19	255	2,622	622	143	417	21	42,988
Other tributaries of Grand River	203	28	580	3,720	1,014	309	584	38	10,948
Green River and tributaries	144	73	809	5,333	1,428	302	413	83	9,563
Yampa River and tributaries	101	57	542	2,447	1,018	188	370	64	7,660
Yampa River direct	16	4	65	498	142	19	12	4	1,509
Little Snake River	2	6	77	584	138	13	6	6	888
Other tributaries of Yampa River	83	47	400	1,365	738	156	352	54	5,403
White River	43	16	265	2,883	408	114	43	19	1,703
Other tributaries of Green River	.....	.....	2	3	2	.....	.....	.....	.....
North Platte River and tributaries	268	11	393	5,607	842	32	54	10	15,234
North Platte River direct	3	2	5	310	16	.....	.....	2	2,700
Laramie River	32	1	38	478	63	11	11	1	75
Other tributaries of North Platte River	233	8	350	4,819	763	21	43	7	12,459

TABLE 17.—IRRIGATION WORKS, CLASSIFIED BY DRAINAGE BASIN: 1920—Continued.

DRAINAGE BASIN.	Pipe lines, length (miles).	FLOWING WELLS.		PUMPED WELLS.		PUMPING PLANTS.				
		Number.	Capacity (gallons per minute).	Number.	Capacity (gallons per minute).	Number.	Engine capacity (horsepower).	Pumps.		Average lift (feet).
								Number.	Capacity (gallons per minute).	
Total	217.3	476	20,139	527	210,094	406	8,635	435	299,726	23
South Platte River and tributaries	48.8	4	230	283	121,358	226	3,103	241	166,263	22
South Platte River direct	9.7	3	170	90	42,452	76	1,096	78	50,812	22
Bear Creek	1.0					1	7	5		40
Clear Creek	0.1									
St. Vrain Creek	12.7			1		4	100	4	1,000	22
Big Thompson Creek	1.9			1	1,200	6	106	6	5,831	17
Big Beaver Creek				7	15,250	4	65	6	15,250	26
Cache la Poudre River	17.5	1	60	123	53,643	107	1,386	107	74,943	21
Lone Tree Creek	0.5			20	6,958	13	172	20	10,160	24
Other tributaries of South Platte River	3.4			41	4,825	15	171	15	8,267	26
Smoky Hill River and tributaries	0.1									
Arkansas River and tributaries	118.6	18	3,140	243	85,756	144	1,936	150	105,287	24
Arkansas River direct	13.3	2	315	167	66,235	98	1,564	104	83,836	23
Fountain River	11.7	3	30	19	7,700	8	126	8	8,200	21
St. Charles River	0.4			3	515	2	16	2	475	32
Huerfano River	4.5			11	2,070	6	36	6	2,045	40
Apishapa River	0.3			1	144	1	20	1	144	14
Purgatoire or Las Animas River	0.1					1	7	1	500	7
Other tributaries of Arkansas River	87.8	13	2,795	42	9,092	28	167	28	10,087	26
Rio Grande and tributaries	5.9	449	16,669	1		1		1		
Rio Grande direct		329	13,595							
Saguache River		83	2,672	1		1		1		
San Luis River	0.2	22	175							
Alamosa River	0.1	8	207							
Conejos River	0.1	1	20							
Trinchera River	4.0									
Other tributaries of Rio Grande	1.5	6								
San Juan River and tributaries	0.2	4	100			2	22	2	1,200	85
San Juan River direct	0.1					2	22	2	1,200	85
Los Pinos River	0.1									
Animas River		4	100							
Grand River and tributaries	65.3	1				28	3,516	36	22,876	32
Grand River direct	11.9					8	2,660	14	15,070	42
Muddy Creek	0.1									
Blue River	1.2									
Eagle River	5.2					2	33	2	1,000	58
Roaring Fork	0.3									
Plateau Creek	0.1									
Gunnison River and tributaries	18.1					17	822	19	6,806	22
Gunnison River direct	1.0					13	759	15	5,706	20
Tomichi Creek	0.4									
North Fork River	2.8					1	8	1	300	14
Smith Fork River	5.1									
Uncompahgre River	4.5					1	40	1		53
Other tributaries of Gunnison River	4.3					2	15	2	800	16
Rio Dolores	1.2					1	1	1		15
Other tributaries of Grand River	7.2	1								
Green River and tributaries	0.4					5	58	5	4,100	14
Yampa River and tributaries	0.2					4	48	4	3,200	15
Yampa River direct						4	48	4	3,200	15
Other tributaries of Yampa River	0.2									
White River	0.2					1	10	1	900	10

CROPS.

TABLE 18.—ACREAGE, YIELD, AND VALUE OF PRINCIPAL CROPS GROWN ON IRRIGATED LAND, AND COMPARISONS WITH TOTALS FOR THE STATE: 1919 AND 1909.

[Totals for the state, used in making comparisons, are shown in state bulletin on agriculture.]

	CROP.	AREA HARVESTED.						QUANTITY HARVESTED.				
		1919		1909			Unit.	1919		1909		
		Acres.	Per cent of total for state.	Acres.	Per cent of total for state.	Per cent of increase.[1]		Amount.	Per cent of total for state.	Amount.	Per cent of total for state.	Per cent of increase.[1]
	Cereals:											
1	Corn	52,617	7.0	25,705	7.9	104.7	Bu.	1,316,478	13.0	567,151	11.6	132.1
2	Oats	97,618	56.0	192,311	69.7	—49.2	Bu.	3,037,305	67.0	6,235,979	81.6	—51.3
3	Winter wheat	112,548	10.9	174,116	51.1	44.6	Bu.	2,577,277	18.8	4,727,359	65.4	17.9
4	Spring wheat	139,214	46.9				Bu.	2,994,897	65.3			
5	Barley	58,125	38.0	48,775	68.3	19.2	Bu.	1,383,519	49.4	1,483,112	78.5	—6.7
6	Rye	2,757	2.1	898	5.7	207.0	Bu.	34,217	3.1	14,135	7.1	142.1
	Hay and forage:											
7	Timothy alone	33,588	75.4	45,029	87.4	—25.4	Tons	46,568	75.3	76,660	92.9	—39.3
8	Timothy and clover mixed	106,664	85.4	24,049	53.4	343.5	Tons	188,616	87.7	47,007	55.5	301.3
9	Clover alone	3,095	66.8	405	28.6	664.2	Tons	4,833	67.9	888	24.0	451.0
10	Alfalfa	659,912	84.4	480,586	94.4	37.3	Tons	1,568,038	88.1	1,222,790	96.6	28.2
11	Other tame grasses	46,110	36.6	52,844	51.3	—12.7	Tons	60,585	46.1	95,119	66.4	—36.3
12	Annual legumes cut for hay	9,386	73.5	48,171	64.2	—25.2	Tons	14,194	80.8	70,057	74.3	—25.1
13	Small grains cut for hay	26,630	20.2				Tons	38,250	30.5			
14	Wild, salt, or prairie grasses	290,693	70.7	299,755	75.9	—3.0	Tons	280,332	76.8	288,536	78.3	—2.8
15	Silage crops	18,015	33.9	(2)			Tons	119,656	50.2	(2)		
16	Corn cut for forage	14,547	8.2	(2)			Tons	34,234	17.9	(2)		
17	Kafir, sorghum, etc., for forage	12,123	3.5	(2)			Tons	24,349	5.5	(2)		
18	Root crops for forage	633	41.4	(2)			Tons	4,255	57.2	(2)		
	Vegetables:											
19	Potatoes	50,631	65.5	59,221	69.0	—14.5	Bu.	7,475,618	84.2	8,408,915	71.4	—11.1
20	Cabbages	2,791	74.0	(2)						(2)		
21	Cantaloupes	3,330	88.1	(2)						(2)		
22	Cucumbers	1,284	80.8	(2)						(2)		
23	Tomatoes	1,693	71.6	(2)						(2)		
	Fruits:											
24	Grapes	[3] 35,688	28.5	(2)			Lbs.	173,669	33.9	(2)		
25	Apples	[4] 879,087	49.4	(2)			Bu.	1,842,018	53.9	(2)		
26	Peaches	[4] 238,370	53.3	(2)			Bu.	460,404	63.8	(2)		
27	Pears	[4] 97,923	71.8	(2)			Bu.	210,944	78.3	(2)		
28	Plums and prunes	[4] 27,049	33.2	(2)			Bu.	19,264	42.9	(2)		
29	Cherries	[4] 194,612	55.7	(2)			Bu.	161,271	61.3	(2)		
	Miscellaneous:											
30	Sugar beets grown for sugar	137,329	82.8	106,905	99.0	28.5	Tons	1,409,560	85.0	1,224,466	99.5	15.1
31	Clover and alfalfa seed[5]	5,949	77.3	4,483	57.8	32.7	Bu.	21,363	78.4	9,628	53.4	121.9
32	Dry beans	10,627	16.0	2,504	49.7	324.4	Bu.	126,629	28.2	32,444	60.2	271.8
33	Dry peas	24,841	89.4	15,537	64.1	59.9	Bu.	265,449	89.8	190,945	77.4	32.8

	CROP.	AVERAGE YIELD PER ACRE: 1919.						VALUE.				
					On irrigated land.			1919		1909		
		Unit.	For state.	On non-irrigated land.	Average.	Per cent of average for state.	Per cent of average on non-irrigated land.	Amount.	Per cent of total for state.	Amount.	Per cent of total for state.	Per cent of increase.[1]
	Cereals:											
1	Corn	Bu.	13.4	12.6	25.0	186.6	198.4	$1,843,069	13.0	$370,400	13.9	397.6
2	Oats	Bu.	26.0	19.6	31.1	119.6	158.7	2,885,440	67.0	3,458,308	82.8	—16.6
3	Winter wheat	Bu.	13.3	12.1	22.9	172.2	189.3	5,309,191	18.8	4,352,823	67.3	163.7
4	Spring wheat	Bu.	15.4	10.1	21.5	139.6	212.9	6,169,488	65.3			
5	Barley	Bu.	18.3	14.9	23.8	130.1	159.7	1,798,575	49.4	897,849	81.6	100.3
6	Rye	Bu.	8.2	8.1	12.4	151.2	153.1	49,615	3.1	11,284	9.1	339.7
	Hay and forage:											
7	Timothy alone	Tons	1.39	1.40	1.39	100.0	99.3	977,928	75.3	602,213	80.7	62.4
8	Timothy and clover mixed	Tons	1.72	1.46	1.77	102.9	121.2	4,149,552	87.7	355,529	51.9	
9	Clover alone	Tons	1.56	1.50	1.58	101.3	105.3	83,181	67.9	7,864	27.0	957.7
10	Alfalfa	Tons	2.28	1.73	2.38	104.4	137.6	29,008,703	88.1	9,522,968	98.1	204.6
11	Other tame grasses	Tons	1.04	0.89	1.31	126.0	147.2	969,360	46.1	751,436	66.4	29.0
12	Annual legumes cut for hay	Tons	1.38	1.00	1.51	109.4	151.0	212,910	80.8	501,204	59.3	79.8
13	Small grains cut for hay	Tons	0.95	0.82	1.44	151.6	175.6	688,500	30.5			
14	Wild, salt, or prairie grasses	Tons	0.89	0.70	0.96	107.9	137.1	4,905,810	76.8	2,444,558	79.2	100.7
15	Silage crops	Tons	4.25	3.29	6.29	148.0	190.6	1,196,560	50.2	(2)		
16	Corn cut for forage	Tons	1.08	0.96	2.35	217.6	244.8	445,042	17.0	(2)		
17	Kafir, sorghum, etc., for forage	Tons	1.29	1.26	2.01	155.8	159.5	316,537	5.5	(2)		
18	Root crops for forage	Tons	4.86	3.55	6.72	138.3	189.3	55,315	57.2	(2)		
	Vegetables:											
19	Potatoes	Bu.	114.8	52.4	147.6	128.6	281.7	16,446,360	84.2	2,889,799	78.0	469.1
20	Cabbages							544,640	73.1	(2)		
21	Cantaloupes							616,437	89.2	(2)		
22	Cucumbers							198,241	83.2	(2)		
23	Tomatoes							234,779	67.8	(2)		
	Fruits:											
24	Grapes	Lbs.	[6] 4.2	[6] 3.9	[6] 4.9	116.7	125.6	13,894	33.6	(2)		
25	Apples	Bu.	[7] 1.9	[7] 1.8	[7] 2.1	110.5	116.7	3,609,330	53.9	(2)		
26	Peaches	Bu.	[7] 1.6	[7] 1.3	[7] 1.9	118.8	146.2	851,747	63.8	(2)		
27	Pears	Bu.	[7] 2.0	[7] 1.5	[7] 2.2	110.0	146.7	464,077	78.3	(2)		
28	Plums and prunes	Bu.	[7] 0.6	[7] 0.5	[7] 0.7	116.7	140.0	46,234	42.9	(2)		
29	Cherries	Bu.	[7] 0.5	[7] 0.4	[7] 0.5	100.0	125.0	329,131	61.3	(2)		
	Miscellaneous:											
30	Sugar beets grown for sugar	Tons	10.00	8.72	10.26	102.6	117.7	14,800,380	85.0	6,055,382	99.9	144.4
31	Clover and alfalfa seed[5]	Bu.	3.5	3.4	3.6	102.9	105.9	491,349	78.4	83,070	60.5	491.5
32	Dry beans	Bu.	6.5	5.5	11.4	175.4	207.3	410,139	28.2	90,632	70.4	352.4
33	Dry peas	Bu.	10.6	10.2	10.7	100.9	104.9	663,622	89.8	282,095	71.0	135.2

[1] A minus sign (—) denotes decrease. Per cent not shown when more than 1,000.
[2] Not reported separately in 1909.
[3] Number of vines of bearing age.
[4] Number of trees of bearing age.
[5] Not including red clover seed.
[6] Yield per vine.
[7] Yield per tree.

County Table.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910.

[A minus sign (−) denotes decrease. Per cent not shown when base is less than 100 or when per cent is more than 1,000.]

		The State.	Adams [1]	Alamosa [2]	Arapahoe.	Archuleta.	Baca.	Bent.	Boulder.	Chaffee.
1	Number of all farms in 1920	50,534	1,753	302	1,025	420	1,858	1,056	1,420	326
2	Number of farms irrigated in 1919	28,756	740	281	477	185	23	438	1,200	313
3	Per cent of all farms	46.9	42.2	93.0	46.5	44.0	1.2	41.5	84.5	96.0
4	Number of farms irrigated in 1909	25,857	726	.....	493	206	8	404	1,118	212
5	Per cent of increase, 1909–1919	11.2	1.9	.....	−3.2	−10.2	.....	8.4	7.3	47.6
	LAND AND FARM AREA.									
6	Approximate land area ... acres	66,341,120	807,680	465,280	538,880	780,800	1,633,280	975,360	488,960	693,120
7	All land in farms ... acres	24,962,014	432,115	236,847	343,095	146,028	1,051,279	433,970	221,202	65,407
8	Improved land in farms ... acres	7,744,757	229,192	60,952	113,662	28,234	380,974	102,037	119,530	25,926
9	Area irrigated in 1919 ... acres	3,348,385	66,467	89,805	25,674	11,933	2,287	128,712	159,781	29,623
10	Per cent of improved land in farms	43.2	29.0	147.3	22.6	42.3	0.6	126.1	133.7	114.3
11	Area irrigated in 1909 ... acres	2,792,032	67,339	.....	26,341	15,008	211	59,497	112,724	16,142
12	Per cent of increase, 1909–1919	19.9	−1.4	.....	−2.5	−20.5	983.9	116.3	41.7	83.5
13	Area enterprises were capable of irrigating in 1920 ... acres	3,855,348	98,065	168,625	26,137	13,289	12,020	133,372	174,736	30,113
14	Area enterprises were capable of irrigating in 1910 ... acres	3,990,166	81,828	.....	35,997	23,230	351	69,497	169,040	32,383
15	Per cent of increase, 1910–1920	−3.4	−16.8	.....	−27.4	−42.8	.....	91.9	3.4	−7.0
16	Area included in enterprises in 1920 ... acres	5,220,588	114,266	186,258	62,128	18,188	12,500	145,866	188,485	38,277
17	Area included in enterprises in 1910 ... acres	5,917,457	103,065	.....	57,784	24,812	959	97,731	172,235	42,605
18	Per cent of increase, 1910–1920	−11.8	10.9	.....	7.5	−26.7	.....	49.3	9.4	−10.2
19	Area of irrigated land reported as available for settlement ... acres	274,282	.....	72,900	.....	.....	.....	6,540	.....	.....
	IRRIGATION WORKS.									
	Independent enterprises:									
20	Number, 1920	6,634	59	57	37	97	7	30	151	157
21	Number, 1910	9,065	89	.....	62	136	8	50	270	203
	Main ditches:									
22	Number, 1920	8,867	41	61	33	116	5	34	157	206
23	Number, 1910	8,405	70	.....	38	135	1	52	265	187
24	Length, 1920 ... miles	19,022	238	182	105	179	8	280	1,147	392
25	Length, 1910 ... miles	17,364	174	.....	196	211	2	240	570	311
26	Capacity, 1920 ... second-feet	119,558	2,987	2,073	903	369	271	3,679	4,812	1,090
27	Capacity, 1910 ... second-feet	148,483	3,453	.....	2,192	767	20	3,269	6,256	1,486
	Laterals:									
28	Number, 1920	6,185	63	41	32	128	32	450	205	95
29	Number, 1910	5,612	18	.....	8	31	.....	313	49	39
30	Length, 1920 ... miles	8,571	128	173	113	6	19	830	320	47
31	Length, 1910 ... miles	5,696	26	.....	11	28	.....	929	73	29
	Reservoirs:									
32	Number, 1920	979	11	2	6	5	4	17	44	3
33	Number, 1910	1,004	81	.....	18	4	.....	15	69	2
34	Capacity, 1920 ... acre-feet	2,406,372	68,551	12,527	73,866	665	33,726	339,402	33,282	20
35	Capacity, 1910 ... acre-feet	2,646,583	38,151	.....	796,094	627	.....	131,842	30,220	5
	Flowing wells:									
36	Number, 1920	476	1	119	2	.....	8	.....	.....	.....
37	Number, 1910	313	7	.....	2	.....	.....	.....	.....	.....
38	Capacity, 1920 ... gallons per minute	20,139	40	5,085	130	.....	1,725	.....	.....	.....
39	Capacity, 1910 ... gallons per minute	41,989	703	.....	36	.....	.....	.....	.....	.....
	Pumped wells:									
40	Number, 1920	527	28	.....	3	.....	4	11	1	.....
41	Number, 1910	121	10	.....	8	.....	10	.....	.....	.....
42	Capacity, 1920 ... gallons per minute	210,094	8,217	.....	750	.....	52	8,250	.....	.....
43	Capacity, 1910 ... gallons per minute	53,564	2,097	.....	2,425	.....	2,882	.....	.....	.....
	Pumping plants:									
44	Number, 1920	406	29	.....	3	2	3	8	2	.....
45	Number, 1910	296	10	.....	9	1	5	1	1	.....
46	Engine capacity, 1920 ... horsepower	8,635	168	.....	22	22	.....	197	30	.....
47	Engine capacity, 1910 ... horsepower	7,969	35	.....	145	2	50	10	3	.....
48	Pump capacity, 1920 ... gallons per minute	259,726	8,217	.....	750	1,200	52	8,350	1,000	.....
49	Pump capacity, 1910 ... gallons per minute	296,937	2,097	.....	8,375	128	2,882	470	200	.....
50	Average lift, 1920 ... feet	23	27	.....	17	85	100	24	8	.....
	CAPITAL INVESTED.									
51	Capital invested to Jan. 1, 1920 ... dollars	88,302,442	2,436,771	416,305	597,099	168,635	572,553	2,773,601	1,774,922	261,368
52	Capital invested to July 1, 1910 ... dollars	58,696,443	1,211,609	.....	745,517	112,168	2,473	989,211	837,060	54,949
53	Per cent of increase, 1910–1920	35.9	101.1	.....	−19.9	50.3	.....	180.4	112.0	375.7
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	22.90	35.80	2.47	22.84	12.69	47.63	20.80	10.16	8.68
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	14.19	14.81	.....	20.71	4.83	7.05	14.23	4.95	1.70
	ESTIMATED FINAL COST.									
56	Estimated final cost of existing enterprises in 1920 ... dollars	95,198,423	2,557,121	458,962	600,299	170,285	572,553	2,797,201	1,850,662	265,083
57	Estimated final cost of existing enterprises in 1910 ... dollars	76,443,239	1,417,109	.....	745,517	112,168	2,473	989,211	901,143	54,949
58	Per cent of increase, 1910–1920	24.5	80.4	.....	−19.5	51.8	.....	182.8	105.4	382.4
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	18.24	22.38	2.46	9.66	9.36	45.80	19.18	9.82	6.93
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	12.92	13.75	.....	12.90	4.52	2.58	10.12	5.23	1.29

[1] Adams and Denver Counties organized from parts of Arapahoe County in 1902; parts of Adams and Arapahoe Counties annexed to Washington County and to Yuma County in 1903; and part of Denver County annexed to Adams County in 1909.

[2] Alamosa County organized from parts of Conejos and Costilla Counties in 1913.

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909, AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910—Continued.

[A minus sign (—) denotes decrease. Per cent not shown when base is less than 100 or when per cent is more than 1,000.]

		Conejos.[1]	Costilla.[1]	Crowley.[2]	Custer.	Delta.	Denver.[3]	Dolores.	Douglas.	Eagle.
1	Number of all farms in 1920	814	443	743	353	1,707	239	186	462	301
2	Number of farms irrigated in 1919	734	431	447	165	1,680	118	21	108	277
3	Per cent of all farms	90.2	97.3	60.2	46.7	98.4	49.4	11.3	23.4	92.0
4	Number of farms irrigated in 1909	737	350		142	1,709	72	36	157	218
5	Per cent of increase, 1909-1919				16.2	—1.7			—31.2	27.1
	LAND AND FARM AREA.									
6	Approximate land area ... acres	801,280	758,400	517,120	478,080	768,640	37,120	667,520	549,800	1,036,800
7	All land in farms ... acres	231,938	434,410	263,285	197,360	169,768	4,287	57,889	362,033	80,874
8	Improved land in farms ... acres	128,018	46,598	130,645	36,896	74,473	3,672	7,278	56,791	28,567
9	Area irrigated in 1919 ... acres	139,504	36,771	57,789	24,241	93,509	4,000	1,023	8,696	30,025
10	Per cent of improved land in farms	109.0	78.9	44.2	65.7	125.5	108.9	14.1	15.3	105.3
11	Area irrigated in 1909 ... acres	138,788	57,882		29,248	62,411	1,337	1,139	13,768	22,578
12	Per cent of increase, 1909-1919				—17.1	49.8	199.2	—10.2	—36.8	33.0
13	Area enterprises were capable of irrigating in 1920 ... acres	152,346	43,906	58,735	33,548	127,469	4,000	2,361	10,291	31,072
14	Area enterprises were capable of irrigating in 1910 ... acres	262,040	106,745		33,610	99,195	1,338	2,042	24,624	28,116
15	Per cent of increase, 1910-1920				—0.2	28.5	199.0	15.6	—57.8	10.5
16	Area included in enterprises in 1920 ... acres	207,519	102,960	71,974	39,463	156,624	4,877	23,601	15,080	48,926
17	Area included in enterprises in 1910 ... acres	335,253	255,485		34,610	174,830	1,338	2,062	25,405	32,925
18	Per cent of increase, 1910-1920				14.0	—10.4	264.5		—40.6	45.9
19	Area of irrigated land reported as available for settlement ... acres			5,000		9,040		20,000		
	IRRIGATION WORKS.									
	Independent enterprises:									
20	Number, 1920	159	46	24	202	208	4	22	94	186
21	Number, 1910	312	70		464	329	10	31	145	188
	Main ditches:									
22	Number, 1920	172	57	23	440	309	4	25	129	245
23	Number, 1910	236	71		464	291	3	31	141	171
24	Length, 1920 ... miles	533	334	93	223	738	20	56	191	385
25	Length, 1910 ... miles	609	212		415	819	6	33	186	309
26	Capacity, 1920 ... second-feet	5,000	907	2,059	784	3,245	70	298	554	885
27	Capacity, 1910 ... second-feet	8,542	2,681		791	3,474	20	129	764	794
	Laterals:									
28	Number, 1920	99	17	93	92	222		4	9	91
29	Number, 1910	93	47		622	89	4		8	97
30	Length, 1920 ... miles	150	203	119	15	259		2	22	62
31	Length, 1910 ... miles	320	68		166	175	1		40	43
	Reservoirs:									
32	Number, 1920	5	6	18	1	115		4	17	15
33	Number, 1910	10	6			123	2	1	14	5
34	Capacity, 1920 ... acre-feet	34,968	132,860	8,593	5	39,284		19,690	4,257	1,468
35	Capacity, 1910 ... acre-feet	50,693	132,248			62,883	1	40	12,025	73
	Flowing wells:									
36	Number, 1920	2		1						1
37	Number, 1910	111	3							
38	Capacity, 1920 ... gallons per minute	70		700						
39	Capacity, 1910 ... gallons per minute	24,587	1,792							
	Pumped wells:									
40	Number, 1920			48					3	
41	Number, 1910						4		1	
42	Capacity, 1920 ... gallons per minute			22,575					405	
43	Capacity, 1910 ... gallons per minute						11		100	
	Pumping plants:									
44	Number, 1920			25		6			3	3
45	Number, 1910					21	4		1	
46	Engine capacity, 1920 ... horsepower			299		21			21	33
47	Engine capacity, 1910 ... horsepower					131	3		20	
48	Pump capacity, 1920 ... gallons per minute			25,505		881			412	1,000
49	Pump capacity, 1910 ... gallons per minute					15,242	11		100	
50	Average lift, 1920 ... feet			28		13			22	45
	CAPITAL INVESTED.									
51	Capital invested to Jan. 1, 1920 ... dollars	1,155,162	1,389,816	2,587,043	75,431	4,168,137	47,386	549,070	207,786	265,282
52	Capital invested to July 1, 1910 ... dollars	927,647	2,090,999		137,565	1,568,770	21,581	12,671	581,214	133,956
53	Per cent of increase, 1910-1920				—45.2	165.7	119.6		—64.2	113.9
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	7.58	31.65	44.05	2.25	32.70	11.85	232.56	20.00	9.18
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	3.54	19.59		4.09	15.82	16.13	6.21	23.60	4.70
	ESTIMATED FINAL COST.									
56	Estimated final cost of existing enterprises in 1920 ... dollars	1,156,632	1,403,066	2,593,508	76,596	4,320,091	47,386	729,020	208,286	307,432
57	Estimated final cost of existing enterprises in 1910 ... dollars	1,026,897	2,177,966		137,565	2,261,610	21,581	12,671	580,878	133,956
58	Per cent of increase, 1910-1920				—44.3	91.0	119.6		—64.7	129.5
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	5.57	13.63	36.03	1.94	27.58	9.72	30.89	13.80	6.40
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	3.06	8.52		3.97	12.94	16.13	6.17	23.22	4.07

[1] Parts of Conejos and Costilla Counties taken to form Alamosa County in 1913.
[2] Crowley County organized from part of Otero County in 1911.
[3] Organized from part of Arapahoe County in 1902. A part of Denver County annexed to Adams County in 1909.

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910—Continued.

[A minus sign (—) denotes decrease. Per cent not shown when base is less than 100 or when per cent is more than 1,000.]

		El Paso.	Elbert.	Fremont.	Garfield.	Grand.	Gunnison.	Hinsdale.	Huerfano.	Jackson.[1]	Jefferson.[2]
1	Number of all farms in 1920	1,571	1,308	1,014	930	265	376	40	954	182	1,446
2	Number of farms irrigated in 1919	143	12	827	829	237	335	29	418	156	1,141
3	Per cent of all farms	9.1	0.9	81.6	89.1	89.4	89.1	72.5	43.8	85.7	78.9
4	Number of farms irrigated in 1909	174	34	839	868	226	261	22	350	163	1,151
5	Per cent of increase, 1909-1919	−17.8	.....	−1.4	−4.5	4.9	28.4	.....	19.4	−4.3	−1.0
	LAND AND FARM AREA.										
6	Approximate land area ... acres	1,357,440	1,188,480	996,480	1,968,480	1,194,240	2,034,560	621,440	960,000	1,044,480	517,120
7	All land in farms ... acres	919,013	1,011,533	229,397	211,875	119,426	121,579	10,633	386,354	234,214	249,922
8	Improved land in farms ... acres	208,517	206,021	31,484	74,214	32,766	49,351	3,742	59,130	93,468	69,625
9	Area irrigated in 1919 ... acres	18,143	1,175	29,884	73,473	39,857	48,280	3,675	29,081	136,942	70,788
10	Per cent of improved land in farms	8.7	0.6	94.9	99.0	121.6	97.8	98.2	49.2	146.5	101.7
11	Area irrigated in 1909 ... acres	21,354	7,628	24,737	61,617	42,194	55,848	2,924	26,598	151,850	57,336
12	Per cent of increase, 1909-1919	−15.0	−84.6	20.8	19.2	−5.5	−13.6	25.7	9.3	−9.8	23.5
13	Area enterprises were capable of irrigating in 1920 ... acres	22,947	1,790	35,697	93,814	43,092	52,467	3,880	32,119	149,325	73,635
14	Area enterprises were capable of irrigating in 1910 ... acres	29,214	11,288	37,136	95,281	77,672	59,700	3,354	35,690	199,457	142,286
15	Per cent of increase, 1910-1920	−21.9	−84.1	−3.9	−1.5	−44.5	−12.1	15.7	−10.0	−25.1	−48.2
16	Area included in enterprises in 1920 ... acres	35,450	6,720	44,059	117,618	85,504	67,925	4,065	43,274	229,203	77,937
17	Area included in enterprises in 1910 ... acres	41,438	20,361	42,414	133,321	98,299	73,895	5,220	66,878	244,967	293,163
18	Per cent of increase, 1910-1920	−14.5	−67.0	3.9	−11.8	−13.0	−8.1	−22.1	−35.3	−6.4	−73.4
19	Area of irrigated land reported as available for settlement ... acres	2,200	1,800	4,550	6,000	800	.....	.....	2,520	27,640	.....
	IRRIGATION WORKS.										
	Independent enterprises:										
20	Number, 1920	63	22	179	323	166	382	52	267	145	105
21	Number, 1910	99	37	413	440	328	507	41	263	328	163
	Main ditches:										
22	Number, 1920	72	30	267	392	314	523	52	321	355	133
23	Number, 1910	85	30	366	374	326	448	31	266	326	164
24	Length, 1920 ... miles	176	31	229	730	542	702	104	475	779	289
25	Length, 1910 ... miles	193	30	337	870	497	466	28	427	743	640
26	Capacity, 1920 ... second-feet	862	128	991	2,563	2,037	4,236	519	1,907	5,129	2,093
27	Capacity, 1910 ... second-feet	1,157	427	1,658	4,401	3,508	6,934	183	1,609	6,896	4,623
	Laterals:										
28	Number, 1920	44	24	190	283	39	30	.....	458	21	88
29	Number, 1910	24	60	363	89	173	41	6	187	142	31
30	Length, 1920 ... miles	17	31	101	512	37	34	.....	146	43	92
31	Length, 1910 ... miles	14	4	122	54	94	7	2	106	79	67
	Reservoirs:										
32	Number, 1920	29	5	31	26	25	6	2	34	9	25
33	Number, 1910	15	8	26	14	21	1	.....	37	6	79
34	Capacity, 1920 ... acre-feet	13,103	6,755	6,972	7,894	3,137	460	43,500	12,027	15,159	8,178
35	Capacity, 1910 ... acre-feet	12,247	1,456	18,879	5,049	3,344	125	.....	12,714	2,150	136,519
	Flowing wells:										
36	Number, 1920	3	.....	3	.....	.....	.....	.....	.....	.....	.....
37	Number, 1910	30	.....	69	.....	.....	.....	.....	.....	.....	.....
38	Capacity, 1920 ... gallons per minute	30	.....	115	.....	.....	.....	.....	.....	.....	.....
39	Capacity, 1910 ... gallons per minute	1,064	.....	1,371	.....	.....	.....	.....	.....	.....	.....
	Pumped wells:										
40	Number, 1920	1	3	9	.....	.....	.....	.....	2	.....	.....
41	Number, 1910	1	.....	5	.....	.....	.....	.....	1	.....	3
42	Capacity, 1920 ... gallons per minute	.....	1,200	287	.....	.....	.....	.....	70	.....	.....
43	Capacity, 1910 ... gallons per minute	300	.....	1,169	.....	.....	.....	.....	1,200	.....	355
	Pumping plants:										
44	Number, 1920	1	3	10	2	.....	4	.....	4	.....	1
45	Number, 1910	1	.....	9	.....	.....	1	.....	1	.....	7
46	Engine capacity, 1920 ... horsepower	.....	12	300	10	.....	112	.....	11	.....	7
47	Engine capacity, 1910 ... horsepower	8	.....	225	.....	.....	56	.....	10	.....	26
48	Pump capacity, 1920 ... gallons per minute	.....	1,200	6,962	350	.....	3,800	.....	45	.....	.....
49	Pump capacity, 1910 ... gallons per minute	300	.....	8,921	.....	.....	3,600	.....	1,200	.....	939
50	Average lift, 1920 ... feet	.....	29	38	29	.....	18	.....	52	.....	40
	CAPITAL INVESTED.										
51	Capital invested to Jan. 1, 1920 ... dollars	931,461	25,561	1,761,518	1,134,502	534,913	462,748	395,752	1,061,777	784,326	1,231,205
52	Capital invested to July 1, 1910 ... dollars	187,211	35,215	1,505,440	1,458,678	432,231	207,622	11,047	257,959	275,899	4,300,968
53	Per cent of increase, 1910-1920	381.5	−27.4	17.0	−22.2	23.8	122.9	.....	11.6	184.3	−71.4
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	40.59	14.28	49.35	12.09	12.41	8.82	102.00	33.06	5.25	16.72
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	6.64	3.12	40.54	15.31	5.56	3.48	3.29	7.23	1.38	30.23
	ESTIMATED FINAL COST.										
56	Estimated final cost of existing enterprises in 1920 ... dollars	921,461	39,961	1,889,158	1,170,927	547,713	472,998	395,752	1,083,232	1,043,826	1,268,125
57	Estimated final cost of existing enterprises in 1910 ... dollars	187,211	35,215	1,588,971	1,498,678	504,654	207,622	11,047	273,959	275,899	5,170,968
58	Per cent of increase, 1910-1920	392.2	13.5	18.9	−21.9	8.5	127.8	.....	295.4	378.3	−75.5
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	25.99	5.95	42.89	9.95	6.41	6.96	97.36	25.03	4.55	16.27
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	4.52	1.73	37.46	11.24	5.13	2.81	2.12	4.10	1.13	17.64

[1] Jackson County organized from part of Larimer County in 1909.
[2] Part of Jefferson County annexed to Park County in 1908.

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910—Continued.

[A minus sign (−) denotes decrease. Per cent not shown when base is less than 100 or when per cent is more than 1,000.]

		Kiowa.	La Plata.	Lake.	Larimer.[1]	Las Animas.	Logan.	Mesa.	Mineral.	Moffat.[2]	Montezuma.
1	Number of all farms in 1920	668	1,069	30	1,921	2,286	1,874	2,207	34	1,023	904
2	Number of farms irrigated in 1919	12	860	29	1,486	530	397	2,060	28	103	616
3	Per cent of all farms	1.8	80.4	96.7	77.4	23.2	21.2	93.3	82.4	10.1	68.1
4	Number of farms irrigated in 1909	6	634	43	1,491	447	272	2,238	28	.....	516
5	Per cent of increase, 1909–1919	.....	35.6	.....	−0.3	18.6	46.0	−8.0	.....	.....	19.4
	LAND AND FARM AREA.										
6	Approximate land area ... acres	1,150,720	1,184,640	237,440	1,682,560	3,077,760	1,166,080	2,024,320	554,240	2,981,120	1,312,640
7	All land in farms ... acres	430,985	305,003	12,862	790,533	1,302,849	857,359	232,225	17,139	481,777	192,703
8	Improved land in farms ... acres	61,782	76,019	5,151	192,976	133,084	416,120	99,582	5,458	75,235	57,904
9	Area irrigated in 1919 ... acres	418	63,755	6,397	169,356	40,400	85,079	102,667	6,865	17,439	44,083
10	Per cent of improved land in farms	0.7	83.9	124.2	87.8	30.4	20.4	103.0	125.8	23.2	76.1
11	Area irrigated in 1909 ... acres	1,460	49,840	10,967	170,600	26,093	63,166	71,942	7,702	.....	27,176
12	Per cent of increase, 1909–1919	−71.4	56.1	−41.7	−0.7	54.8	34.7	42.6	−11.6	.....	62.2
13	Area enterprises were capable of irrigating in 1920 ... acres	2,083	78,227	7,088	188,047	43,857	105,916	140,104	9,950	24,224	44,795
14	Area enterprises were capable of irrigating in 1910 ... acres	1,460	109,479	11,647	178,992	32,566	65,345	92,992	9,370	.....	62,757
15	Per cent of increase, 1910–1920	42.7	−28.5	−39.1	5.1	34.7	62.1	52.1	6.2	.....	−28.6
16	Area included in enterprises in 1920 ... acres	17,283	111,462	19,449	196,330	50,987	124,415	185,177	14,770	32,327	80,216
17	Area included in enterprises in 1910 ... acres	2,316	151,387	16,380	316,992	35,149	87,301	182,942	10,590	.....	67,536
18	Per cent of increase, 1910–1920	648.2	−26.4	−36.2	−38.1	45.1	42.5	1.2	39.5	.....	18.8
19	Area of irrigated land reported as available for settlement ... acres	.....	7,907	.....	.....	.....	.....	30,200	.....	.....	13,000
	IRRIGATION WORKS.										
	Independent enterprises:										
20	Number, 1920	6	211	30	171	176	39	213	42	127	102
21	Number, 1910	6	262	55	221	139	36	275	46	.....	141
	Main ditches:										
22	Number, 1920	3	239	59	228	184	39	239	45	135	123
23	Number, 1910	4	257	39	217	88	35	259	44	.....	150
24	Length, 1920 ... miles	18	580	52	564	373	386	686	60	362	265
25	Length, 1910 ... miles	7	489	71	758	161	215	592	47	.....	368
26	Capacity, 1920 ... second-feet	2,585	2,018	268	6,968	1,618	3,376	4,721	355	888	995
27	Capacity, 1910 ... second-feet	22	2,062	530	7,176	1,193	2,506	5,000	217	.....	1,590
	Laterals:										
28	Number, 1920	4	109	.....	238	41	105	398	50	113	39
29	Number, 1910	.....	52	9	136	16	8	62	12	.....	38
30	Length, 1920 ... miles	34	124	.....	418	28	125	326	22	334	159
31	Length, 1910 ... miles	.....	125	16	368	7	23	150	8	.....	158
	Reservoirs:										
32	Number, 1920	4	5	.....	60	21	7	60	2	18	9
33	Number, 1910	1	7	.....	84	7	4	42	0	.....	11
34	Capacity, 1920 ... acre-feet	32,118	15	.....	181,515	429,105	116,108	19,201	2,311	1,560	17,680
35	Capacity, 1910 ... acre-feet	1	7,456	.....	293,268	427	1,929	10,172	.....	.....	37,600
	Flowing wells:										
36	Number, 1920	.....	4	.....	1	.....	.....	.....	.....	.....	.....
37	Number, 1910	1	4	.....	.....	.....	.....	.....	.....	.....	.....
38	Capacity, 1920 ... gallons per minute	.....	100	.....	60	.....	.....	.....	.....	.....	.....
39	Capacity, 1910 ... gallons per minute	10	89	.....	.....	.....	.....	.....	.....	.....	.....
	Pumped wells:										
40	Number, 1920	6	.....	.....	28	.....	40	.....	.....	.....	.....
41	Number, 1910	2	.....	.....	2	.....	1	2	.....	.....	.....
42	Capacity, 1920 ... gallons per minute	2,985	.....	.....	8,095	.....	6,600	.....	.....	.....	.....
43	Capacity, 1910 ... gallons per minute	4	.....	.....	857	.....	600	80	.....	.....	.....
	Pumping plants:										
44	Number, 1920	5	.....	.....	22	1	10	11	.....	4	.....
45	Number, 1910	2	2	.....	5	.....	1	31	.....	.....	.....
46	Engine capacity, 1920 ... horsepower	57	.....	.....	374	7	241	3,299	.....	48	.....
47	Engine capacity, 1910 ... horsepower	1	136	.....	80	.....	10	5,991	.....	.....	.....
48	Pump capacity, 1920 ... gallons per minute	2,985	.....	.....	14,376	500	11,600	16,845	.....	3,200	.....
49	Pump capacity, 1910 ... gallons per minute	4	2,716	.....	1,659	.....	600	178,273	.....	.....	.....
50	Average lift, 1920 ... feet	20	.....	.....	21	7	15	36	.....	15	.....
	CAPITAL INVESTED.										
51	Capital invested to Jan. 1, 1920 ... dollars	251,500	938,864	33,696	6,236,866	481,720	3,593,889	7,319,055	81,693	266,301	1,846,679
52	Capital invested to July 1, 1910 ... dollars	7,975	668,774	46,196	5,576,639	155,583	368,862	3,024,019	19,514	.....	1,026,977
53	Per cent of increase, 1910–1920	.....	96.3	−27.1	11.8	158.2	824.2	142.6	318.6	.....	79.8
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	120.74	12.00	4.75	33.17	9.16	33.93	52.24	8.21	15.12	41.23
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	5.46	6.29	3.97	31.16	4.78	5.95	32.84	2.08	.....	16.36
	ESTIMATED FINAL COST.										
56	Estimated final cost of existing enterprises in 1920 ... dollars	337,200	978,214	33,696	6,473,663	455,470	3,596,039	8,155,335	102,243	286,226	2,446,679
57	Estimated final cost of existing enterprises in 1910 ... dollars	7,975	855,311	46,196	9,026,639	155,583	368,862	6,745,382	19,514	.....	1,091,974
58	Per cent of increase, 1910–1920	.....	14.4	−27.1	−28.3	192.8	824.8	20.9	423.9	.....	124.1
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	19.51	8.78	3.22	32.97	8.93	28.90	44.04	6.92	11.95	30.50
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	3.45	5.65	2.82	28.48	4.43	4.45	36.87	1.84	.....	16.17

[1] Part of Larimer County taken to form Jackson County in 1909.
[2] Moffat County organized from part of Routt County in 1911.

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910—Continued.

[A minus sign (—) denotes decrease. Per cent not shown when base is less than 100 or when per cent is more than 1,000.]

		Montrose.	Morgan.	Otero.[1]	Ouray.[2]	Park.[3]	Pitkin.	Prowers.	Pueblo.	Rio Blanco.	Rio Grande.
1	Number of all farms in 1920	1,356	1,720	1,486	180	286	179	1,469	1,826	537	603
2	Number of farms irrigated in 1919	1,294	777	1,157	142	122	153	660	995	278	584
3	Per cent of all farms	94.6	45.2	77.9	78.9	42.7	85.5	44.9	54.5	51.8	96.8
4	Number of farms irrigated in 1909	1,042	561	1,310	184	162	182	546	753	285	517
5	Per cent of increase, 1909–1919	24.2	38.5			—24.7	—15.9	20.9	32.1	—2.5	13.0
	LAND AND FARM AREA.										
6	Approximate land area ... acres	1,448,960	823,040	805,760	332,160	1,434,880	652,160	1,043,200	1,557,120	2,062,720	574,720
7	All land in farms ... acres	218,255	555,890	334,293	73,010	239,862	49,389	669,262	993,226	223,649	199,231
8	Improved land in farms ... acres	88,696	237,374	94,201	17,098	113,452	16,345	188,230	146,972	54,900	115,044
9	Area irrigated in 1919 ... acres	94,757	132,231	120,198	14,016	49,793	12,994	76,322	75,454	28,046	206,258
10	Per cent of improved land in farms	107.6	55.7	127.6	82.0	43.9	79.5	40.5	51.3	51.1	179.3
11	Area irrigated in 1909 ... acres	55,993	97,949	122,457	15,621	64,824	15,152	71,684	50,718	32,830	107,551
12	Per cent of increase, 1909–1919	69.2	35.1			—23.2	—14.2	6.5	48.8	—14.6	91.8
13	Area enterprises were capable of irrigating in 1920 ... acres	123,905	153,796	124,879	23,092	52,029	15,172	81,508	88,699	32,742	227,161
14	Area enterprises were capable of irrigating in 1910 ... acres	92,194	114,935	198,460	20,337	65,384	29,719	74,632	69,442	37,353	298,021
15	Per cent of increase, 1910–1920	34.4	33.8			—20.4	—48.9	9.2	27.7	—12.3	—23.8
16	Area included in enterprises in 1920 ... acres	173,162	166,670	183,077	24,017	55,449	21,295	99,213	142,594	45,579	293,162
17	Area included in enterprises in 1910 ... acres	234,132	259,590	250,766	25,492	68,969	39,497	130,596	174,518	53,169	353,637
18	Per cent of increase, 1910–1920	—31.9	—35.8			—19.6	—46.1	—24.0	—18.3	—14.3	—17.1
19	Area of irrigated land reported as available for settlement ... acres	13,500							31,585		
	IRRIGATION WORKS.										
	Independent enterprises:										
20	Number, 1920	103	39	26	96	213	76	29	264	189	159
21	Number, 1910	200	49	47	137	282	165	25	190	202	213
	Main ditches:										
22	Number, 1920	113	34	27	124	359	96	27	273	299	198
23	Number, 1910	192	48	37	138	276	124	20	173	191	229
24	Length, 1920 ... miles	431	308	329	213	440	191	180	525	458	348
25	Length, 1910 ... miles	541	537	327	252	363	253	218	436	354	537
26	Capacity, 1920 ... second-feet	2,437	3,771	5,537	642	2,705	655	1,573	5,316	2,908	3,347
27	Capacity, 1910 ... second-feet	3,983	6,454	6,533	1,085	4,241	1,002	2,286	5,181	1,129	6,755
	Laterals:										
28	Number, 1920	187	69	404	4	53	74	153	370	113	184
29	Number, 1910	58	15	53	41	718	17	82	91	118	187
30	Length, 1920 ... miles	382	62	429		20	37	309	371	48	373
31	Length, 1910 ... miles	164	42	123	15	185	5	148	109	70	398
	Reservoirs:										
32	Number, 1920	14	10	10		1	3	5	61	24	4
33	Number, 1910	15	17	40	7	1	9	7	54	10	1
34	Capacity, 1920 ... acre-feet	8,335	86,660	36,659		8	19	53,613	109,534	4,028	30,150
35	Capacity, 1910 ... acre-feet	119,381	181,673	139,564	441	1	1,874	183,381	106,307	384	261
	Flowing wells:										
36	Number, 1920								3		172
37	Number, 1910								4		33
38	Capacity, 1920 ... gallons per minute								570		6,666
39	Capacity, 1910 ... gallons per minute								2,168		7,672
	Pumped wells:										
40	Number, 1920		23	12				6	132		
41	Number, 1910	1	3	14			1		3		
42	Capacity, 1920 ... gallons per minute		26,590	11,088				1,205	37,869		
43	Capacity, 1910 ... gallons per minute	170	1,581	6,205			34		145		
	Pumping plants:										
44	Number, 1920	2	17	11				7	66	1	
45	Number, 1910	1	3	15			1		4	9	
46	Engine capacity, 1920 ... horsepower	41	344	188				30	801	10	
47	Engine capacity, 1910 ... horsepower	3	25	87			1		9	87	
48	Pump capacity, 1920 ... gallons per minute		26,585	10,438				1,470	49,505	900	
49	Pump capacity, 1910 ... gallons per minute	170	1,581	15,185			34		165	4,329	
50	Average lift, 1920 ... feet	34	22	20				18	21	10	
	CAPITAL INVESTED.										
51	Capital invested to Jan. 1, 1920 ... dollars	6,788,758	2,890,735	4,157,535	197,039	175,670	208,324	1,160,422	3,645,462	355,617	981,136
52	Capital invested to July 1, 1910 ... dollars	4,769,166	4,821,813	3,197,415	159,091	213,233	237,523	1,453,019	1,511,694	269,479	1,356,578
53	Per cent of increase, 1910–1920	42.3	—40.1			—17.6	—12.3	—20.1	141.2	32.0	—27.7
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	54.79	16.91	33.29	8.56	3.38	13.73	14.24	41.10	10.86	4.32
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	51.73	41.95	16.11	7.82	3.26	7.99	19.47	21.77	7.21	4.55
	ESTIMATED FINAL COST.										
56	Estimated final cost of existing enterprises in 1920 ... dollars	7,296,466	2,604,785	4,438,935	197,758	176,080	214,324	1,163,412	3,919,262	372,882	982,914
57	Estimated final cost of existing enterprises in 1910 ... dollars	9,751,675	6,004,613	3,631,587	159,091	213,233	252,554	1,453,019	1,693,321	269,479	1,400,313
58	Per cent of increase, 1910–1920	—25.3	—56.6			—17.4	—15.1	—19.9	131.5	38.4	—29.8
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	42.08	15.63	24.25	8.23	3.18	10.06	11.73	27.49	8.18	3.35
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	38.37	23.13	14.48	6.25	3.09	6.39	11.13	9.70	5.07	3.96

[1] Part of Otero County taken to form Crowley County in 1911.
[2] Part of San Miguel County annexed to Ouray County in 1917.
[3] Part of Jefferson County annexed to Park County in 1908.

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910—Continued.

[A minus sign (−) denotes decrease. Per cent not shown when base is less than 100 or when per cent is more than 1,000.]

		Routt.[1]	Saguache.	San Miguel.[2]	Sedgwick.	Summit.	Teller.	Washington.[3]	Weld.	Yuma.[3]	All other counties.
1	Number of all farms in 1920	923	432	334	487	72	250	2,057	5,765	2,179	4,265
2	Number of farms irrigated in 1919	428	390	154	130	67	26	51	3,398	29	35
3	Per cent of all farms	46.2	90.3	46.1	26.7	93.1	10.4	2.5	58.9	1.3	0.8
4	Number of farms irrigated in 1909	588	338	121	141	90	32	47	2,578	23	12
5	Per cent of increase, 1909-1919		15.4		−7.8				31.8		
	LAND AND FARM AREA.										
6	Approximate land area ... acres	1,477,760	2,005,120	824,320	339,840	415,360	350,080	1,613,440	2,574,080	1,514,880	5,228,160
7	All land in farms ... acres	360,787	436,024	128,492	234,537	26,155	122,631	1,088,796	1,756,973	1,203,781	2,758,803
8	Improved land in farms ... acres	94,896	139,856	21,344	139,243	8,150	16,632	551,234	878,520	591,609	726,651
9	Area irrigated in 1919 ... acres	50,735	137,581	18,634	21,510	9,831	1,464	9,335	382,701	8,254	794
10	Per cent of improved land in farms	53.5	98.4	87.3	15.4	120.6	8.8	1.8	43.6	1.4	0.1
11	Area irrigated in 1909 ... acres	62,427	145,874	14,712	22,023	8,402	1,376	5,595	395,514	3,890	1,041
12	Per cent of increase, 1909-1919		−5.7		−2.3	17.0	6.9	66.8	−3.2	112.2	−23.7
13	Area enterprises were capable of irrigating in 1920 ... acres	61,123	153,391	22,811	23,050	10,986	1,540	10,095	395,444	10,182	1,394
14	Area enterprises were capable of irrigating in 1910 ... acres	110,569	150,943	20,421	23,260	11,739	1,435	6,027	434,606	6,290	1,191
15	Per cent of increase, 1910-1920		1.6		−0.9	−6.4	7.3	67.5	−8.9	61.9	17.0
16	Area included in enterprises in 1920 ... acres	92,148	271,932	44,749	24,050	15,222	1,944	10,095	567,392	15,242	2,324
17	Area included in enterprises in 1910 ... acres	157,298	157,568	21,653	53,620	16,489	1,664	7,969	629,433	8,275	1,518
18	Per cent of increase, 1910-1920		72.6		−55.1	−7.7	16.8	26.7	−9.9	84.2	53.1
19	Area of irrigated land reported as available for settlement ... acres		8,000	3,000							
	IRRIGATION WORKS.										
	Independent enterprises:										
20	Number, 1920	310	212	67	7	79	25	8	238	26	17
21	Number, 1910	433	348	95	10	151	26	7	291	16	11
	Main ditches:										
22	Number, 1920	421	576	74	7	133	35	8	204	31	14
23	Number, 1910	417	328	94	10	154	21	4	263	12	9
24	Length, 1920 ... miles	649	614	231	87	150	42	21	1,113	64	21
25	Length, 1910 ... miles	899	414	179	139	174	18	5	752	32	11
26	Capacity, 1920 ... second-feet	1,619	3,757	789	459	437	60	365	9,040	599	158
27	Capacity, 1910 ... second-feet	4,502	2,597	773	1,934	571	38	85	12,611	210	103
	Laterals:										
28	Number, 1920	87	163	39	5	34	36	16	240	47	11
29	Number, 1910	171	888	2	20	26	2	2	250		4
30	Length, 1920 ... miles	38	249	182	7	7	41	39	877	39	10
31	Length, 1910 ... miles	106	174	5	10	12	1	2	182		2
	Reservoirs:										
32	Number, 1920	50	14	3	2		1	3	103	4	7
33	Number, 1910	74	13	3	11	3		2	100	1	3
34	Capacity, 1920 ... acre-feet	5,432	8,554	5,066	27,219		40	268	310,059	30	737
35	Capacity, 1910 ... acre-feet	36,456	28	1,334	42,020	76		290	73,766	3	55
	Flowing wells:										
36	Number, 1920		156								
37	Number, 1910		58								
38	Capacity, 1920 ... gallons per minute		4,848								
39	Capacity, 1910 ... gallons per minute		2,497								
	Pumped wells:										
40	Number, 1920		1		1			4	149		12
41	Number, 1910								47		2
42	Capacity, 1920 ... gallons per minute				250			1,920	70,311		1,375
43	Capacity, 1910 ... gallons per minute								33,263		26
	Pumping plants:										
44	Number, 1920		1		1			2	133		3
45	Number, 1910	3	1						54		2
46	Engine capacity, 1920 ... horsepower				8			30	1,846		37
47	Engine capacity, 1910 ... horsepower	125	3						686		1
48	Pump capacity, 1920 ... gallons per minute				250			1,920	99,953		1,475
49	Pump capacity, 1910 ... gallons per minute	7,225	170						49,295		26
50	Average lift, 1920 ... feet				30			13	22		14
	CAPITAL INVESTED.										
51	Capital invested to Jan. 1, 1920 ... dollars	572,873	450,609	676,100	716,215	103,581	12,141	78,966	16,417,224	83,908	89,094
52	Capital invested to July 1, 1910 ... dollars	661,203	547,870	142,552	493,501	70,253	7,037	65,713	7,597,658	22,276	5,050
53	Per cent of increase, 1910-1920		−17.8		45.1	47.2	72.5	20.2	116.1	276.7	
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	9.37	2.94	29.64	31.07	9.43	7.88	7.82	41.52	8.24	63.91
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	5.98	3.63	6.98	21.22	5.99	4.90	10.90	17.51	3.54	4.24
	ESTIMATED FINAL COST.										
56	Estimated final cost of existing enterprises in 1920 ... dollars	613,908	531,614	797,700	716,215	103,631	12,141	80,166	18,892,957	89,908	90,994
57	Estimated final cost of existing enterprises in 1910 ... dollars	1,099,590	547,870	142,552	1,130,501	70,353	7,037	65,713	9,847,658	22,276	5,050
58	Per cent of increase, 1910-1920		−3.0		−36.6	47.3	72.5	22.0	91.9	303.6	
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	6.66	1.95	17.83	29.78	6.81	6.25	7.94	33.30	5.11	39.15
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	6.99	3.48	6.58	21.08	4.27	4.23	8.25	15.64	2.69	3.33

[1] Part of Routt County taken to form Moffat County in 1911.
[2] Part of San Miguel County annexed to Ouray County in 1917.
[3] Parts of Adams and Arapahoe Counties annexed to Washington and Yuma Counties in 1903.

IDAHO.

INTRODUCTION.

The following pages present the statistics of irrigation for the state of Idaho collected at the census of 1920. Statistics of acreage irrigated, of acreage, yield, and value of crops grown on irrigated land, and of cost of operation and maintenance relate to the year 1919; other items relate to the year 1920. Throughout the report figures for the census of 1910 are given for purposes of comparison; and, for the purpose of showing the historical development of irrigation, items which have been reported in censuses previous to 1910 are presented.

Statistics of number of farms irrigated and of acreage, yield, and value of crops grown on irrigated land were collected in the general census of agriculture. All other statistics were obtained in a special canvass of irrigation enterprises.

TABLE 1.—SUMMARY FOR THE STATE: 1920 AND 1910.

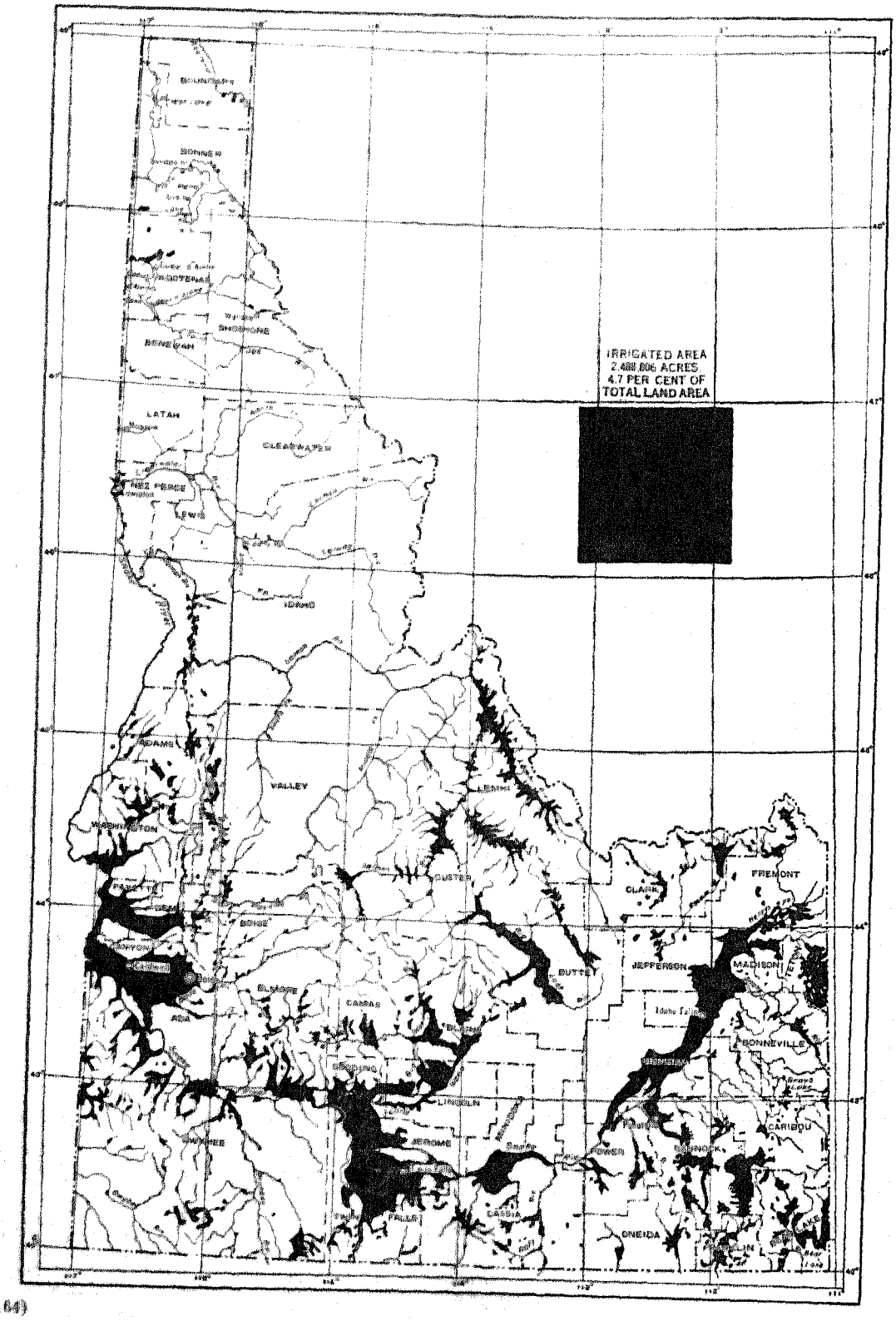
ITEM.	CENSUS OF—		INCREASE.[1]	
	1920	1910	Amount.	Per cent.
Number of all farms	42,106	30,807	11,299	36.7
Approximate land area of the state ... acres	53,346,560	53,346,560	.....	.....
All land in farms ... acres	8,375,873	5,283,604	3,092,269	58.5
Improved land in farms ... acres	4,511,680	2,778,740	1,732,940	62.4
Number of farms irrigated	25,283	16,439	8,844	53.8
Area irrigated ... acres	2,488,806	1,430,848	1,057,958	73.9
Area enterprises were capable of irrigating ... acres	3,092,810	2,388,959	703,851	29.5
Area included in enterprises ... acres	3,780,048	3,549,573	230,475	6.5
Per cent irrigated:				
Number of all farms	60.0	53.4	6.6	.....
Approximate land area of the state	4.7	2.7	2.0	.....
Land in farms	29.7	27.1	2.6	.....
Improved land in farms	55.2	51.5	3.7	.....
Excess of area enterprises were capable of irrigating over area irrigated ... acres	604,004	958,111	−354,107	−37.0
Excess of area included in enterprises over area irrigated ... acres	1,291,242	2,118,725	−827,483	−39.1
Area of irrigated land reported as available for settlement ... acres	118,334	(2)	.....	.....
Capital invested	$91,501,009	$40,977,688	$50,523,321	123.3
Average per acre enterprises were capable of irrigating	$29.59	$17.15	$12.44	72.5
Estimated final cost of existing enterprises	$97,019,717	$58,451,106	$38,568,611	66.0
Average per acre included in enterprises	$25.67	$16.47	$9.20	55.9
Average cost of operation and maintenance per acre	$1.17	$0.63	$0.54	85.7
IRRIGATION WORKS.				
Number of enterprises	3,629	3,092	537	17.4
Number of main ditches	4,553	3,209	1,344	41.9
Length of main ditches ... miles	11,144	7,662	3,482	45.4
Capacity of main ditches ... second-feet	86,273	80,458	5,815	7.2
Number of lateral ditches	5,265	3,359	1,906	56.7
Length of lateral ditches ... miles	6,154	5,097	1,057	20.7
Number of reservoirs	249	243	6	2.5
Capacity of reservoirs ... acre-feet	3,493,511	1,742,303	1,751,208	100.5
Number of flowing wells	142	62	80	129.0
Capacity of flowing wells ... gallons per minute	15,133	7,200	7,933	110.2
Number of pumped wells	53	24	29	120.8
Capacity of pumped wells ... gallons per minute	17,749	2,826	14,923	528.1
Number of pumping plants	143	58	85	146.6
Engine capacity ... horsepower	28,364	7,065	21,299	301.5
Pump capacity ... gallons per minute	1,397,681	278,569	1,119,112	401.7
Average lift ... feet	29	(2)	29	.....

[1] A minus sign (−) denotes decrease.

[2] Not reported in 1910.

IDAHO

APPROXIMATE LOCATION AND EXTENT OF IRRIGATED LAND



CLIMATIC CONDITIONS.

The climatic conditions determining the necessity for irrigation are the amount and the seasonal distribution of precipitation, especially rainfall. With reference to precipitation Idaho is divided into two quite distinct zones. The southern and southeastern parts of the state are dry, while the northern part is wet. Expressed in another way, the drainage basin of Snake River from the point where this river enters the state on the eastern border to the northern boundary of Washington County, on the western border of the state, is dry, while the remainder of the state, except for a small area on the headwaters of Salmon River, is wet. In Snake River Valley, the normal annual precipitation at the eastern border of the state is about 20 inches; it decreases to the westward, falling below 10 inches in the vicinity of Twin Falls, or about midway of the state, and remaining below 10 inches to the western border of the state. From the vicinity of Caldwell northward the rainfall increases, reaching 20 inches at about the northern boundary of Washington County. A second zone that receives less than 10 inches of annual precipitation extends from Snake River in the vicinity of American Falls northward into the valleys of the headwaters of Salmon River and reaches the mountains forming the boundary between Idaho and Montana. The region, thus described, that receives less than 20 inches of precipitation annually constitutes about two-thirds of the area of the state, and contains most of the irrigated land. Crops are grown without irrigation in this section, on the high lands away from the rivers, where the precipitation is heavier. Throughout this section the period of lowest precipitation is the growing season—June, July, August, and September.

The part of the state receiving more than 20 inches of precipitation annually comprises all of the northern part of the state and the mountainous section extending southward between the dry section in Snake River Valley and that in Salmon River Valley. Small areas are irrigated in this humid part of the state, but generally crops are grown without irrigation.

In 1919 there was a serious deficiency of precipitation during the growing season. There was a pronounced shortage in the spring and summer rains in all sections, and this drouth continued until October. The local representative of the United States Weather Bureau in his annual report speaks of this drouth as follows:

> It was without precedent both in duration and intensity and its destructive effects were apparent in the failure of dry farm crops and pastures; the drying up of the range; rapid and stubborn spread of forest fires; the failure of mountain streams, and the shortage, in some districts total failure, of irrigation water.

Aside from shortage of water the season was very favorable, and where water for irrigation was available unusually good crops were harvested.

WATER SUPPLY FOR IRRIGATION.

In the northern part of the state, where the precipitation is heavy and the acreage irrigated is small, the streams supply far more water than is needed for the irrigation of the small areas that are watered or for any additional areas on which irrigation is likely to be practiced.

With the exception of a small area in the southeast corner of the state, all the southern part of Idaho, from the eastern border to the western border, is watered by Snake River and its tributaries. The South Fork of Snake River rises in lakes in Yellowstone National Park, flows southward into Wyoming, where it passes through Jackson Lake, and continues southward for about 60 miles, then turns westward into Idaho. From that point Snake River forms a long loop extending first southwesterly and then northwesterly, entirely across the state, after which it flows in a northerly direction, forming the western boundary of Idaho for about 200 miles.

From the junction of the North and South Fork to the point where the Snake reaches the western boundary of the state there are no important tributaries from the north. Numerous streams head in the mountains to the north of the river, but their waters are lost before reaching the river. There are, however, large springs discharging into the river from the north, producing quite an increase in the flow of the river. From the south, on the other hand, there are tributaries reaching the river at intervals throughout its course across the state. The most important of these, in order from east to west, are Blackfoot, Port Neuf, Raft, Salmon Falls, Bruneau, and Owyhee Rivers.

Entering Snake River from the east, in that section where it forms the western boundary of the state, are the Boise, Payette, and Weiser Rivers. All of the tributaries are used for irrigation, but the larger part of the irrigated land is supplied with water from Snake River itself.

Water for use in Idaho is stored in Jackson Lake in Wyoming and to some extent in reservoirs in the valley in Idaho. Any large extension of irrigation from Snake River in Idaho will require storage, and plans for such storage are being investigated by the United States Reclamation Service and other agencies.

Large storage reservoirs have been built on the Boise River by the United States Reclamation Service, from which water is supplied to lands in Oregon as well as in Idaho. There is storage on other tributaries also.

The southeastern corner of the state is watered from Bear River and its tributaries. The normal flow of this stream is largely utilized, and large increase in irrigation will require storage. Rights to water from Bear River are in conflict with rights in Utah, and the rights in the two states have been involved in litigation for many years.

FARMS AND ACREAGE IRRIGATED.

TABLE 2.—NUMBER OF FARMS AND ACREAGE IRRIGATED, 1890 TO 1920.

CENSUS YEAR.	FARMS IRRIGATED.			AREA IRRIGATED.				
	Number.	Per cent of increase.	Per cent of all farms.	Acres.	Per cent of increase.	Per cent of total land area.	Per cent of land in farms.	Per cent of improved land in farms.
1920	25,283	53.8	60.0	2,488,806	73.9	4.7	22.7	55.2
1910	16,439	78.9	53.4	1,430,848	135.1	2.7	27.1	51.5
1900	9,188	112.3	32.6	608,718	185.5	1.1	19.0	43.1
1890	4,323		23.5	217,056		0.4	18.7	35.8

TABLE 3.—ACREAGE, CLASSIFIED BY DATE OF BEGINNING OF ENTERPRISES SUPPLYING WATER FOR IRRIGATION.

DATE OF BEGINNING.	Number of enterprises.	Area included in enterprises, 1920 (acres).	AREA IRRIGATED IN 1919.		Area enterprises were capable of irrigating in 1920 (acres).
			Acres.	Per cent of acreage in enterprises.	
Total	3,629	3,780,048	2,488,806	65.8	3,092,810
Before 1880	10	2,374	931	39.2	1,271
1880–1889	36	69,426	48,536	69.8	51,143
1890–1899	277	183,670	144,031	78.4	157,694
1900–1909	1,013	998,737	755,533	75.6	890,378
1910–1919	818	567,955	383,053	67.4	520,789
1905–1904	420	775,464	619,677	79.9	738,495
1905–1909	368	727,786	354,143	48.7	544,265
1910–1914	372	296,879	129,870	43.9	116,582
1915–1919	316	292,693	89,355	29.9	67,589
Not reported	149	45,684	31,677	69.3	26,774

TABLE 4.—ACREAGE, CLASSIFIED BY SOURCE OF WATER SUPPLY: 1919 AND 1909.

CLASS.	AREA IRRIGATED (ACRES).				Area enterprises were capable of irrigating in 1920 (acres).	Area included in enterprises, 1920 (acres).
	1919	1909	Increase.[1]			
			Acres.	Per cent.		
Total	2,488,806	1,430,848	1,057,958	73.9	3,092,810	3,780,048
Streams, gravity	2,274,959	1,383,718	891,241	64.4	2,806,479	3,331,426
Streams, pumped	197,181	18,685	88,496	473.6	131,550	158,026
Streams, pumped and gravity	1,870	(2)	1,870	.....	4,470	5,670
Wells, pumped	414	705	−291	−41.3	513	903
Wells, flowing	1,131	1,172	−41	−3.5	1,241	3,492
Lakes, gravity	2,492	4,622	−2,130	−46.1	4,660	25,772
Lakes, pumped	4,912	1,535	3,377	220.0	9,236	11,931
Springs	33,337	19,679	13,658	69.4	48,461	80,568
Stored storm water	2,590	732	1,858	253.8	4,420	9,420
Sewage	30	(2)	30	.....	150	150
Streams, gravity, and pumped wells	357	(2)	357	.....	338	363
Streams, gravity, and flowing wells	1,927	(2)	1,927	.....	1,967	2,328
Other mixed	54,601	(2)	54,601	.....	82,996	115,590
Other and not reported	2,955	(2)	2,955	.....	3,059	3,219

[1] A minus sign (−) denotes decrease. [2] Not included in classification in 1919.

ACREAGE, BY CHARACTER OF ENTERPRISE.

The original irrigation district law in Idaho was enacted in 1895, and it has been amended from time to time since that date. Generally, in Idaho, irrigation districts have not built irrigation works, but have been organized to take over works built by other agencies. Some of the larger commercial enterprises reported in 1910 have been taken over by districts, and this accounts for the decrease in the acreage reported for commercial enterprises. Much of the land served by the United States Reclamation Service has been organized into districts, but the acreage is credited to the Reclamation Service because the Government constructed the works and still controls them to a large extent. The Reclamation Service also supplies stored water to about 650,000 acres of land in other enterprises under the terms of the Warren Act (act of Congress, Feb. 21, 1911) and other special arrangements.

The state of Idaho accepted the terms of the Federal Carey Act (act of Congress, Aug. 18, 1894) in 1895, and this law has been amended from time to time. Some enterprises originally begun under this act have been reorganized in other forms and are reported under these in Table 5.

The small acreage credited to the state belongs to a state institution, and does not represent a scheme of state construction of irrigation works.

TABLE 5.—ACREAGE CLASSIFIED BY CHARACTER OF ENTERPRISE: 1920 AND 1910.

ITEM AND CLASS.	CENSUS OF—		INCREASE.[1]	
	1920	1910	Acres.	Percent.
ACREAGE IRRIGATED.				
Total	2,488,806	1,430,848	1,057,958	73.9
Individual and partnership	513,350	403,600	109,750	27.2
Cooperative	938,421	628,102	310,319	49.4
Irrigation district	355,995	140,930	215,065	152.6
Carey Act	383,833	162,418	221,415	136.3
Commercial	6,503	44,872	−38,369	−85.5
U. S. Reclamation Service	[2] 253,759	47,500	206,259	434.2
U. S. Indian Service	36,775	3,426	33,349	973.4
State	10	(3)	10	.....
City	160	(3)	160	.....
ACREAGE ENTERPRISES WERE CAPABLE OF IRRIGATING.				
Total	3,092,810	2,388,959	703,851	29.5
Individual and partnership	639,002	483,946	155,056	32.0
Cooperative	1,190,422	782,603	407,819	52.1
Irrigation district	399,382	177,900	222,482	125.1
Carey Act	523,090	742,618	−219,528	−29.6
Commercial	7,747	67,352	−59,605	−88.5
U. S. Reclamation Service	[2] 289,992	113,000	176,992	156.6
U. S. Indian Service	42,005	21,540	20,465	95.0
State	10	(3)	10	.....
City	160	(3)	160	.....
ACREAGE INCLUDED IN ENTERPRISES.				
Total	3,780,048	3,549,573	230,475	6.5
Individual and partnership	850,215	676,508	173,707	25.7
Cooperative	1,442,477	993,746	448,731	45.2
Irrigation district	463,839	329,796	134,043	40.6
Carey Act	654,404	1,098,661	−434,257	−39.5
Commercial	8,551	104,322	−95,771	−91.8
U. S. Reclamation Service	[2] 295,992	295,000	992	0.3
U. S. Indian Service	54,240	51,540	2,700	5.2
State	10	(3)	10	.....
City	320	(3)	320	.....

[1] A minus sign (−) denotes decrease.
[2] Does not include about 650,000 acres to which stored water is supplied under Warren Act.
[3] Not included in classification in 1910.

ACREAGE, BY CHARACTER OF WATER RIGHTS.

The territory of Idaho was organized under the act of March 3, 1863, and the state was admitted to the Union in 1890.

Rights to water from streams and other sources are subject to control by the state. The laws of Idaho

relating to water rights are summarized in the following paragraphs:

During the territorial period, in 1881, a law was passed recognizing the right to take or "appropriate" water from streams for useful or beneficial purposes, and providing that the appropriator must post a notice of the intended appropriation at the point of diversion and must file a copy of the notice in the county records. Laws passed in 1895 and 1899 retained this provision for posting and filing, and the act of 1899 provided further that all claimants to water must file statements of their claims within six months after the passage of the act. These provisions were in effect until 1903.

The act of March 11, 1903, provided that any party wishing to acquire a right to water must apply to the state engineer for a permit, and must, later, submit proof of having built works and put the water to use in accordance with the terms of the permit, and that, if the applicant complied with the terms of the permit the state engineer should issue a certificate of completion of works, and a license defining the rights acquired. This law is still in effect.

The act of March 11, 1903, provided, further, for the appointment of state officials to distribute water to those entitled to its use, and for the bringing of suits by these officials for the defining of rights to water, that is for adjudication of rights by the courts. The latter provision of the law was declared unconstitutional (Bear Lake *v.* Budge, 9 Idaho, 703). Rights are adjudicated in ordinary suits between claimants, but these can be begun only by claimants.

Article 15 of the state constitution, adopted August 6, 1889, provides that "the right to divert and appropriate the unappropriated waters of any natural stream to beneficial uses shall never be denied."

Riparian rights are not recognized in Idaho.

TABLE 6.—ACREAGE IRRIGATED, CLASSIFIED BY CHARACTER OF RIGHTS UNDER WHICH WATER IS RECEIVED: 1919 AND 1909.

CLASS.	1919		1909, per cent of total.
	Acres.	Per cent of total.	
Total	2,488,806	100.0	100.0
Appropriation and use	130,774	5.3	18.9
Notice filed and posted	238,637	9.6	25.4
Adjudicated by court	1,104,607	44.4	36.9
Permit from state	490,979	19.6	18.6
Certificate or license from state	338,958	13.6	0.1
Riparian rights	18,389	0.6	0.1
Underground	1,534	(1)	(2)
Other and mixed	55,595	2.3	(2)
Not reported	109,033	4.6	(2)

[1] Less than one-tenth of 1 per cent.
[2] All land for which the class of water rights was not reported was included in "Appropriation and use."

ACREAGE, BY DRAINAGE BASIN.

The report of a special census taken in 1902 presented all data by drainage basins rather than by counties. The results of the census of 1920 have been tabulated on the same basis, and the data for 1902 are presented for purposes of comparison. For no other census have the results been tabulated in this form. The acreage reported for each drainage basin in 1919 comprises all the irrigated land in that drainage basin, including that watered from springs and wells. In the 1902 results the acreages irrigated from springs and wells were not reported for the smaller tributary streams, but the acreages for the tributaries were included in those reported for the main streams. This area is so small, however, that the comparison of the areas reported for the tributary streams is not seriously affected.

TABLE 7.—ACREAGE IRRIGATED, CLASSIFIED BY DRAINAGE BASIN: 1919 AND 1902.

DRAINAGE BASIN.	AREA IRRIGATED (ACRES).			Area included in enterprises, 1920 (acres).	Area enterprises were capable of irrigating in 1920 (acres).
	1919	1902	Per cent of increase.[1]		
Total	2,488,806	712,595	249.8	3,780,048	3,092,810
Bear River and tributaries	214,166	99,691	114.8	321,804	247,166
Bear River direct	107,063	15,912	572.8	149,991	127,642
Thomas Fork	8,905	6,116	45.6	8,929	8,905
Mill Creek	2,973	6,561	−54.7	10,928	5,238
Little Malad Creek	16,179	9,024	84.8	43,604	17,128
Other tributaries of Bear River	78,486	62,078	26.4	109,542	88,253
Snake River and tributaries	2,103,892	569,286	280.1	3,102,573	2,660,929
Snake River direct	716,308	54,832	.....	889,892	849,610
Henrys Fork	208,534	85,793	145.1	325,114	296,524
South Fork of Snake River	151,597	52,326	189.7	297,292	192,473
Blackfoot River	53,910	9,095	496.7	77,255	60,225
Port Neuf River	37,996	18,528	105.1	75,923	59,270
Raft River	23,620	23,793	−0.7	42,906	26,436
Salmon Falls River	41,330	(3)	.....	87,260	49,920
Little Wood River	30,155	(3)	.....	97,867	55,475
Big Wood River	117,748	33,961	246.7	293,795	178,497
Bruneau River	21,301	12,865	65.6	35,043	23,511
Owyhee River	10,903	(3)	.....	17,241	11,760
Boise River	328,395	84,438	288.9	388,313	308,854
Payette River	123,072	50,893	141.8	165,142	117,011
Weiser River	58,869	26,769	119.9	79,925	69,718
Salmon River	115,108	46,243	148.9	224,527	103,036
Clearwater River	4,623	1,944	137.8	5,777	5,545
Coeur d'Alene Lake and River	4,101	(3)	.....	10,469	5,681
Other tributaries of Snake River	115,664	[2] 57,866	99.9	168,832	137,393
Other tributaries of Columbia River	895	[2] 607	47.4	2,420	1,904
Independent streams	109,913	44,011	149.7	353,251	182,811
Camas Creek	17,490	4,107	325.9	95,199	46,190
Beaver Creek	1,562	2,390	−35.5	2,590	1,970
Medicine Lodge	5,019	3,225	55.6	12,445	8,290
Little Lost River	11,552	6,825	69.3	31,452	18,732
Big Lost River	72,788	23,547	209.1	204,845	105,727
Other independent streams	1,562	[2] 3,977	−60.7	6,720	1,802

[1] A minus sign (−) denotes decrease. Per cent not shown when more than 1,000.
[2] Includes springs and wells. [3] Not reported separately in 1902.

CAPITAL INVESTED AND COST OF OPERATION AND MAINTENANCE.

TABLE 8.—CAPITAL INVESTED IN IRRIGATION ENTERPRISES: 1890 TO 1920.

CENSUS YEAR.	Amount.	Per cent of increase.	AVERAGE PER ACRE.	
			Amount.	Per cent of increase.[1]
1920	$91,501,009	123.3	$29.59	72.5
1910	40,977,688	700.3	17.15	352.5
1900	5,120,399	397.6	3.79	−20.0
1890	1,029,000	.....	4.74	.....

[1] A minus sign (−) denotes decrease.

TABLE 9.—CAPITAL INVESTED, CLASSIFIED BY DATE OF BEGINNING.

DATE OF BEGINNING.	Amount.	Per cent of total.	Average per acre.
Total	$91,501,009	100.0	$29.59
Before 1860	3,137	(1)	2.47
1860–1869	881,963	1.0	17.25
1870–1879	1,024,629	1.1	6.50
1880–1889	13,791,760	15.1	15.67
1890–1899	9,088,738	9.9	17.45
1900–1904	25,892,006	28.3	36.14
1905–1909	34,081,217	37.3	62.62
1910–1914	3,795,869	4.1	32.56
1915–1919	2,227,426	2.4	32.95
Not reported	714,324	0.8	19.42

[1] Less than one-tenth of 1 per cent.

TABLE 10.—CAPITAL INVESTED, 1920, AND COST OF OPERATION AND MAINTENANCE, 1919, CLASSIFIED BY SOURCE OF WATER SUPPLY.

[When water is pumped, cost of operation and maintenance includes cost of fuel and attendance.]

CLASS.	CAPITAL INVESTED, 1920.			OPERATION AND MAINTENANCE, 1919.	
	Amount.	Per cent of total.	Average per acre.	Area for which cost is reported (acres).	Average cost per acre.[1]
Total	$91,501,009	100.0	$39.59	2,105,336	$1.17
Streams, gravity	81,923,379	89.4	29.22	1,920,057	1.02
Streams, pumped	5,108,912	5.6	38.83	99,378	3.43
Streams, pumped and gravity	168,200	0.2	37.63	1,329	8.30
Wells, pumped	24,935	(2)	48.61	250	3.35
Wells, flowing	33,652	(2)	27.12	271	0.85
Lakes, pumped	544,981	0.6	59.20	3,412	6.72
Lakes, gravity	276,837	0.3	68.09	2,162	1.76
Springs	980,169	1.1	30.23	24,989	0.80
Stored storm water	246,257	0.3	55.71	2,245	0.89
Sewage	200	(2)	1.33	80	0.31
Streams, gravity and pumped wells	59,700	0.1	166.76	4	1.00
Streams, gravity and flowing wells	39,150	(2)	12.99	1,745	0.47
Other mixed	2,181,887	2.4	26.32	46,668	1.99
Other and not reported	12,730	(2)	4.17	2,855	0.81

[1] Based on area irrigated in 1919. [2] Less than one-tenth of 1 per cent.

TABLE 11.—CAPITAL INVESTED, CLASSIFIED BY DRAINAGE BASIN: 1920 AND 1902.

DRAINAGE BASIN.	1920	1902	INCREASE.[1]	
			Amount.	Per cent.
Total	$91,501,009	$56,190,671	$35,310,938	
Bear River and tributaries	3,228,007	504,511	2,823,496	559.7
Bear River direct	2,066,991	98,080	1,968,911	
Thomas Fork	25,389	16,210	9,179	56.6
Mill Creek	21,612	18,940	2,672	12.7
Little Malad Creek	332,175	30,945	301,230	973.4
Other tributaries of Bear River	802,440	[2] 349,036	541,804	159.1
Snake River and tributaries	84,317,216	5,529,005	78,788,211	
Snake River direct	35,847,491	533,796	35,293,695	
Henrys Fork	2,001,841	428,430	1,573,411	367.3
South Fork of Snake River	6,193,701	633,698	5,560,003	877.4
Blackfoot River	1,022,276	43,690	978,586	
Port Neuf River	1,141,528	58,255	1,083,273	
Raft River	100,928	46,665	54,263	116.4
Salmon Falls River	4,132,745	(3)	4,132,745	
Little Wood River	1,016,699	(3)	1,016,699	
Big Wood River	5,395,133	239,228	5,155,905	
Bruneau River	532,745	234,250	298,495	127.4
Owyhee River	64,467	(3)	64,467	
Boise River	16,013,734	1,674,583	14,339,151	856.3
Payette River	2,915,780	695,232	2,220,548	325.5
Weiser River	2,018,450	116,601	1,901,849	
Salmon River	1,175,302	212,668	962,634	452.7
Clearwater River	296,755	90,585	206,170	229.8
Coeur d'Alene Lake and River	576,674	(3)	576,674	
Other tributaries of Snake River	3,848,007	[2] 511,254	3,337,553	652.7
Other tributaries of Columbia River	27,180	5,395	21,785	403.8
Independent streams	3,828,606	151,160	3,677,446	
Camas Creek	575,627	6,263	569,364	
Beaver Creek	7,269	4,260	2,969	69.2
Medicine Lodge	31,696	3,800	27,896	733.9
Little Lost River	474,465	32,730	441,735	
Big Lost River	2,799,698	79,717	2,629,981	
Other independent streams	26,867	[2] 24,380	2,487	10.2

[1] Per cent not shown when more than 1,000.
[2] Includes springs and wells.
[3] Not reported separately in 1902.

In classifying capital invested by type of enterprise (Table 12) the average capital invested per acre is not presented, for the reason that it is not possible to compute this correctly. The United States Reclamation Service supplies stored water to enterprises controlled by agencies of most of the other classes shown in the table and a part of its expenditure is properly chargeable to those lands; but it is not possible to tell how much should be so charged or how it should be distributed among the various classes.

TABLE 12.—CAPITAL INVESTED, 1920, AND COST OF OPERATION AND MAINTENANCE, 1919, CLASSIFIED BY CHARACTER OF ENTERPRISE.

[When water is pumped, cost of operation and maintenance includes cost of fuel and attendance.]

CLASS.	CAPITAL INVESTED, 1920.		OPERATION AND MAINTENANCE, 1919.	
	Amount.	Per cent of total.	Area for which cost is reported (acres).	Average cost per acre.[1]
Total	$91,501,009	100.0	2,105,336	$1.17
Individual and partnership	5,747,004	6.3	383,430	0.75
Cooperative	36,576,664	40.0	780,006	0.72
Irrigation district	11,954,046	13.1	287,415	2.11
Commercial	698,179	0.8	5,503	2.68
Carey Act	17,772,590	19.4	360,063	1.23
U. S. Reclamation Service	17,804,839	19.6	253,759	1.98
U. S. Indian Service	932,387	0.8	35,000	1.55
City	14,300	(2)	160	1.56
State	1,000	(2)	.....	.....

[1] Based on area irrigated in 1919. [2] Less than one-tenth of 1 per cent.

DRAINAGE OF IRRIGATED LAND.

The acreages reported in Table 13 relate to lands within the boundaries of irrigation projects, and do not include lands within the vicinity of these projects. "Additional acreage needing drainage" includes all lands so reported by the owners of the enterprises, and includes lands producing partial crops as well as those wholly unproductive.

TABLE 13.—ACREAGE WITHIN IRRIGATION ENTERPRISES FOR WHICH DRAINS HAVE BEEN INSTALLED AND ADDITIONAL ACREAGE IN NEED OF DRAINAGE: 1920.

Number of enterprises reporting land drained or needing drainage	206
Acreage included in enterprises reporting land drained or needing drainage	734,405
Acreage for which drains have been installed	81,187
Additional acreage needing drainage	94,934
Per cent that acreage for which drains have been installed is of total acreage included in enterprises reporting drainage	11.1
Per cent that acreage for which drains have been installed is of total acreage included in irrigation enterprises in the state	2.1
Per cent that acreage for which drains have been installed plus that needing drainage is of total acreage included in irrigation enterprises in the state	4.7

QUANTITY OF WATER USED.

The quantity of water used in 1919 was reported on only part of the irrigation schedules, and the figures given vary greatly. In order that proper values may be assigned to the figures given, those representing measurements and those representing estimates are reported separately in Table 14. While the data are incomplete, the reports represent sufficient acreages to serve as bases for reliable averages.

TABLE 14.—QUANTITY OF WATER USED IN 1919.

ITEM.	Total.	Measured.	Not measured.
Average volume entering canals..second-feet..	43,481	35,669	7,812
Area irrigated in 1919.....acres..	1,750,265	1,472,586	277,679
Average number of acres per second-foot..	40	41	36
Total quantity entering canals.....acre-feet..	11,142,792	9,571,753	1,571,039
Area irrigated in 1919.....acres..	1,724,581	1,465,482	259,099
Average quantity per acre.....acre-feet..	6.5	6.5	6.1
Total quantity delivered.....acre-feet..	2,269,233	2,045,769	223,464
Area irrigated in 1919.....acres..	936,689	841,667	95,022
Average quantity per acre.....acre-feet..	2.4	2.4	2.4

IRRIGATION WORKS.

TABLE 15.—IRRIGATION WORKS, CLASSIFIED BY DATE OF BEGINNING.

DATE OF BEGINNING.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.	
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).
Total	2,872	288	4,553	86,273	11,144	5,265	6,154	249	3,493,511
Before 1860	5	2	10	33	13	29	7	8	551
1860-1869	144	22	147	1,863	279	98	119	2	1,206
1870-1879	268	10	376	4,348	666	245	208	15	5,278
1880-1889	917	46	1,304	28,264	2,267	1,141	1,188	25	34,526
1890-1899	490	58	850	16,320	2,099	648	855	32	213,783
1900-1904	282	43	507	14,328	1,423	261	1,555	39	1,540,723
1905-1909	270	49	447	13,412	1,816	2,130	1,843	55	1,408,308
1910-1914	226	38	452	4,408	859	325	237	41	104,507
1915-1919	179	36	287	2,276	470	247	95	25	184,604
Not reported	91	4	173	933	252	71	47	7	25

DATE OF BEGINNING.	Pipe lines, length (miles).	FLOWING WELLS.		PUMPED WELLS.		PUMPING PLANTS.			
		Number.	Capacity (gallons per minute).	Number.	Capacity (gallons per minute).	Number.	Engine capacity (horse-power).	Pumps. Number.	Pumps. Capacity (gallons per minute).
Total	180.6	142	15,133	53	17,749	143	28,364	232	1,397,681
Before 1860	.....	2	150	.....	.....	.....	.....	.....	.....
1860-1869	21.4	4	186	.....	.....	1	5	1	450
1870-1879	0.3	34	5,115	.....	.....	1	10	1	600
1880-1889	7.8	8	1,090	.....	.....	7	786	7	30,000
1890-1899	7.2	16	2,276	2	125	7	64	9	2,435
1900-1904	31.3	15	2,909	1	27	10	9,505	43	830,812
1905-1909	35.9	9	1,206	4	1,290	28	3,276	43	170,909
1910-1914	25.7	20	211	18	11,250	33	12,880	61	206,651
1915-1919	16.8	28	1,900	27	5,057	49	1,544	60	128,822
Not reported	34.2	6	90	1	.....	7	294	7	7,002

TABLE 16.—IRRIGATION WORKS, CLASSIFIED BY CHARACTER OF ENTERPRISE: 1920.

CLASS.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.	
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).
Total	2,872	288	4,553	86,273	11,144	5,265	6,154	249	3,493,511
Individual and partnership	2,445	187	3,945	23,946	5,505	2,198	821	164	41,247
Cooperative	341	70	481	37,081	3,251	1,249	2,181	56	1,076,454
Irrigation district	48	10	79	10,051	627	186	698	9	159,500
Carey Act	27	12	31	10,802	1,047	221	1,655	9	479,600
Commercial	5	3	6	144	18	56	35	3	33,000
U. S. Reclamation Service	4	5	6	3,487	336	1,290	604	6	1,493,700
U. S. Indian Service	1	1	3	728	57	40	150	2	200,000
State	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other and not reported	1	.....	2	34	3	25	10	.....	.....

CLASS.	Pipe lines, length (miles).	FLOWING WELLS.		PUMPED WELLS.		PUMPING PLANTS.			
		Number.	Capacity (gallons per minute).	Number.	Capacity (gallons per minute).	Number.	Engine capacity (horse-power).	Pumps. Number.	Pumps. Capacity (gallons per minute).
Total	180.6	142	15,133	53	17,749	143	28,364	232	1,397,681
Individual and partnership	67.1	135	12,682	50	8,669	96	1,297	104	124,982
Cooperative	52.3	7	2,451	.....	.....	22	4,621	46	162,220
Irrigation district	38.8	.....	.....	2	9,000	21	13,190	44	269,319
Carey Act	8.9	.....	.....	.....	.....	1	746	25	.....
Commercial	1.7	.....	.....	.....	.....	.....	.....	.....	.....
U. S. Reclamation Service	8.9	.....	.....	.....	.....	2	8,500	12	850,000
U. S. Indian Service	0.8	.....	.....	.....	.....	.....	.....	.....	.....
State	0.1	.....	.....	1	60	1	10	1	166
Other and not reported	2.0	.....	.....	.....	.....	.....	.....	.....	.....

TABLE 17.—IRRIGATION WORKS, CLASSIFIED BY DRAINAGE BASIN: 1920.

DRAINAGE BASIN.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.	
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).
Total	2,872	298	4,533	86,273	11,144	5,265	6,154	219	2,193,511
Bear River and tributaries	498	80	429	5,030	1,697	375	379	33	28,358
Bear River direct	59	6	80	2,094	245	122	199	9	3,659
Thomas Fork	23		29	293	63				
Mill Creek	4		8	27	38	4	2		
Little Malad Creek	190	58	12	400	788	49	49	4	12,788
Other tributaries of Bear River	220	16	300	2,306	563	200	129	20	11,911
Snake River and tributaries	2,065	190	3,676	74,625	8,571	4,350	5,483	201	3,320,425
Snake River direct	58	9	132	18,257	845	1,253	2,431	6	1,790,000
Henrys Fork	226	25	274	12,693	730	340	457	20	8,462
South Fork of Snake River	112	7	146	8,609	431	161	620	7	15,332
Blackfoot River	43	3	45	1,214	182	136	172	3	200,060
Port Neuf River	101	7	149	1,274	345	58	76	10	59,226
Raft River	101	2	99	642	133	42	30		
Salmon Falls River	40	6	48	1,857	192	56	250	6	206,600
Little Wood River	85	9	107	1,865	234	22	7	2	40,000
Big Wood River	188	15	234	4,745	421	108	443	13	191,993
Bruneau River	116	17	132	771	172	133	56	11	10,722
Owyhee River	71	7	105	428	92	10	5	9	7,100
Boise River	76	14	138	6,669	861	744	191	18	573,203
Payette River	51	12	287	4,450	645	63	140	17	63,284
Weiser River	30	9	134	1,822	389	81	89	10	95,796
Salmon River	363	12	980	4,747	1,425	898	270	14	2,183
Clearwater River	2	2	13	69	23	8	1	6	4
Coeur d'Alene Lake and River	19	3	15	110	19	18	22	5	600
Other tributaries of Snake River	367	31	598	4,355	1,564	219	243	44	55,860
Other tributaries of Columbia River	16	1	19	196	9	50	4	1	416
Independent streams	303	17	429	6,428	867	490	288	14	114,312
Camas Creek	81	6	97	3,042	165	159	112	5	65,179
Beaver Creek	27	1	34	72	23	2	4	1	35
Medicine Lodge	62	1	72	266	61	127	44	2	412
Little Lost River	33	2	39	774	101	15	7	2	22,000
Big Lost River	98	7	169	2,237	491	183	119	4	56,686
Other independent streams	2		7	37	26	4	2		

DRAINAGE BASIN.	Pipe lines, length (miles).	FLOWING WELLS.		PUMPED WELLS.		PUMPING PLANTS.				
		Number.	Capacity (gallons per minute).	Number.	Capacity (gallons per minute).	Number.	Engine capacity (horse-power).	Pumps. Number.	Pumps. Capacity (gallons per minute).	Average lift (feet).
Total	199.6	142	15,133	53	17,749	143	28,364	232	1,397,681	29
Bear River and tributaries	4.6	57	7,468			7	573	8	14,915	10
Bear River direct	4.5					3	530	3	5,180	9
Little Malad River		57	7,468							
Other tributaries of Bear River	0.1					4	43	5	9,735	10
Snake River and tributaries	168.4	85	7,665	53	17,749	127	27,465	215	1,286,516	32
Snake River direct	32.4	10	800	5	840	38	23,909	107	1,122,012	42
Henrys Fork	0.8									
Blackfoot River	1.1									
Port Neuf River	2.8					1	18	1		20
Salmon Falls River	6.1	3	1,900			1	6	1	440	15
Little Wood River	0.2			1	2,500	1	2	1	50	10
Big Wood River	7.6					4	30	4	4,000	19
Bruneau River	0.2	38	1,628	1	27	6	457	7	27,465	24
Boise River	39.5	8	75	2	900	9	324	10	9,650	30
Payette River	5.2	1	36	3	9,600	11	608	13	18,256	28
Weiser River	15.1					3	620	5	31,100	76
Salmon River	1.9					2	38	2	10,875	56
Clearwater River	25.9			28	2,730	33	394	36	9,945	21
Coeur d'Alene Lake and River	30.8					6	992	11	50,041	51
Other tributaries of Snake River	3.4	25	3,106	13	1,732	12	67	17	2,682	17
Other tributaries of Columbia River	5.2									
Independent streams	2.4					9	326	9	96,250	8
Camas Creek						9	326	9	96,250	8
Medicine Lodge	0.4									
Little Lost River	1.9									
Big Lost River	0.1									

CROPS.

TABLE 18.—ACREAGE, YIELD, AND VALUE OF PRINCIPAL CROPS GROWN ON IRRIGATED LAND, AND COMPARISONS WITH TOTALS FOR THE STATE: 1919 AND 1909.

[Totals for the state, used in making comparisons, are shown in state bulletin on agriculture.]

	Crop.	Area harvested. 1919. Acres.	Area harvested. 1919. Per cent of total for state.	Area harvested. 1909. Acres.	Area harvested. 1909. Per cent of total for state.	Area harvested. Per cent of increase.[1]	Quantity harvested. Unit.	Quantity harvested. 1919. Amount.	Quantity harvested. 1919. Per cent of total for state.	Quantity harvested. 1909. Amount.	Quantity harvested. 1909. Per cent of total for state.	Quantity harvested. Per cent of increase.[1]
	Cereals:											
1	Corn	10,984	47.2	2,041	22.2	438.7	Bu.	383,740	53.5	68,490	21.5	460.3
2	Oats	42,487	36.0	14,827	48.8	−71.3	Bu.	1,232,866	40.2	5,667,718	50.0	−78.2
3	Winter wheat	20,306	4.6				Bu.	360,211	5.8			
4	Spring wheat	299,380	42.5	106,823	26.8	180.0	Bu.	7,964,943	63.1	2,860,976	27.9	179.0
5	Barley	19,667	22.6	13,287	10.0	48.0	Bu.	540,749	40.1	428,775	9.3	26.1
6	Rye	2,414	20.2	365	11.1	561.4	Bu.	19,751	24.1	4,698	11.6	321.3
	Other grains and seeds:											
7	Red clover seed	14,814	87.2	(2)			Bu.	57,195	91.1	(2)		
8	Other clover and alfalfa seed	8,955	66.8	(2)			Bu.	33,442	74.9	(2)		
9	Timothy seed	537	16.6	215	14.3	149.8	Bu.	1,286	11.4	1,287	13.9	−7.3
10	Dry beans, navy, etc	10,150	29.9	298	15.6		Bu.	188,586	54.6	2,983	8.8	
11	Dry peas, Canada	8,443	47.9	68	29.1		Bu.	153,017	60.9	1,830	37.9	
	Hay and forage:											
12	Timothy alone	17,686	21.4	24,842	24.2	−28.8	Tons	22,360	30.8	47,398	33.8	−52.8
13	Timothy and clover mixed	48,903	47.6	33,418	61.9	45.4	Tons	62,010	52.2	83,068	63.2	−1.7
14	Clover alone	14,715	72.2	6,978	79.0	110.9	Tons	23,743	78.2	18,697	89.3	27.0
15	Alfalfa	515,301	79.1	276,460	89.5	86.4	Tons	1,510,389	86.7	993,291	93.6	67.2
16	Other tame grasses	8,762	41.5	18,803	47.3	−53.4	Tons	13,666	52.0	39,739	55.2	−67.1
17	Small grains cut for hay	13,402	8.0	7,395	7.6	81.2	Tons	17,656	12.2	8,857	6.3	92.6
18	Wild, salt, or prairie grasses	53,371	44.1	86,329	71.7	−38.2	Tons	55,515	46.6	108,869	76.7	−50.8
19	Corn cut for forage	1,527	18.6	(2)			Tons	4,969	29.9	(2)		
20	Silage crops	4,453	52.2	(2)			Tons	37,908	68.6	(2)		
21	Annual legumes cut for hay	544	14.0	(2)			Tons	762	21.8	(2)		
	Miscellaneous:											
22	Potatoes	[3] 32,044	74.2	1,011	87.8		Bu.	5,409,108	85.8	66,351	68.3	
23	Sugar beets grown for sugar	32,270	86.4	4,123	92.8	682.7	Tons	222,128	85.3	47,175	95.1	376.9
	Fruits:											
24	Grapes	[3] 10,809	14.6	(2)			Lbs.	104,156	20.0	(2)		
25	Apples	[4] 852,307	35.8	(2)			Bu.	1,211,790	33.2	(2)		
26	Peaches	[4] 71,890	40.3	(2)			Bu.	138,442	49.6	(2)		
27	Pears	[4] 20,290	26.9	(2)			Bu.	15,435	32.3	(2)		
28	Plums and prunes	[4] 273,303	49.5	(2)			Bu.	291,495	60.1	(2)		
29	Cherries	[4] 31,136	26.5	(2)			Bu.	19,769	22.0	(2)		

	Crop.	Average yield per acre, 1919. Unit.	For state.	On non-irrigated land.	On irrigated land. Average.	On irrigated land. Per cent of average for state.	On irrigated land. Per cent of average on nonirrigated land.	Value. 1919. Amount.	Value. 1919. Per cent of total for state.	Value. 1909. Amount.	Value. 1909. Per cent of total for state.	Value. Per cent of increase.[1]
	Cereals:											
1	Corn	Bu.	27.5	20.8	34.9	126.9	167.6	$652,358	59.9	$53,549	28.0	
2	Oats	Bu.	21.7	18.5	29.0	133.6	156.8	1,294,540	40.2	2,728,882	53.9	−52.6
3	Winter wheat	Bu.	14.2	14.0	17.7	124.6	126.4	738,433	5.8			
4	Spring wheat	Bu.	16.6	10.6	24.6	148.2	232.1	15,098,133	63.1	2,377,367	28.3	506.1
5	Barley	Bu.	19.9	16.8	27.5	138.2	163.7	811,124	40.1	252,388	10.9	221.4
6	Rye	Bu.	6.9	6.5	8.2	118.8	126.2	36,539	24.1	3,046	10.5	
	Other grains and seeds:											
7	Red clover seed	Bu.	3.7	2.5	3.9	104.9	153.8	1,544,265	91.1	(2)		
8	Other clover and alfalfa seed	Bu.	3.3	2.5	3.7	112.0	148.0	769,166	74.9	(2)		
9	Timothy seed	Bu.	3.5	3.7	2.4	68.7	64.8	7,439	11.4	3,135	14.4	137.9
10	Dry beans, navy, etc	Bu.	10.1	6.6	18.5	183.2	280.3	658,301	54.6	8,074	10.6	
11	Dry peas, Canada	Bu.	14.3	12.0	16.2	113.3	135.0	719,180	60.9	3,992	43.6	
	Hay and forage:											
12	Timothy alone	Tons	0.88	0.78	1.26	143.2	161.5	648,440	30.8	370,498	33.6	75.0
13	Timothy and clover mixed	Tons	1.16	1.06	1.28	110.3	120.8	1,612,260	52.2	541,229	56.8	197.9
14	Clover alone	Tons	1.49	1.17	1.61	108.1	137.6	474,860	78.2	120,069	85.5	295.1
15	Alfalfa	Tons	2.67	1.70	2.93	109.7	172.4	32,473,170	86.7	6,237,450	94.2	420.6
16	Other tame grasses	Tons	1.19	0.98	1.49	125.2	152.0	274,386	52.0	288,200	59.5	−4.8
17	Small grains cut for hay	Tons	0.83	0.86	1.27	153.0	158.8	469,040	12.2	88,874	6.2	427.8
18	Wild, salt, or prairie grasses	Tons	0.96	0.93	1.00	104.2	107.5	1,016,894	46.0	672,562	78.7	51.2
19	Corn cut for forage	Tons	2.03	1.74	3.25	160.1	186.8	54,639	29.9	(2)		
20	Silage crops	Tons	6.48	4.26	8.51	131.3	199.8	379,080	68.6	(2)		
21	Annual legumes cut for hay	Tons	0.90	0.82	1.40	155.6	170.7	16,962	21.8	(2)		
	Miscellaneous:											
22	Potatoes	Bu.	145.9	80.0	168.8	115.8	211.2	11,039,582	85.8	74,885	76.0	
23	Sugar beets grown for sugar	Tons	6.97	7.54	6.88	98.7	91.2	2,392,344	85.3	226,367	95.6	939.3
	Fruits:											
24	Grapes	Lbs.	[5] 0.1	[5] 0.1	[5] 0.1	142.9	142.9	7,291	20.0	(2)		
25	Apples	Bu.	[6] 1.5	[6] 1.6	[6] 1.4	92.8	89.3	2,120,632	33.2	(2)		
26	Peaches	Bu.	[6] 1.6	[6] 1.3	[6] 1.9	123.7	146.2	249,196	49.6	(2)		
27	Pears	Bu.	[6] 0.6	[6] 0.6	[6] 0.8	129.6	128.8	34,001	32.3	(2)		
28	Plums and prunes	Bu.	[6] 0.9	[6] 0.7	[6] 1.1	121.6	155.1	641,289	60.1	(2)		
29	Cherries	Bu.	[6] 0.8	[6] 0.8	[6] 0.6	81.8	77.8	68,203	22.0	(2)		

[1] A minus sign (−) denotes decrease. Per cent not shown when base is less than 100 or when per cent is more than 1,000.
[2] Not reported separately in 1909.
[3] Number of vines of bearing age.
[4] Number of trees of bearing age.
[5] Yield per vine.
[6] Yield per tree.

County Table.—ACREAGE IRRIGATED, 1919 AND 1909, AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910.

[A minus sign (—) denotes decrease.]

		The State.	Ada.	Adams.[1]	Bannock.[2]	Bear Lake.	Bingham.[3]	Blaine.[4]
1	Number of all farms in 1920	42,106	2,198	484	1,719	825	2,144	473
2	Number of farms irrigated in 1919	25,283	1,938	267	1,095	635	1,831	347
3	Per cent of all farms	60.0	88.2	55.2	63.7	77.0	85.4	73.4
4	Number of farms irrigated in 1909	16,459	1,315	.....	981	679	1,883	550
5	Per cent of increase, 1909–1919	53.8	47.4	.....	.....	—6.5	.....	.....
	LAND AND FARM AREA.							
6	Approximate land area ... acres	53,346,560	738,560	874,240	1,175,680	627,200	1,397,760	1,790,080
7	All land in farms ... acres	8,375,872	263,651	156,949	453,710	202,896	284,924	134,100
8	Improved land in farms ... acres	4,311,426	131,974	53,984	279,179	108,466	169,103	55,491
9	Area irrigated in 1919 ... acres	2,488,806	121,493	30,906	137,266	67,202	177,296	52,090
10	Per cent of improved land in farms	55.2	92.4	57.2	50.8	62.0	104.8	93.9
11	Area irrigated in 1909 ... acres	1,436,948	86,494	.....	86,648	58,731	193,741	68,112
12	Per cent of increase, 1909–1919	73.0	40.5	.....	.....	14.4	.....	.....
13	Area enterprises were capable of irrigating in 1920 ... acres	3,992,816	133,768	32,579	185,316	72,893	217,200	77,391
14	Area enterprises were capable of irrigating in 1910 ... acres	2,398,959	87,511	.....	112,288	59,829	310,903	87,689
15	Per cent of increase, 1910–1920	20.5	52.9	.....	.....	21.8	.....	.....
16	Area included in enterprises in 1920 ... acres	3,780,948	138,790	42,786	227,586	83,890	232,923	97,801
17	Area included in enterprises in 1910 ... acres	3,549,573	147,330	.....	156,037	74,427	362,034	203,592
18	Per cent of increase, 1910–1920	6.5	—7.2	.....	.....	12.7	.....	.....
19	Area of irrigated land reported as available for settlement ... acres	118,534	800	.....	16,000	.....	12,688	500
	IRRIGATION WORKS.							
	Independent enterprises:							
20	Number, 1920	1,629	50	121	242	95	68	129
21	Number, 1910	2,092	46	.....	261	112	116	254
	Main ditches:							
22	Number, 1920	4,353	54	147	303	158	53	155
23	Number, 1910	3,209	43	.....	232	131	124	257
24	Length, 1920 ... miles	11,144	255	206	654	343	416	271
25	Length, 1910 ... miles	7,602	213	.....	631	394	591	620
26	Capacity, 1920 ... second-feet	86,273	2,587	1,015	3,038	1,522	5,688	2,716
27	Capacity, 1910 ... second-feet	80,458	4,257	.....	4,096	2,192	10,383	4,363
	Laterals:							
28	Number, 1920	5,265	264	50	127	161	95	.....
29	Number, 1910	3,359	121	.....	137	37	205	256
30	Length, 1920 ... miles	6,154	43	57	294	57	176	.....
31	Length, 1910 ... miles	5,097	199	.....	261	29	331	376
	Reservoirs:							
32	Number, 1920	249	10	3	17	13	6	1
33	Number, 1910	243	5	.....	14	14	8	14
34	Capacity, 1920 ... acre-feet	3,493,511	159,536	1,205	141,216	5,677	123,610	.....
35	Capacity, 1910 ... acre-feet	1,742,303	8,009	.....	176,259	1,158	4,409	205,835
	Flowing wells:							
36	Number, 1920	142	7	.....	.....	.....	.....	.....
37	Number, 1910	62	9	.....	1	.....	.....	2
38	Capacity, 1920 ... gallons per minute	15,133	45	.....	.....	.....	.....	.....
39	Capacity, 1910 ... gallons per minute	7,200	370	.....	30	.....	.....	75
	Pumped wells:							
40	Number, 1920	53	2	.....	.....	.....	1	.....
41	Number, 1910	24	.....	.....	.....	.....	.....	1
42	Capacity, 1920 ... gallons per minute	17,749	900	.....	.....	.....	440	.....
43	Capacity, 1910 ... gallons per minute	2,826	.....	.....	.....	.....	.....	600
	Pumping plants:							
44	Number, 1920	143	6	.....	2	.....	2	.....
45	Number, 1910	58	2	.....	.....	.....	.....	1
46	Engine capacity, 1920 ... horsepower	28,364	168	.....	23	.....	10	.....
47	Engine capacity, 1910 ... horsepower	7,665	10	.....	.....	.....	.....	4
48	Pump capacity, 1920 ... gallons per minute	1,397,681	2,250	.....	.....	.....	1,440	.....
49	Pump capacity, 1910 ... gallons per minute	278,569	308	.....	.....	.....	.....	600
50	Average lift, 1920 ... feet	29	32	.....	14	.....	18	.....
	CAPITAL INVESTED.							
51	Capital invested to Jan. 1, 1920 ... dollars	91,361,069	5,669,338	394,960	3,106,000	397,393	3,201,889	736,713
52	Capital invested to July 1, 1910 ... dollars	40,977,688	2,404,008	.....	806,960	301,672	3,001,533	2,058,383
53	Per cent of increase, 1910–1920	123.3	135.8	.....	.....	31.7	.....	.....
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	29.59	42.38	12.06	16.76	5.45	14.74	9.52
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	17.13	27.47	.....	7.19	5.04	9.65	23.47
	ESTIMATED FINAL COST.							
56	Estimated final cost of existing enterprises in 1920 ... dollars	97,019,717	5,669,338	394,960	3,373,940	430,093	3,654,189	1,120,113
57	Estimated final cost of existing enterprises in 1910 ... dollars	58,431,196	3,349,208	.....	963,812	304,162	3,088,885	3,797,813
58	Per cent of increase, 1910–1920	66.0	6.0	.....	.....	41.4	.....	.....
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	25.67	41.43	9.23	15.70	5.13	15.69	11.45
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	16.47	36.21	.....	5.79	4.09	8.53	18.65

[1] Organized from part of Washington in 1911.
[2] Part annexed to Franklin in 1918; part taken to form Caribou in 1919.
[3] Part annexed to Fremont in 1908; part taken to form Bonneville in 1911; part taken to form part of Power in 1913; part taken to form part of Butte in 1917.
[4] Part annexed to Elmore in 1911; part taken to form part of Power in 1913; parts taken to form Camas and part of Butte in 1917.

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910—Continued.

[A minus sign (—) denotes decrease.]

		Boise.[1]	Bonneville.[2]	Butte.[3]	Camas.[4]	Canyon.[5]	Carbon.[6]	Cassia.[7]	Clark.[8]
1	Number of all farms in 1920	238	1,480	432	354	2,660	308	1,508	398
2	Number of farms irrigated in 1919	143	1,080	327	97	2,477	91	1,257	99
3	Per cent of all farms	60.1	73.0	75.7	27.4	93.1	24.7	83.2	24.9
4	Number of farms irrigated in 1909	242				2,258		582	
5	Per cent of increase, 1909-1919								
	LAND AND FARM AREA.								
6	Approximate land area ... acres	1,177,600	1,218,560	1,310,720	684,800	578,560	898,320	1,663,360	1,137,920
7	All land in farms ... acres	81,636	798,877	80,951	132,963	199,427	122,843	285,214	183,066
8	Improved land in farms ... acres	16,452	176,091	50,911	72,308	157,486	52,783	178,879	35,673
9	Area irrigated in 1919 ... acres	7,608	110,953	39,363	13,272	201,718	23,825	118,537	18,851
10	Per cent of improved land in farms	46.2	63.0	77.7	18.4	128.1	45.1	66.5	53.9
11	Area irrigated in 1909 ... acres	25,052				133,046		59,510	
12	Per cent of increase, 1909-1919								
13	Area enterprises were capable of irrigating in 1920 ... acres	8,509	123,043	66,140	14,516	228,082	25,908	129,019	26,467
14	Area enterprises were capable of irrigating in 1910 ... acres	32,359				182,585		94,244	
15	Per cent of increase, 1910-1920								
16	Area included in enterprises in 1920 ... acres	14,239	135,621	184,858	21,284	234,552	29,102	149,635	45,794
17	Area included in enterprises in 1910 ... acres	41,458				256,722		163,561	
18	Per cent of increase, 1910-1920								
19	Area of irrigated land reported as available for settlement ... acres	193						2,181	3,120
	IRRIGATION WORKS.								
	Independent enterprises:								
20	Number, 1920	111	85	76	58	29	61	157	100
21	Number, 1910	180				109		171	
	Main ditches:								
22	Number, 1920	172	115	107	105	30	91	291	190
23	Number, 1910	202				105		176	
24	Length, 1920 ... miles	224	352	296	71	388	150	411	200
25	Length, 1910 ... miles	251				533		286	
26	Capacity, 1920 ... second-feet	508	4,553	1,509	195	3,619	1,139	2,039	2,160
27	Capacity, 1910 ... second-feet	933				7,159		3,095	
	Laterals:								
28	Number, 1920	14	49	132	12	462	154	378	287
29	Number, 1910	76				247		354	
30	Length, 1920 ... miles	6	259	72	1	144	48	355	122
31	Length, 1910 ... miles	34				427		424	
	Reservoirs:								
32	Number, 1920	10	6	5	6	1	5	9	5
33	Number, 1910	18				13		7	
34	Capacity, 1920 ... acre-feet	27	147	103,080	708	422,257	163	442,767	36,947
35	Capacity, 1910 ... acre-feet	80				186,244		73,055	
	Flowing wells:								
36	Number, 1920					1		11	
37	Number, 1910	1				12			
38	Capacity, 1920 ... gallons per minute					30		2,790	
39	Capacity, 1910 ... gallons per minute	42				276			
	Pumped wells:								
40	Number, 1920								
41	Number, 1910					2			
42	Capacity, 1920 ... gallons per minute								
43	Capacity, 1910 ... gallons per minute					60			
	Pumping plants:								
44	Number, 1920	1				3		1	
45	Number, 1910					4		1	
46	Engine capacity, 1920 ... horsepower	2				156		3,300	
47	Engine capacity, 1910 ... horsepower					17		5,400	
48	Pump capacity, 1920 ... gallons per minute					7,400		320,000	
49	Pump capacity, 1910 ... gallons per minute					185		225,000	
50	Average lift, 1920 ... feet	15				27		34	
	CAPITAL INVESTED.								
51	Capital invested to Jan. 1, 1920 ... dollars	148,454	2,045,291	3,034,313	117,177	10,223,513	236,538	4,616,590	138,592
52	Capital invested to July 1, 1910 ... dollars	160,487				4,507,966		2,403,581	
53	Per cent of increase, 1910-1920								
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	17.33	24.73	45.88	8.07	44.83	9.13	35.57	5.24
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	4.96				24.69		25.50	
	ESTIMATED FINAL COST.								
56	Estimated final cost of existing enterprises in 1920 ... dollars	150,519	3,130,091	4,846,413	117,777	10,223,513	236,188	4,618,040	140,318
57	Estimated final cost of existing enterprises in 1910 ... dollars	160,487				8,355,066		4,074,824	
58	Per cent of increase, 1910-1920								
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	10.57	23.18	26.22	5.53	43.58	8.18	30.99	3.06
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	3.87				24.83		24.91	

[1] Part taken to form part of Gem in 1915; part taken to form part of Valley in 1917.
[2] Organized from part of Bingham in 1911.
[3] Organized from parts of Bingham, Blaine, and Jefferson in 1917.
[4] Organized from part of Blaine in 1917.
[5] Part taken to form part of Gem in 1915; part taken to form Payette in 1917.
[6] Organized from part of Bannock in 1919.
[7] Part taken to form Twin Falls in 1907; part taken to form part of Power in 1913.
[8] Organized from part of Fremont in 1919.

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909, AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910—Continued.

[A minus sign (—) denotes decrease.]

		Custer.	Elmore.[1]	Franklin.[2]	Fremont.[3]	Gem.[4]	Gooding.[5]	Idaho.[6]	Jefferson.[7]
1	Number of all farms in 1920	379	592	910	1,101	770	874	1,667	1,071
2	Number of farms irrigated in 1919	349	313	737	635	599	812	85	888
3	Per cent of all farms	92.1	52.4	81.0	57.7	77.8	93.7	5.1	82.9
4	Number of farms irrigated in 1909	277	276	.....	2,221	.....	.....	129	.....
5	Per cent of increase, 1909-1919	26.0	.....	.....	.....	.....	.....	.....	.....
	LAND AND FARM AREA.								
6	Approximate land area ... acres	3,149,440	1,757,120	355,840	1,183,360	362,880	473,600	5,464,960	700,160
7	All land in farms ... acres	99,365	121,830	173,790	278,758	143,144	104,491	604,468	160,948
8	Improved land in farms ... acres	49,461	35,958	104,241	172,073	56,134	75,379	218,562	99,744
9	Area irrigated in 1919 ... acres	80,141	28,844	37,460	130,044	51,007	45,406	2,593	149,151
10	Per cent of improved land in farms	162.0	74.0	35.9	75.6	90.9	60.2	1.2	149.5
11	Area irrigated in 1909 ... acres	41,899	17,751	.....	303,163	.....	.....	3,372	.....
12	Per cent of increase, 1909-1919	91.3	.....	.....	.....	.....	.....	.....	.....
13	Area enterprises were capable of irrigating in 1920 ... acres	112,244	37,641	39,279	191,572	55,836	83,662	3,103	211,515
14	Area enterprises were capable of irrigating in 1910 ... acres	54,595	27,403	.....	499,757	.....	.....	3,990	.....
15	Per cent of increase, 1910-1920	105.9	.....	.....	.....	.....	.....	.....	.....
16	Area included in enterprises in 1920 ... acres	144,041	60,232	54,967	222,235	59,852	91,523	3,843	258,608
17	Area included in enterprises in 1910 ... acres	75,798	105,688	.....	466,112	.....	.....	5,546	.....
18	Per cent of increase, 1910-1920	90.1	.....	.....	.....	.....	.....	.....	.....
19	Area of irrigated land reported as available for settlement ... acres	1,475	2,185	.....	.....	.....	.....	.....	12,225
	IRRIGATION WORKS.								
	Independent enterprises:								
20	Number, 1920	284	128	77	108	42	79	86	72
21	Number, 1910	192	134	.....	394	.....	.....	122	.....
	Main ditches:								
22	Number, 1920	331	150	79	143	37	55	119	62
23	Number, 1910	215	134	.....	410	.....	.....	126	.....
24	Length, 1920 ... miles	735	283	212	527	135	167	103	344
25	Length, 1910 ... miles	539	208	.....	1,071	.....	.....	116	.....
26	Capacity, 1920 ... second-feet	3,202	1,117	859	9,597	2,109	2,756	151	8,364
27	Capacity, 1910 ... second-feet	2,112	898	.....	21,726	.....	.....	281	.....
	Laterals:								
28	Number, 1920	358	217	46	106	31	150	3	198
29	Number, 1910	160	119	.....	291	.....	.....	29	.....
30	Length, 1920 ... miles	78	108	89	252	119	282	.....	591
31	Length, 1910 ... miles	112	38	.....	428	.....	.....	8	.....
	Reservoirs:								
32	Number, 1920	7	15	6	19	1	5	5	6
33	Number, 1910	13	22	.....	32	.....	.....	.....	.....
34	Capacity, 1920 ... acre-feet	16,708	35,109	7,602	8,422	3	6,405	79	35,874
35	Capacity, 1910 ... acre-feet	3,417	51,013	.....	41,535	.....	.....	.....	.....
	Flowing wells:								
36	Number, 1920	.....	1	.....	.....	1	.....	.....	.....
37	Number, 1910	.....	11	.....	.....	.....	.....	.....	.....
38	Capacity, 1920 ... gallons per minute	.....	.....	.....	.....	36	.....	.....	.....
39	Capacity, 1910 ... gallons per minute	.....	1,470	.....	.....	.....	.....	.....	.....
	Pumped wells:								
40	Number, 1920	.....	17	.....	.....	.....	.....	.....	.....
41	Number, 1910	.....	5	.....	.....	.....	.....	.....	.....
42	Capacity, 1920 ... gallons per minute	.....	2,132	.....	.....	.....	.....	.....	.....
43	Capacity, 1910 ... gallons per minute	.....	690	.....	.....	.....	.....	.....	.....
	Pumping plants:								
44	Number, 1920	1	22	6	.....	.....	3	.....	11
45	Number, 1910	.....	12	.....	1	.....	.....	1	.....
46	Engine capacity, 1920 ... horsepower	35	2,397	568	.....	.....	706	.....	626
47	Engine capacity, 1910 ... horsepower	.....	9	.....	200	.....	.....	25	.....
48	Pump capacity, 1920 ... gallons per minute	10,800	13,966	14,915	.....	.....	33,794	.....	96,250
49	Pump capacity, 1910 ... gallons per minute	.....	1,945	.....	1,000	.....	.....	225	.....
50	Average lift, 1920 ... feet	94	22	10	.....	.....	50	.....	11
	CAPITAL INVESTED.								
51	Capital invested to Jan. 1, 1920 ... dollars	779,848	1,606,335	822,981	1,712,611	1,492,559	6,960,473	109,506	6,308,032
52	Capital invested to July 1, 1910 ... dollars	305,149	1,608,493	.....	1,789,082	.....	.....	74,316	.....
53	Per cent of increase, 1910-1920	155.2	.....	.....	.....	.....	.....	.....	.....
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	6.94	42.68	20.95	8.94	26.73	83.20	35.29	29.82
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	5.60	36.80	.....	4.29	.....	.....	18.63	.....
	ESTIMATED FINAL COST.								
56	Estimated final cost of existing enterprises in 1920 ... dollars	813,848	1,576,777	824,781	1,964,211	1,695,559	7,028,095	109,506	6,463,412
57	Estimated final cost of existing enterprises in 1910 ... dollars	308,349	1,608,493	.....	1,791,082	.....	.....	74,316	.....
58	Per cent of increase, 1910-1920	163.9	.....	.....	.....	.....	.....	.....	.....
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	5.65	31.15	15.19	8.84	28.33	76.79	28.49	.....
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	4.07	14.27	.....	3.84	.....	.....	13.40	24.99

[1] Part of Blaine annexed in 1911.
[2] Organized from part of Oneida in 1913; part of Bannock annexed in 1918.
[3] Parts taken to form Jefferson and Madison in 1914; part taken to form Clark in 1919.
[4] Organized from parts of Boise and Canyon in 1915.
[5] Organized from part of Lincoln in 1913; part taken to form part of Jerome in 1919.
[6] Boundary between Idaho and Lemhi changed in 1911; part of Idaho taken to form part of Valley in 1917.
[7] Organized from part of Fremont in 1914; part taken to form part of Butte in 1917.

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES: 1920 AND 1910—Continued.

[A minus sign (−) denotes decrease.]

		Jerome.[1]	Kootenai.[2]	Lemhi.[3]	Lincoln.[4]	Madison.[5]	Minidoka.[6]	Nez Perce.[7]	Oneida.[8]
1	Number of all farms in 1920	685	1,396	535	418	928	1,024	1,291	1,041
2	Number of farms irrigated in 1919	652	195	509	397	665	991	184	415
3	Per cent of all farms	95.2	14.0	95.1	95.0	71.7	98.0	14.3	39.9
4	Number of farms irrigated in 1909		185	317	1,433			99	836
5	Per cent of increase, 1909-1919								
	LAND AND FARM AREA.								
6	Approximate land area ... acres	387,840	801,920	2,942,080	760,320	307,840	483,840	544,640	773,760
7	All land in farms ... acres	76,488	221,151	159,192	64,784	217,591	91,628	417,461	308,414
8	Improved land in farms ... acres	62,229	79,017	77,423	42,899	155,145	68,951	190,875	176,774
9	Area irrigated in 1919 ... acres	85,000	4,000	66,905	67,520	54,687	55,259	5,018	20,314
10	Per cent of improved land in farms	136.6	5.1	86.4	162.5	35.2	81.2	2.6	11.5
11	Area irrigated in 1909 ... acres		2,984	37,916	82,984			5,360	43,525
12	Per cent of increase, 1909-1919								
13	Area enterprises were capable of irrigating in 1920 ... acres	110,000	5,495	96,451	121,304	60,784	65,228	5,991	21,625
14	Area enterprises were capable of irrigating in 1910 ... acres		10,126	41,198	456,852			9,317	45,282
15	Per cent of increase, 1910-1920								
16	Area included in enterprises in 1920 ... acres	110,000	10,214	136,052	125,376	68,257	65,228	6,135	48,782
17	Area included in enterprises in 1910 ... acres		18,125	61,677	514,965			29,896	93,023
18	Per cent of increase, 1910-1920								
19	Area of irrigated land reported as available for settlement ... acres	17,647		3,650	26,260		176		
	IRRIGATION WORKS.								
	Independent enterprises:								
20	Number, 1920	1	19	404	44	37	1	59	68
21	Number, 1910		20	247	190			50	106
	Main ditches:								
22	Number, 1920	1	13	584	42	44	2	31	18
23	Number, 1910		17	272	185			49	104
24	Length, 1920 ... miles	22	15	825	170	132	29	33	1,391
25	Length, 1910 ... miles		33	411	407			42	340
26	Capacity, 1920 ... second-feet	2,072	98	2,651	3,027	2,708	480	75	1,600
27	Capacity, 1910 ... second-feet		129	1,363	7,000			127	1,323
	Laterals:								
28	Number, 1920	220	18	596	73	51	350	15	74
29	Number, 1910		28	64	645			12	53
30	Length, 1920 ... miles	485	22	244	400	87	309	3	59
31	Length, 1910 ... miles		32	22	1,293			33	102
	Reservoirs:								
32	Number, 1920	1	1	4	1	1	2	6	10
33	Number, 1910		2	1	8			11	25
34	Capacity, 1920 ... acre-feet	850,000	600	397	190,000	8,000	490,733	4	19,291
35	Capacity, 1910 ... acre-feet			1	379,624			30,033	26,606
	Flowing wells:								
36	Number, 1920								57
37	Number, 1910							3	9
38	Capacity, 1920 ... gallons per minute								7,468
39	Capacity, 1910 ... gallons per minute							400	1,487
	Pumped wells:								
40	Number, 1920				1			27	
41	Number, 1910		2					12	2
42	Capacity, 1920 ... gallons per minute				2,300			2,690	
43	Capacity, 1910 ... gallons per minute		180					1,290	6
	Pumping plants:								
44	Number, 1920	3	6	1	1		1	33	
45	Number, 1910		10	1				14	2
46	Engine capacity, 1920 ... horsepower	1,290	992	5	2		5,200	404	
47	Engine capacity, 1910 ... horsepower		979	139				89	2
48	Pump capacity, 1920 ... gallons per minute	62,956	50,041	75	50		520,000	9,935	
49	Pump capacity, 1910 ... gallons per minute		34,270	5,400				1,410	6
50	Average lift, 1920 ... feet	50	51	19	10		16	22	
	CAPITAL INVESTED.								
51	Capital invested to Jan. 1, 1920 ... dollars	11,663,236	561,842	720,647	4,255,895	667,126	3,090,849	313,781	471,910
52	Capital invested to July 1, 1910 ... dollars		771,904	199,731	10,265,569			827,603	1,585,759
53	Per cent of increase, 1910-1920								
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	106.03	102.25	7.47	35.11	10.98	47.39	53.17	21.82
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars		76.23	4.86	22.47			89.90	35.02
	ESTIMATED FINAL COST.								
56	Estimated final cost of existing enterprises in 1920 ... dollars	11,663,236	811,842	744,797	4,259,215	699,726	3,090,849	717,171	471,910
57	Estimated final cost of existing enterprises in 1910 ... dollars		771,904	202,216	11,776,546			1,614,603	1,817,103
58	Per cent of increase, 1910-1920								
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	106.03	79.48	5.47	33.97	10.25	47.39	116.90	9.67
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars		42.59	3.29	22.87			54.01	19.53

[1] Organized from parts of Gooding, Lincoln, and Minidoka in 1919.
[2] Part taken to form Bonner in 1907; part taken to form Benewah in 1915.
[3] Boundary between Lemhi and Idaho changed in 1911.
[4] Parts taken to form Gooding and Minidoka in 1913; part taken to form part of Jerome in 1919.
[5] Organized from part of Fremont in 1914; part taken to form Teton in 1915.
[6] Organized from part of Lincoln in 1913; part taken to form part of Jerome in 1919.
[7] Part of Shoshone annexed in 1905; parts of Nez Perce taken to form Clearwater and Lewis in 1911.
[8] Part taken to form Franklin in 1913; part taken to form part of Power in 1913; part annexed to Power in 1916.

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIG AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910—Continued.

[A minus sign (—) denotes decrease. Per cent not shown when base is less than 100.]

		Owyhee.	Payette.[1]	Power.[2]	Teton.[3]	Twin Falls.	Valley.[4]
1	Number of all farms in 1920	785	763	784	541	2,746	309
2	Number of farms irrigated in 1919	642	700	179	318	2,609	107
3	Per cent of all farms	81.8	91.7	22.8	58.8	95.0	34.6
4	Number of farms irrigated in 1909	247				1,203	
5	Per cent of increase, 1909-1919	159.9				116.9	
	LAND AND FARM AREA.						
6	Approximate land area ....acres..	5,091,840	264,960	890,240	296,320	1,252,480	2,418,560
7	All land in farms ....acres..	140,464	72,254	311,571	130,756	276,179	87,038
8	Improved land in farms ....acres..	64,682	41,054	217,046	84,354	232,533	49,278
9	Area irrigated in 1919 ....acres..	62,933	52,428	11,264	41,385	261,622	15,591
10	Per cent of improved land in farms	97.3	127.7	5.2	49.1	112.5	31.6
11	Area irrigated in 1909 ....acres..	21,771				100,545	
12	Per cent of increase, 1909-1919	189.1				160.2	
13	Area enterprises were capable of irrigating in 1920 ....acres..	74,404	30,653	17,186	57,422	271,443	24,148
14	Area enterprises were capable of irrigating in 1910 ....acres..	44,240				246,625	
15	Per cent of increase, 1910-1920	68.4				10.1	
16	Area included in enterprises in 1920 ....acres..	119,061	71,455	19,496	62,459	312,121	31,984
17	Area included in enterprises in 1910 ....acres..	162,111				384,590	
18	Per cent of increase, 1910-1920	—26.6				—18.8	
19	Area of irrigated land reported as available for settlement ..acres..	3,958	5,356			7,430	
	IRRIGATION WORKS.						
	Independent enterprises:						
20	Number, 1920	259	40	53	99	85	73
21	Number, 1910	146				37	
	Main ditches:						
22	Number, 1920	420	41	57	103	132	79
23	Number, 1910	137				82	
24	Length, 1920 ....miles..	583	268	97	154	219	120
25	Length, 1910 ....miles..	302				172	
26	Capacity, 1920 ....second-feet..	2,338	1,497	325	1,498	6,046	572
27	Capacity, 1910 ....second-feet..	2,249				4,924	
	Laterals:						
28	Number, 1920	193	9	31	200	72	9
29	Number, 1910	158				257	
30	Length, 1920 ....miles..	142	13	27	120	993	2
31	Length, 1910 ....miles..	66				762	
	Reservoirs:						
32	Number, 1920	22	7	12	1	6	2
33	Number, 1910	14				2	
34	Capacity, 1920 ....acre-feet..	20,324	63,050	712	40	206,000	205
35	Capacity, 1910 ....acre-feet..	50,779				492,000	
	Flowing wells:						
36	Number, 1920	61				3	
37	Number, 1910	9				5	
38	Capacity, 1920 ....gallons per minute..	2,054				1,900	
39	Capacity, 1910 ....gallons per minute..	80				2,970	
	Pumped wells:						
40	Number, 1920	1	3				
41	Number, 1910						
42	Capacity, 1920 ....gallons per minute..	27	9,000				
43	Capacity, 1910 ....gallons per minute..						
	Pumping plants:						
44	Number, 1920	18	10	1		4	
45	Number, 1910	5					
46	Engine capacity, 1920 ....horsepower..	9,526	600	40		1,552	
47	Engine capacity, 1910 ....horsepower..	118					
48	Pump capacity, 1920 ....gallons per minute..	169,213	18,256	110		23,840	
49	Pump capacity, 1910 ....gallons per minute..	4,615					
50	Average lift, 1920 ....feet..	45	30	40		39	
	CAPITAL INVESTED.						
51	Capital invested to Jan. 1, 1920 ....dollars..	2,309,967	1,209,175	270,888	157,976	8,984,389	147,110
52	Capital invested to July 1, 1910 ....dollars..	1,274,833				6,653,172	
53	Per cent of increase, 1910-1920	81.2				35.0	
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ....dollars..	31.01	39.45	15.76	2.75	33.10	6.09
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ....dollars..	28.82				26.98	
	ESTIMATED FINAL COST.						
56	Estimated final cost of existing enterprises in 1920 ....dollars..	2,535,156	1,209,375	287,138	163,176	9,166,578	177,160
57	Estimated final cost of existing enterprises in 1910 ....dollars..	4,034,943				7,415,142	
58	Per cent of increase, 1910-1920	—37.2				23.6	
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ....dollars..	21.29	16.92	14.73	2.61	29.37	5.54
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ....dollars..	24.89				19.28	

[1] Organized from part of Canyon in 1917.
[2] Organized from parts of Bingham, Blaine, Cassia, and Oneida in 1913; part of Oneida annexed in 1916.
[3] Organized from part of Madison in 1915.
[4] Organized from parts of Boise and Idah
[5] Part taken to form Adams in 1911.

KANSAS.

INTRODUCTION.

The following pages present the statistics of irrigation for the state of Kansas collected at the census of 1920. Statistics of acreage irrigated, of acreage, yield, and value of crops grown on irrigated land, and of cost of operation and maintenance relate to the year 1919; other items relate to the year 1920. Throughout the report figures for the census of 1910 are given for purposes of comparison; and, for the purpose of showing the historical development of irrigation, items which have been reported in censuses previous to 1910 are presented.

Statistics of number of farms irrigated and of acreage, yield, and value of crops grown on irrigated land were collected in the general census of agriculture. All other statistics were obtained in a special canvass of irrigation enterprises.

TABLE 1.—SUMMARY FOR THE STATE: 1920 AND 1910.

ITEM.	CENSUS OF—		INCREASE.[1]	
	1920	1910	Amount.	Per cent.
Number of all farms	165,286	177,841	−12,555	−7.1
Approximate land area of the state ... acres	52,335,360	52,335,360	.....	.....
All land in farms ... acres	45,425,179	43,384,799	2,040,380	4.7
Improved land in farms ... acres	30,600,760	29,904,067	696,693	2.3
Number of farms irrigated	504	1,006	−502	−49.9
Area irrigated ... acres	47,312	37,479	9,833	26.2
Area enterprises were capable of irrigating ... acres	67,853	139,995	−72,142	−51.5
Area included in enterprises ... acres	102,562	161,300	−58,738	−36.4
Per cent irrigated:				
Number of all farms	0.3	0.6	−0.3	.....
Approximate land area of the state	0.1	0.1	.....	.....
Land in farms	0.1	0.1	.....	.....
Improved land in farms	0.2	0.1	0.1	.....
Excess of area enterprises were capable of irrigating over area irrigated ... acres	20,541	102,516	−81,975	−80.0
Excess of area included in enterprises over area irrigated ... acres	55,250	123,821	−68,571	−55.4
Capital invested	$2,067,381	$1,365,563	$701,818	51.4
Average per acre enterprises were capable of irrigating	$30.47	$9.75	$20.72	212.5
Estimated final cost of existing enterprises	$2,195,981	$1,365,563	$830,418	60.8
Average per acre included in enterprises	$21.41	$8.47	$12.94	152.8
Average cost of operation and maintenance per acre	$3.29	$1.59	$1.70	106.9
IRRIGATION WORKS.				
Number of enterprises	209	716	−507	−70.8
Number of main ditches	139	89	50	56.2
Length of main ditches ... miles	271	274	−3	−1.1
Capacity of main ditches ... second-feet	1,667	2,600	−933	−35.9
Number of lateral ditches	374	39	335	859.0
Length of lateral ditches ... miles	147	42	105	250.0
Number of reservoirs	36	42	−6	−14.3
Capacity of reservoirs ... acre-feet	391	31,024	−30,633	−98.7
Number of flowing wells	6	3	3	100.0
Capacity of flowing wells ... gallons per minute	500	30	470	(2)
Number of pumped wells	710	939	−229	−24.4
Capacity of pumped wells ... gallons per minute	266,797	73,362	193,435	263.7
Number of pumping plants	198	698	−500	−71.6
Engine capacity ... horsepower	6,946	1,517	5,429	357.9
Pump capacity ... gallons per minute	297,975	128,276	169,699	132.3
Average lift ... feet	30	(3)	30	.....

[1] A minus sign (−) denotes decrease. [2] Per cent not shown when more than 1,000. [3] Not reported in 1910.

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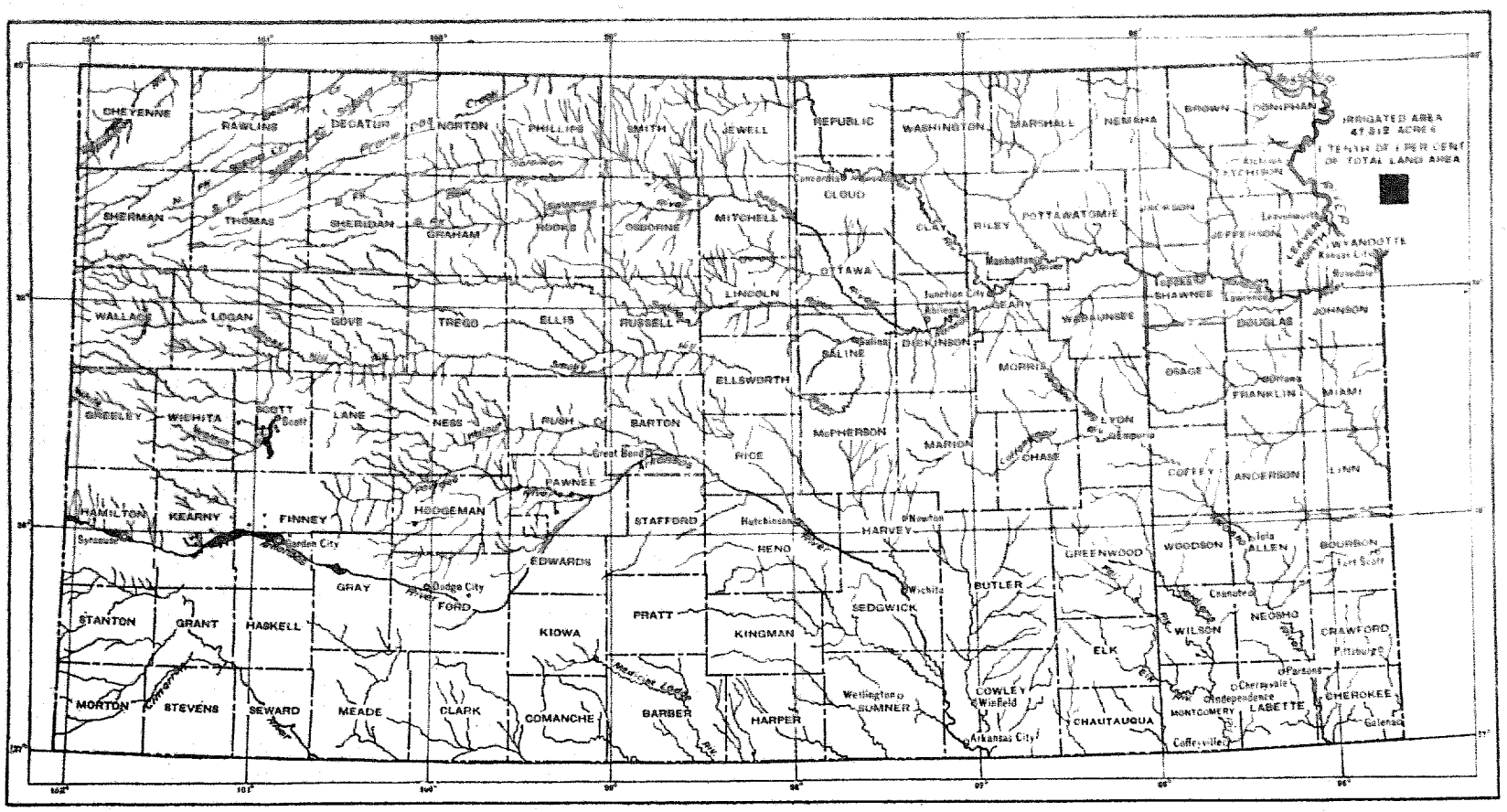
KANSAS

APPROXIMATE LOCATION AND EXTENT OF IRRIGATED LAND.



CLIMATIC CONDITIONS.

The usual climatic conditions determining the necessity for irrigation are the amount and the seasonal distribution of precipitation. In Kansas the wind movement also must be taken into consideration, because of its effect on evaporation.

Precipitation decreases with remarkable regularity from 42 inches in the southeastern counties of the state to just a little more than 15 inches at the Colorado line.

About 75 per cent of the annual precipitation falls during the six crop-growing months, April to September. In the western part of the state, during the late summer, the large amount of sunshine and the hot drying winds cause a rapid evaporation that increases the water requirements of vegetation and the necessity for irrigation.

The precipitation in the western part of the state in 1919 was above the normal and it is probable that some land was not irrigated that would be in a drier season.

WATER SUPPLY FOR IRRIGATION.

In the eastern part of Kansas the rainfall is sufficient for the growing of crops, and the streams carry an abundance of water. In the western part of the state the streams, with the exception of the Arkansas River, rise on the plains, and depend mostly on local precipitation for their summer flow, consequently they carry little water except during storms.

The Arkansas River rises in the main range of the Rocky Mountains and receives water from melting snows, but losses from evaporation and seepage and diversions in Colorado exhaust the summer flow of the river, except such as comes from local precipitation and seepage from irrigated land in Colorado. None of the streams in the part of the state where irrigation is needed affords any large supply of water during the summer, but the streams afford a good supply in the spring. There is opportunity for storage of the winter and flood flow, but little storage has been provided.

In the stream valleys there is abundant ground water at shallow depths, and more than one-fourth of the land irrigated in the state is supplied from this source. On the high plains there is ground water, but it occurs at such great depths that the cost of pumping is too great to permit of a large use of water from wells.

FARMS AND ACREAGE IRRIGATED.

TABLE 2.—NUMBER OF FARMS AND ACREAGE IRRIGATED: 1890 TO 1920.

CENSUS YEAR.	FARMS IRRIGATED.			AREA IRRIGATED.				
	Number.	Per cent of increase.[1]	Per cent of all farms.	Acres.	Per cent of increase.	Per cent of total land area.	Per cent of land in farms.	Per cent of improved land in farms.
1920	504	−49.9	0.3	47,312	25.2	0.1	0.1	0.2
1910	1,006	8.3	0.6	37,479	58.7	0.1	0.1	0.1
1900	929	79.0	0.5	23,620	13.5	(2)	0.1	0.1
1890	519	.....	(2)	20,818	.....	(2)	0.1	0.1

[1] A minus sign (−) denotes decrease. [2] Less than one-tenth of 1 per cent.

TABLE 3.—ACREAGE, CLASSIFIED BY DATE OF BEGINNING OF ENTERPRISES SUPPLYING WATER FOR IRRIGATION.

DATE OF BEGINNING.	Number of enterprises.	Area included in enterprises, 1920 (acres).	AREA IRRIGATED IN 1919.		Area enterprises were capable of irrigating in 1920 (acres).
			Acres.	Per cent of acreage in enterprises.	
Total	209	102,562	47,312	46.1	67,853
1870-1879	2	145	80	55.2	145
1880-1889	7	23,366	15,413	65.9	23,366
1890-1899	7	15,786	13,226	83.8	15,786
1905-1909	30	13,103	3,617	27.6	5,317
1910-1914	62	7,627	3,719	52.9	6,485
1915-1919	78	37,452	7,109	18.5	11,405
Not reported	23	5,663	4,148	73.2	5,329

TABLE 4.—ACREAGE, CLASSIFIED BY SOURCE OF WATER SUPPLY: 1919 AND 1909.

CLASS.	AREA IRRIGATED (ACRES).				Area enterprises were capable of irrigating in 1920 (acres).	Area included in enterprises, 1920 (acres).
	1919	1909	Increase.[1]			
			Amount.	Per cent.		
Total	47,312	37,479	9,833	26.2	67,853	102,562
Streams, gravity	30,807	35,469	−4,662	−13.1	41,603	41,435
Streams, pumped	730	20	710	.....	1,541	2,105
Streams, pumped and gravity	600	.....	600	.....	850	850
Wells, pumped	13,233	1,959	11,276	575.6	20,519	54,974
Wells, flowing and pumped	50	2	48	.....	60	60
Lakes, pumped	.....	.....	.....	.....	100	100
Springs	.....	27	−27	.....	.....	.....
Stored storm water	.....	2	−2	.....	.....	.....
Streams, gravity, and pumped wells	1,540	.....	1,540	.....	2,830	2,618
Other mixed	350	.....	350	.....	350	420

[1] A minus sign (−) denotes decrease. Per cent not shown when base is less than 100.

ACREAGE, BY CHARACTER OF ENTERPRISE.

Kansas enacted an irrigation district law in 1891 but no districts are reported in the state.

The state has never accepted the conditions of the Federal Carey Act (act of Aug. 18, 1894).

The United States Reclamation Service undertook one project in Kansas, but this has been disposed of.

The small acreage credited to the state in Table 5 belongs to a state institution, and does not represent a scheme of state construction.

TABLE 5.—ACREAGE, CLASSIFIED BY CHARACTER OF ENTERPRISE: 1920 AND 1910.

ITEM AND CLASS.	CENSUS OF—		INCREASE.[1]	
	1920	1910	Acres.	Per cent.
ACREAGE IRRIGATED.				
Total	47,312	37,479	9,833	26.2
Individual and partnership	14,546	3,154	11,392	361.2
Cooperative	32,516	27,372	5,144	18.8
Commercial	150	.....	150	.....
U. S. Reclamation Service	.....	6,953	−6,953	.....
State	100	(2)	100	.....
ACREAGE ENTERPRISES WERE CAPABLE OF IRRIGATING.				
Total	67,853	139,995	−72,142	−51.5
Individual and partnership	26,614	4,795	21,819	455.0
Cooperative	40,719	135,200	−94,481	−69.9
Commercial	320	.....	320	.....
U. S. Reclamation Service	.....	.....	.....	.....
State	200	(2)	200	.....
ACREAGE INCLUDED IN ENTERPRISES.				
Total	102,562	161,300	−58,738	−36.4
Individual and partnership	36,643	6,423	30,220	470.5
Cooperative	65,399	144,200	−78,801	−54.6
Commercial	320	.....	320	.....
U. S. Reclamation Service	.....	10,677	−10,677	.....
State	200	(2)	200	.....

[1] A minus sign (−) denotes decrease. [2] Not included in classification in 1910.

ACREAGE, BY CHARACTER OF WATER RIGHTS.

The laws of the state of Kansas relating to water rights are summarized in the following paragraphs:

The state of Kansas enacted in 1886 a law declaring that rights to the use of water may be acquired by appropriation, and that between appropriations the first in time is the first in right. This law required any party wishing to appropriate water to post a notice at the point of intended diversion and file a copy of the notice with the county clerk.

A law enacted in 1891 contained the following sections relating to water rights:

"In all that portion of the state of Kansas situated west of the ninety-ninth meridian, all natural waters, whether standing or running, and whether surface or subterranean, shall be devoted, first, to purposes of irrigation in aid of agriculture, subject to ordinary domestic uses, and secondly to other industrial purposes, and may be diverted from natural beds, basins, or channels for such purposes and uses. *Provided*, That no such diversion shall interfere with, diminish, or divest any prior vested right of appropriation for the same or a higher purpose than that for which such diversion is sought to be made, without due legal condemnation of, and compensation for the same; and natural lakes and ponds of surface water having no outlets shall be deemed parcel of the lands wherein the same may be situated, and only the proprietors of such land shall be entitled to draw off the same.

"Waters flowing in well-defined subterranean channels and courses, or flowing or standing in subterranean sheets, shall be subject to appropriation with the same effect as water of superficial channels."

This law prescribes no procedure for acquiring rights, or for recording them, and the law of 1886 requiring posting and filing of claims is still in effect.

Conflicting rights are defined in ordinary suits between rival claimants.

TABLE 6.—ACREAGE IRRIGATED, CLASSIFIED BY CHARACTER OF RIGHTS UNDER WHICH WATER IS RECEIVED: 1919 AND 1909.

CLASS.	1919		1909, per cent of total.
	Acres.	Per cent of total.	
Total	47,312	100.0	100.0
Appropriation and use	26,435	55.9	73.6
Notice filed and posted	4,218	8.9	26.3
Adjudicated by court	458	0.9	.....
Riparian rights	30	0.1	0.1
Underground	13,480	28.5	(1)
Other and mixed	938	2.0	(1)
Not reported	1,753	3.7	(1)

[1] All land for which the class of water rights was not reported was included in "Appropriation and use."

ACREAGE, BY DRAINAGE BASIN.

The report of a special census taken in 1902 presented all data by drainage basins rather than by counties. The results of the census of 1920 have been tabulated on the same basis, and the data for 1902 are presented for purposes of comparison. For no other census have the results been tabulated in this form. The acreage reported for each drainage basin in 1919 comprises all the irrigated land in that drainage basin, including that watered from springs and wells. In the 1902 results the acreages irrigated from springs and wells were not reported for the smaller tributary streams, but the acreages for the tributaries were included in those reported for the main streams. This area is so small, however, that the comparison of the areas reported for the tributary streams is not seriously affected.

TABLE 7.—ACREAGE IRRIGATED, CLASSIFIED BY DRAINAGE BASIN: 1919 AND 1902.

DRAINAGE BASIN.	AREA IRRIGATED (ACRES).			Area included in enterprises, 1920 (acres).	Area enterprises were capable of irrigating in 1920 (acres).
	1919	1902	Per cent of increase.[1]		
Total	47,312	28,922	63.6	102,562	67,853
Tributaries of Kansas River	773	2,792	−72.3	3,580	3,396
Republican River	510	1,470	−65.3	2,090	2,090
Smoky Hill River	248	770	−67.8	1,420	1,236
Other tributaries of Kansas River	15	552	−97.3	70	70
Arkansas River and tributaries	46,539	[2] 26,130	78.1	98,982	64,457
Arkansas River direct	30,130	22,253	35.4	38,533	38,533
Cimarron River	.....	1,910	.....	210	210
Other tributaries of Arkansas River	16,409	[2] 1,967	734.2	60,239	25,714

[1] A minus sign (−) denotes decrease. [2] Includes springs and wells.

CAPITAL INVESTED AND COST OF OPERATION AND MAINTENANCE.

TABLE 8.—CAPITAL INVESTED IN IRRIGATION ENTERPRISES: 1890 TO 1920.

CENSUS YEAR.	Amount.	Per cent of increase.	AVERAGE PER ACRE.	
			Amount.	Per cent of increase.[1]
1920	$2,067,381	51.4	$30.47	212.5
1910	1,365,563	157.8	9.75	−56.5
1900	529,755	525.2	22.43	451.1
1890	84,729	.....	4.07	.....

[1] A minus sign (−) denotes decrease.

TABLE 9.—CAPITAL INVESTED, CLASSIFIED BY DATE OF BEGINNING.

DATE OF BEGINNING.	Amount.	Per cent of total.	Average per acre.
Total	$2,067,381	100.0	$30.47
1870-1879	736	0.1	5.08
1880-1889	1,058,982	51.2	45.28
1890-1899	88,719	4.3	5.62
1905-1909	200,085	9.7	37.63
1910-1914	176,286	8.5	27.18
1915-1919	407,876	19.7	35.76
Not reported	134,697	6.5	25.28

TABLE 10.—CAPITAL INVESTED, 1920, AND COST OF OPERATION AND MAINTENANCE, 1919, CLASSIFIED BY SOURCE OF WATER SUPPLY.

[When water is pumped, cost of operation and maintenance includes cost of fuel and attendance.]

CLASS.	CAPITAL INVESTED, 1920.			OPERATION AND MAINTENANCE, 1919.	
	Amount.	Per cent of total.	Average per acre.	Area for which cost is reported (acres).	Average cost per acre.[1]
Total	$2,067,381	100.0	$30.47	28,583	$3.29
Streams, gravity	1,184,674	57.3	28.48	17,957	0.92
Streams, pumped	22,142	1.1	14.37	645	7.57
Streams, pumped and gravity	50,000	2.4	58.82	600	20.00
Wells, pumped	741,583	35.9	36.14	8,481	6.98
Wells, flowing and pumped	4,000	0.2	66.67	.....	.....
Lakes, gravity	1,000	(2)	10.00	50	1.00
Streams, gravity, and pumped wells	50,532	2.4	17.86	620	1.55
Other mixed	13,450	0.7	38.43	230	1.83

[1] Based on area irrigated in 1919. [2] Less than one-tenth of 1 per cent.

TABLE 11.—CAPITAL INVESTED, CLASSIFIED BY DRAINAGE BASIN: 1920 AND 1902.

DRAINAGE BASIN.	1920	1902	INCREASE.[1]	
			Amount.	Per cent.
Total	$2,067,381	$599,098	$1,468,283	245.1
Tributaries of Kansas River	50,311	139,742	−89,431	−64.0
Republican River	15,816	107,450	−91,634	−85.3
Smoky Hill River	33,753	3,410	30,343	889.8
Other tributaries of Kansas River	742	28,882	−28,140	−97.4
Arkansas River and tributaries	2,017,070	[2] 459,356	1,557,714	339.1
Arkansas River direct	1,153,205	368,775	784,430	212.7
Cimarron River	15,000	21,100	−6,100	−28.9
Other tributaries of Arkansas River	848,865	[2] 69,481	779,384	.....

[1] A minus sign (−) denotes decrease. Per cent not shown when more than 1,000.
[2] Includes springs and wells.

TABLE 12.—CAPITAL INVESTED, 1920, AND COST OF OPERATION AND MAINTENANCE, 1919, CLASSIFIED BY CHARACTER OF ENTERPRISE.

[When water is pumped, cost of operation and maintenance includes cost of fuel and attendance.]

CLASS.	CAPITAL INVESTED, 1920.		OPERATION AND MAINTENANCE, 1919.	
	Amount.	Per cent of total.	Area for which cost is reported (acres).	Average cost per acre.[1]
Total	$2,067,381	100.0	28,583	$3.29
Individual and partnership	775,095	37.5	8,817	6.97
Cooperative	1,289,737	62.4	19,666	1.99
Commercial	1,549	0.1	.....	.....
State	1,000	(2)	100	12.00

[1] Based on area irrigated in 1919. [2] Less than one-tenth of 1 per cent.

DRAINAGE OF IRRIGATED LAND.

The acreages reported in Table 13 relate to lands within the boundaries of irrigation projects, and do not include lands within the vicinity of these projects. "Additional acreage needing drainage" includes all lands so reported by the owners of the enterprises, and includes lands producing partial crops as well as those wholly unproductive.

TABLE 13.—ACREAGE WITHIN IRRIGATION ENTERPRISES FOR WHICH DRAINS HAVE BEEN INSTALLED AND ADDITIONAL ACREAGE IN NEED OF DRAINAGE: 1920.

Number of enterprises reporting land drained or needing drainage	5
Acreage included in enterprises reporting land drained or needing drainage	3,610
Acreage for which drains have been installed	250
Additional acreage needing drainage	1,320
Per cent that area for which drains have been installed is of total area included in enterprises reporting drainage	6.9
Per cent that area for which drains have been installed is of total area included in irrigation enterprises in the state	0.2
Per cent that area for which drains have been installed plus that needing drainage is of total area included in irrigation enterprises in the state	1.5

QUANTITY OF WATER USED.

The quantity of water used in 1919 was reported on only part of the irrigation schedules, and the figures given vary greatly. In order that proper values may be assigned to the figures given, those representing measurements and those representing estimates are reported separately in Table 14. While the data are incomplete, the reports represent sufficient acreages to serve as bases for reliable averages.

TABLE 14.—QUANTITY OF WATER USED IN 1919.

ITEM.	Total.	Measured.	Not measured.
Average volume entering canals ..... second-feet	455	354	101
Area irrigated in 1919 ..... acres	20,900	19,925	975
Average number of acres per second-foot	45.9	56.3	8.8
Total quantity of water entering canals ..... acre-feet	25,139	18,402	16,737
Area irrigated in 1919 ..... acres	21,210	20,235	975
Average quantity per acre ..... acre-feet	1.7	0.9	17.2
Total quantity of water delivered ..... acre-feet	14,275	13,718	557
Area irrigated in 1919 ..... acres	20,855	20,055	800
Average quantity per acre ..... acre-feet	0.7	0.7	0.7

IRRIGATION WORKS.

TABLE 15.—IRRIGATION WORKS, CLASSIFIED BY DATE OF BEGINNING.

DATE OF BEGINNING.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.	
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).
Total	10	13	139	1,667	271	374	147	36	391
1870-1879	2	1	2	2	2	8	1	.....	.....
1880-1889	3	.....	7	489	107	48	45	.....	.....
1890-1899	3	1	7	326	51	12	3	2	40
1905-1909	.....	.....	15	271	34	52	4	10	24
1910-1914	.....	5	55	202	36	134	61	11	122
1915-1919	2	6	51	368	26	114	32	12	205
Not reported	.....	.....	2	9	15	6	1	1	.....

DATE OF BEGINNING.	Pipe lines, length (miles).	FLOWING WELLS.		PUMPED WELLS.		PUMPING PLANTS.			
		Number.	Capacity (gallons per minute).	Number.	Capacity (gallons per minute).	Number.	Engine capacity (horsepower).	Pumps.	
								Number.	Capacity (gallons per minute).
Total	28	6	500	719	266,797	198	6,946	288	297,975
1890-1899	.....	.....	.....	1	.....	1	.....	2	.....
1905-1909	0.3	6	500	116	26,665	29	1,483	67	30,035
1910-1914	0.3	.....	.....	158	60,884	65	1,701	85	78,409
1915-1919	0.4	.....	.....	313	104,742	79	3,222	108	114,825
Not reported	1.8	.....	.....	122	74,506	24	540	26	74,106

TABLE 16.—IRRIGATION WORKS, CLASSIFIED BY CHARACTER OF ENTERPRISE: 1920.

CLASS.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.	
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).
Total	10	13	139	1,667	271	374	147	36	391
Individual and partnership	7	6	129	817	112	288	81	30	386
Cooperative	3	6	8	774	154	71	58	6	5
Commercial	.....	.....	1	6	1	.....	.....	.....	.....
State	.....	1	1	70	4	15	8	.....	.....

CLASS.	Pipe lines, length (miles).	FLOWING WELLS.		PUMPED WELLS.		PUMPING PLANTS.			
		Number.	Capacity (gallons per minute).	Number.	Capacity (gallons per minute).	Number.	Engine capacity (horsepower).	Pumps.	
								Number.	Capacity (gallons per minute).
Total	28	6	500	719	266,797	198	6,946	288	297,975
Individual and partnership	27	6	500	697	245,297	194	5,411	269	272,275
Cooperative	.....	.....	.....	17	19,000	2	1,450	17	19,000
Commercial	.....	.....	.....	.....	.....	1	25	1	2,500
State	0.1	.....	.....	6	2,500	1	60	1	4,200

TABLE 17.—IRRIGATION WORKS, CLASSIFIED BY DRAINAGE BASIN: 1920.

DRAINAGE BASIN.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.	
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).
Total	10	13	139	1,667	271	374	147	36	391
Tributaries of Kansas River	5	1	14	50	18	14	1		
Republican River			4	34	12				
Smoky Hill River	5	1	9	15	6	14	1		
Other tributaries of Kansas River			1	1					
Arkansas River and tributaries	5	12	125	1,617	253	360	146	36	391
Arkansas River direct	3		8	774	154	54	48		
Cimarron River		1	18	8	6			2	3
Other tributaries of Arkansas River	2	11	99	835	93	306	98	34	388

DRAINAGE BASIN.	Pipe lines, length (miles).	FLOWING WELLS.		PUMPED WELLS.		PUMPING PLANTS.				
		Number.	Capacity (gallons per minute).	Number.	Capacity (gallons per minute).	Number.	Engine capacity (horse-power).	Pumps.		Average lift (feet).
								Number.	Capacity (gallons per minute).	
Total	2.8	6	500	710	266,797	198	6,946	258	297,975	30
Tributaries of Kansas River				32	2,600	8	383	23	6,700	27
Republican River				1	500	1	60	1	500	100
Smoky Hill River				31	2,100	6	303	21	5,350	29
Other tributaries of Kansas River						1	20	1	850	25
Arkansas River and tributaries	2.8	6	500	678	264,197	190	6,563	265	291,275	29
Arkansas River direct				1		1	10	1		12
Cimarron River		6	500	5	2,800	3	156	3	2,800	12
Other tributaries of Arkansas River	2.8			672	261,397	186	6,397	261	288,475	30

CROPS.

TABLE 18.—ACREAGE, YIELD, AND VALUE OF PRINCIPAL CROPS GROWN ON IRRIGATED LAND, AND COMPARISONS WITH TOTALS FOR THE STATE: 1919 AND 1909.

[Totals for the state, used in making comparisons, are shown in state bulletin on agriculture.]

	Crop.	Area harvested.					Quantity harvested.					
		1919		1909				1919		1909		
		Acres.	Per cent of total for state.	Acres.	Per cent of total for state.	Per cent of increase.[1]	Unit.	Amount.	Per cent of total for state.	Amount.	Per cent of total for state.	Per cent of increase.[1]
	Cereals:											
1	Corn	238	(2)	745	(2)	−68.1	Bu.	4,090	(2)	16,892	(2)	−75.8
2	Oats	1,258	0.1	497	0.1	154.2	Bu.	24,022	0.1	10,525	(2)	128.2
3	Winter wheat	4,929	(2)	299	(2)	358.4	Bu.	45,340	(2)	19,121	(2)	150.7
4	Spring wheat	234	1.0				Bu.	2,592	1.3			
5	Barley	1,370	0.3	356	0.2	284.8	Bu.	18,483	0.2	6,145	0.3	200.8
	Hay and forage:											
6	Alfalfa	14,982	1.1	10,470	1.1	42.9	Tons	30,397	1.2	21,699	1.1	40.1
7	Wild, salt, or prairie grasses	615	0.1	541	(2)	13.7	Tons	1,146	0.1	527	(2)	117.5
8	Silage crops	491	0.2	(3)			Tons	2,668	0.2	(3)		
9	Corn cut for forage	186	(2)	(3)			Tons	500	(2)	(3)		
10	Kafir, sorghum, etc., for forage	1,238	0.1	(3)			Tons	3,033	0.2	(3)		
	Seeds:											
11	Kafir, milo, feterita, durra	2,960	0.4	(3)			Bu.	36,835	0.5	(3)		
	Miscellaneous:											
12	Sugar beets grown for sugar	851	50.6	5,638	96.4	−84.9	Tons	4,036	50.8	45,346	89.4	−91.1

	Crop.	Average yield per acre, 1919.					Value.				
				On irrigated land.			1919		1909		
		Unit.	For state.	On non-irrigated land.	Average.	Per cent of average for state.	Per cent of average for non-irrigated land.	Amount.	Per cent of total for state.	Amount.	Per cent of total for state.	Per cent of increase.[1]
	Cereals:											
1	Corn	Bu.	16.2	16.2	17.2	106.2	106.2	$5,930	(2)	$9,748	(2)	−39.2
2	Oats	Bu.	26.0	26.0	19.4	74.6	74.6	12,218	0.1	4,942	0.1	288.9
3	Winter wheat	Bu.	13.2	13.2	11.3	85.6	85.6	97,934	(2)	17,708	(2)	484.7
4	Spring wheat	Bu.	8.5	8.5	11.1	130.6	130.6	5,599	1.3			
5	Barley	Bu.	21.0	21.1	13.5	64.3	64.0	19,407	0.2	3,281	0.3	491.5
	Hay and forage:											
6	Alfalfa	Tons	1.89	1.89	2.03	107.4	107.4	531,948	1.2	153,250	1.1	247.1
7	Wild, salt, or prairie grasses	Tons	1.06	1.06	1.86	175.5	175.5	14,325	0.1	3,099		362.2
8	Silage crops	Tons	4.21	4.21	5.43	129.0	129.0	21,344	0.2	(3)		
9	Corn cut for forage	Tons	1.50	1.50	2.69	179.3	179.3	4,000	(2)	(3)		
10	Kafir, sorghum, etc., for forage	Tons	1.86	1.86	2.45	131.7	131.7	30,330	0.2	(3)		
	Seeds:											
11	Kafir, milo, feterita, durra	Bu.	13.9	13.9	18.0	129.5	129.5	49,727	0.5	(3)		
	Miscellaneous:											
12	Sugar beets grown for sugar	Tons	4.72	4.70	4.74	100.4	100.9	42,399	50.8	226,931	88.6	−81.3

[1] A minus sign (−) denotes decrease.

[2] Less than one-tenth of 1 per cent.

[3] Not reported separately in 1909.

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910.

[A minus sign (–) denotes decrease. Per cent not shown when base is less than 100 or when per cent is more than 1,000.]

		THE STATE.	Cheyenne.	Finney.	Gray.	Hamilton.	Kearny.	Pawnee.	Scott.	Wallace.	Other counties.
1	Number of all farms in 1920	165,286	974	717	738	326	359	1,144	428	341	160,264
2	Number of farms irrigated in 1919	504	7	206	16	23	81	18	100	8	45
3	Per cent of all farms	0.3	0.7	28.7	2.2	7.1	22.6	1.6	23.4	2.3	.....
4	Number of farms irrigated in 1909	1,006	10	173	.....	54	121	.....	.....	.....	648
5	Per cent of increase, 1909-1919	–49.9	.....	19.1	.....	.....	–33.1	.....	.....	.....	–93.1
	LAND AND FARM AREA.										
6	Approximate land area ....acres..	52,335,360	645,120	816,640	548,480	629,760	545,920	474,880	456,960	589,440	47,628,160
7	All land in farms....acres..	45,425,179	570,222	629,119	423,068	202,213	213,885	436,771	335,360	336,271	42,198,470
8	Improved land in farms....acres..	30,000,760	407,959	158,264	228,277	54,261	80,723	407,567	150,898	101,283	29,011,518
9	Area irrigated in 1919....acres..	47,312	500	15,221	825	3,463	21,976	1,117	3,047	213	950
10	Per cent of improved land in farms	0.2	0.1	9.6	0.4	6.4	27.2	0.3	2.0	0.2	(1)
11	Area irrigated in 1909....acres..	37,479	1,515	17,285	60	2,366	15,168	.....	.....	251	834
12	Per cent of increase, 1909-1919	26.2	–67.0	–11.9	.....	46.4	44.9	.....	.....	–15.1	13.9
13	Area enterprises were capable of irrigating in 1920....acres..	67,853	2,080	18,655	1,000	6,266	29,367	2,366	5,045	1,018	2,056
14	Area enterprises were capable of irrigating in 1910....acres..	139,995	3,025	96,287	60	10,606	28,445	.....	240	466	866
15	Per cent of increase, 1910-1920	–51.5	–31.2	–80.6	.....	–40.9	3.2	.....	.....	118.5	137.4
16	Area included in enterprises in 1920....acres..	102,562	2,080	19,209	1,000	6,266	37,897	2,630	30,163	1,018	2,299
17	Area included in enterprises in 1910....acres..	161,300	4,500	109,376	110	16,754	28,581	.....	480	621	878
18	Per cent of increase, 1910-1920	–36.4	–53.8	–82.4	900.0	–62.6	32.6	.....	.....	63.9	161.8
	IRRIGATION WORKS.										
	Independent enterprises:										
19	Number, 1920	209	3	85	1	9	31	16	12	7	45
20	Number, 1910	716	6	39	.....	11	10	.....	.....	.....	650
	Main ditches:										
21	Number, 1920	139	3	72	1	4	6	15	2	7	29
22	Number, 1910	89	4	32	.....	8	5	.....	1	8	31
23	Length, 1920....miles..	271	12	48	50	28	90	21	1	6	15
24	Length, 1910....miles..	274	27	100	.....	33	65	.....	1	10	38
25	Capacity, 1920....second-feet..	1,667	34	666	24	1	742	118	2	12	68
26	Capacity, 1910....second-feet..	2,600	125	1,400	.....	492	493	.....	6	14	70
	Laterals:										
27	Number, 1920	374	.....	179	30	16	2	101	17	14	15
28	Number, 1910	39	1	11	.....	4	10	.....	.....	13	.....
29	Length, 1920....miles..	147	.....	43	18	6	8	49	10	1	12
30	Length, 1910....miles..	42	1	29	.....	5	3	.....	.....	4	.....
	Reservoirs:										
31	Number, 1920	36	.....	13	.....	2	1	3	7	.....	10
32	Number, 1910	42	.....	31	.....	4	3	.....	.....	1	3
33	Capacity, 1920....acre-feet..	391	.....	237	.....	41	.....	101	9	.....	3
34	Capacity, 1910....acre-feet..	31,024	.....	31,010	.....	1	2	.....	.....	1	1
	Flowing wells:										
35	Number, 1920	6	.....	.....	.....	.....	.....	.....	.....	.....	6
36	Number, 1910	3	.....	.....	.....	.....	.....	.....	.....	1	2
37	Capacity, 1920....gallons per minute..	500	.....	.....	.....	.....	.....	.....	.....	.....	500
38	Capacity, 1910....gallons per minute..	30	.....	.....	.....	.....	.....	.....	.....	10	20
	Pumped wells:										
39	Number, 1920	710	.....	368	.....	11	185	7	54	24	81
40	Number, 1910	939	.....	252	3	7	75	.....	1	.....	601
41	Capacity, 1920....gallons per minute..	265,797	.....	162,611	.....	8,500	98,515	4,590	32,050	450	20,081
42	Capacity, 1910....gallons per minute..	73,362	.....	30,613	1,600	4,384	33,325	.....	3,000	.....	440
	Pumping plants:										
43	Number, 1920	198	.....	81	.....	6	30	17	13	3	48
44	Number, 1910	698	.....	61	2	9	19	.....	1	.....	606
45	Engine capacity, 1920....horsepower..	6,946	.....	1,493	.....	126	2,085	397	1,930	75	840
46	Engine capacity, 1910....horsepower..	1,517	.....	992	30	66	225	.....	35	.....	169
47	Pump capacity, 1920....gallons per minute..	297,975	.....	167,311	.....	9,200	97,615	21,390	32,250	3,300	26,809
48	Pump capacity, 1910....gallons per minute..	128,276	.....	80,113	1,600	6,384	33,725	.....	3,000	.....	3,454
49	Average lift, 1920....feet..	30	.....	26	.....	20	32	27	67	40	26
	CAPITAL INVESTED.										
50	Capital invested to Jan. 1, 1920....dollars..	2,067,381	11,816	237,664	1,000,040	38,065	296,700	32,450	299,502	19,503	132,243
51	Capital invested to July 1, 1910....dollars..	1,365,563	6,284	1,089,048	5,500	25,908	218,694	.....	6,000	1,805	12,224
52	Per cent of increase, 1910-1920	51.4	85.1	–78.2	.....	46.9	35.7	.....	.....	980.5	981.8
53	Average cost per acre based on area enterprises were capable of supplying with water in 1920....dollars..	30.47	5.68	12.71	1,000.04	6.07	10.10	13.72	59.37	19.16	64.32
54	Average cost per acre based on area enterprises were capable of supplying with water in 1910....dollars..	9.75	2.11	11.31	91.67	2.44	7.69	.....	25.00	3.87	14.12
	ESTIMATED FINAL COST.										
55	Estimated final cost of existing enterprises in 1920..dollars..	2,195,981	11,816	237,664	1,005,040	38,065	296,700	35,750	416,000	19,503	136,043
56	Estimated final cost of existing enterprises in 1910..dollars..	1,365,563	6,284	1,089,048	5,900	25,908	218,694	.....	6,000	3,357	10,272
57	Per cent of increase, 1910-1920	60.8	85.1	–78.2	.....	46.9	35.7	.....	.....	481.0	.....
58	Average cost per acre based on estimated final cost and area included in enterprises in 1920....dollars..	21.41	5.68	12.34	1,005.04	6.07	7.83	13.59	13.79	19.16	59.17
59	Average cost per acre based on estimated final cost and area included in enterprises in 1910....dollars..	8.47	1.42	9.96	53.64	1.55	7.65	.....	12.50	5.41	11.70

[1] Less than one-tenth of 1 per cent.

LOUISIANA.

INTRODUCTION.

The following pages present the statistics of irrigation for the state of Louisiana collected at the census of 1920. Statistics of acreage irrigated, of acreage, yield, and value of crops grown on irrigated land, and of cost of operation and maintenance relate to the year 1919; other items relate to the year 1920. Throughout the report figures for the census of 1910 are given for purposes of comparison; and, for the purpose of showing the historical development of irrigation, items which have been reported in censuses previous to 1910 are presented.

Statistics of number of farms irrigated and of acreage, yield, and value of crops grown on irrigated land were collected in the general census of agriculture. All other statistics were obtained in a special canvass of irrigation enterprises.

Rice is the only crop grown under irrigation in Louisiana, and small areas of rice are grown without irrigation, although in general the crop is irrigated. For the state the acreage of rice harvested in 1919 was 456,726 acres, the quantity produced was 16,005,936 bushels, and the value $42,735,849.

TABLE 1.—SUMMARY FOR THE STATE: 1920 AND 1910.

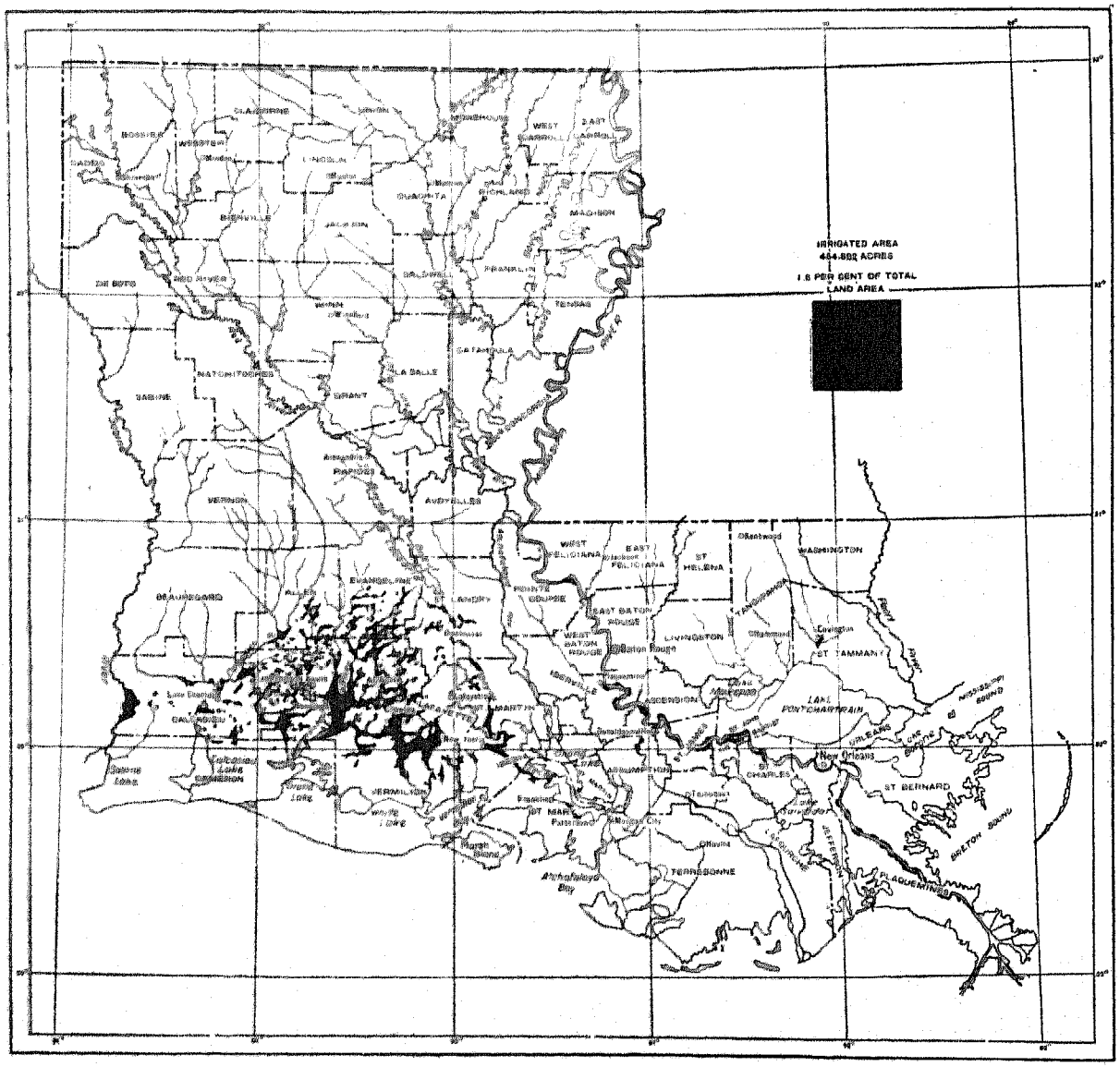
ITEM.	CENSUS OF—		INCREASE.[1]	
	1920	1910	Amount.	Per cent.
Number of all farms	135,463	120,546	14,917	12.4
Approximate land area of the state ... acres	29,061,760	29,061,760	.....	.....
All land in farms ... acres	10,019,822	10,439,481	−419,659	−4.0
Improved land in farms ... acres	5,626,226	5,276,016	350,210	6.6
Number of farms irrigated	6,471	2,690	3,781	140.6
Area irrigated ... acres	454,882	380,200	74,682	19.6
Area enterprises were capable of irrigating ... acres	728,742	553,220	175,522	31.7
Area included in enterprises ... acres	851,211	581,965	269,246	46.3
Per cent irrigated:				
Number of all farms	4.8	2.2	2.6	.....
Approximate land area of the state	1.6	1.3	0.3	.....
Land in farms	4.5	3.6	0.9	.....
Improved land in farms	8.1	7.2	0.9	.....
Excess of area enterprises were capable of irrigating over area irrigated ... acres	273,860	173,020	100,840	58.3
Excess of area included in enterprises over area irrigated ... acres	396,329	201,765	194,564	96.4
Capital invested	$14,063,181	$6,859,166	$7,204,015	105.0
Average per acre enterprises were capable of irrigating	$19.30	$12.40	$6.90	55.6
Estimated final cost of existing enterprises	$14,264,178	$6,914,166	$7,350,012	106.3
Average per acre included in enterprises	$16.76	$11.88	$4.88	41.1
Average cost of operation and maintenance per acre	$7.01	(2)	.....	.....
IRRIGATION WORKS.				
Number of enterprises	1,373	1,237	136	11.0
Number of main ditches	1,298	515	783	152.0
Length of main ditches ... miles	1,584	729	855	117.3
Capacity of main ditches ... second-feet	11,889	(2)	11,889	.....
Number of lateral ditches	3,908	180	3,728	.....
Length of lateral ditches ... miles	1,659	439	1,220	277.9
Number of reservoirs	74	104	−30	−28.8
Capacity of reservoirs ... acre-feet	7,632	19,482	−11,850	−60.8
Number of flowing wells	9	(2)	9	.....
Capacity of flowing wells ... gallons per minute	6,255	(2)	6,255	.....
Number of pumped wells	812	606	206	34.0
Capacity of pumped wells ... gallons per minute	1,607,637	1,108,236	499,401	45.1
Number of pumping plants	1,250	1,007	243	24.1
Engine capacity ... horsepower	85,628	57,426	28,202	49.1
Pump capacity ... gallons per minute	4,968,686	5,064,173	−95,487	1.9
Average lift ... feet	32	(2)	32	.....

[1] A minus sign (−) denotes decrease. Per cent not shown when more than 1,000.

[2] Not reported in 1910.

LOUISIANA

APPROXIMATE LOCATION AND EXTENT OF IRRIGATED LAND.



CLIMATIC CONDITIONS.

In Louisiana the normal rainfall is sufficient for the growing of general farm crops, the average annual rainfall for the state being about 54 inches. The rainfall in 1919 was far above the normal, the average for the state being about 69 inches.

Rice is the only crop irrigated, and some rice is grown without irrigation, although the area of rice grown in this way is small.

WATER SUPPLY FOR IRRIGATION.

The larger part of the land irrigated for rice growing in Louisiana consists of level prairie land located in the southwestern part of the state, near the coast of the Gulf of Mexico. In this section the principal sources of water supply are the streams flowing to the Gulf and wells, from both of which the water is pumped. The streams are but little, if any, above the level of the Gulf, and water is pumped to the level lands lying between the streams. Usually the supply of fresh water is sufficient for the land irrigated, but at times the draft upon the streams is so heavy as to exhaust the supply of fresh water and salt water backs into the streams from the Gulf. At such times it is necessary to stop pumping until the fresh water coming from higher levels forces the salt water out of the streams, and occasionally crops suffer from shortage of water or from the use of salt water. Usually the pumping plants and canals are operated by commercial companies furnishing water to farmers for some form of crop rental.

About one-third of the area of irrigated land in the state is supplied with water pumped from wells. Usually these are owned by individual farmers, who supply water to their own farms only.

A small part of the rice is grown on lands along Mississippi River, which lie below the level of the water in the river at ordinary stages. Water for these lands is taken from the river by siphons passing over the levees. When the water is too low to siphon over the levees, it is pumped from the river to small basins made on the water side of the levees, high enough to permit of its being siphoned over.

The area of land available for rice growing and the water supply are ample to permit of a large extension of the area devoted to this crop. Other conditions limit the area.

FARMS AND ACREAGE IRRIGATED.

TABLE 2.—NUMBER OF FARMS AND ACREAGE IRRIGATED: 1890 TO 1920.

CENSUS YEAR.	FARMS IRRIGATED.			AREA IRRIGATED.				
	Number.	Per cent of increase.[1]	Per cent of all farms	Acres.	Per cent of increase.	Per cent of total land area.	Per cent of land in farms.	Per cent of improved land in farms.
1920	6,471	140.6	4.8	454,882	19.6	1.6	4.5	8.1
1910	2,690	−40.6	2.2	380,200	85.5	1.3	3.6	7.2
1900	4,531		3.9	204,685	159.0	0.7	1.8	4.3
1890	(2)			84,377		0.3	0.9	2.2

[1] A minus sign (−) denotes decrease. [2] Not reported.

TABLE 3.—ACREAGE, CLASSIFIED BY DATE OF BEGINNING OF ENTERPRISES SUPPLYING WATER FOR IRRIGATION.

DATE OF BEGINNING.	Number of enterprises.	Area included in enterprises, 1920 (acres).	AREA IRRIGATED IN 1919.		Area enterprises were capable of irrigating in 1920 (acres).
			Acres.	Per cent of acreage in enterprises.	
Total	1,373	851,211	454,882	53.4	728,742
1870-1879	1	160	40	25.0	160
1880-1889	6	4,018	2,050	51.0	2,260
1890-1899	37	320,490	151,983	47.4	294,465
1900-1904	112	92,361	50,265	54.4	75,862
1905-1909	137	68,605	34,651	50.5	47,224
1910-1914	294	168,290	59,919	35.6	92,539
1915-1919	638	212,410	126,831	59.7	177,238
Not reported	148	44,967	29,165	64.9	38,994

TABLE 4.—ACREAGE, CLASSIFIED BY SOURCE OF WATER SUPPLY: 1919 AND 1909.

CLASS.	AREA IRRIGATED (ACRES).				Area enterprises were capable of irrigating in 1920 (acres).	Area included in enterprises, 1920 (acres).
	1919	1909	Increase.[1]			
			Amount.	Per cent.		
Total	454,882	380,200	74,682	19.6	728,742	851,211
Streams, gravity	10,226	1,012	9,214	910.5	12,393	15,225
Streams, pumped	248,396	211,959	36,347	17.1	437,475	488,611
Streams, pumped and gravity	12,620		12,620		27,675	30,500
Wells, pumped	154,304	109,547	44,757	40.9	209,698	258,680
Wells, flowing	196		196		292	292
Wells, flowing and pumped	1,075	(2)	1,075		1,325	2,175
Lakes, gravity	3,225	1,247	1,878	139.4	4,616	5,095
Lakes, pumped	6,966	5,202	1,764	33.9	10,140	11,100
Stored storm water	84	7,054	−6,970	−98.8	229	229
Streams, gravity, and pumped wells	10,045	(2)	10,045		12,994	25,984
Other mixed	7,835	44,079	−36,244	−82.2	11,905	13,020

[1] A minus sign (−) denotes decrease. [2] Not included in classification in 1910.

ACREAGE, BY CHARACTER OF ENTERPRISE.

Neither the Federal Carey Act (act of Aug. 18, 1894) nor the reclamation act (act of June 17, 1902) applies to the state of Louisiana, and the state has no laws relating to organization for supplying water for irrigation.

The commercial enterprises, reported in Table 5, are usually corporations that put in pumping plants and canals to supply water to farmers for crop rentals. Many of them own lands also and supply both land and water for a share of the crop.

The cooperative enterprises are unimportant, since they supply water to less than 3 per cent of the land.

TABLE 5.—ACREAGE, CLASSIFIED BY CHARACTER OF ENTERPRISE: 1920 AND 1910.

ITEM AND CLASS.	CENSUS OF—		INCREASE.	
	1920	1910	Amount.	Per cent.
ACREAGE IRRIGATED.				
Total	454,882	380,200	74,682	19.6
Individual and partnership	299,673	222,049	37,624	16.9
Cooperative	10,635	.....	10,635	.....
Commercial	184,574	158,151	26,423	16.7
ACREAGE ENTERPRISES WERE CAPABLE OF IRRIGATING.				
Total	728,742	553,220	175,522	31.7
Individual and partnership	375,917	267,620	108,297	40.5
Cooperative	20,325	.....	20,325	.....
Commercial	332,500	285,600	46,900	16.4
ACREAGE INCLUDED IN ENTERPRISES.				
Total	851,211	581,965	269,246	46.3
Individual and partnership	488,126	283,965	184,161	64.9
Cooperative	20,685	.....	20,685	.....
Commercial	362,400	298,000	64,400	21.6

ACREAGE, BY DRAINAGE BASIN.

For no previous census have the results for Louisiana been tabulated by drainage basins; consequently no comparative figures can be included in Table 6.

TABLE 6.—ACREAGE IRRIGATED, CLASSIFIED BY DRAINAGE BASIN: 1919.

DRAINAGE BASIN.	Area irrigated in 1919 (acres).	Area included in enterprises, 1920 (acres).	Area enterprises were capable of irrigating in 1920 (acres).
Total	454,882	851,211	728,742
Sabine River and tributaries	13,035	20,850	20,850
Calcasieu Lake, River, and tributaries	54,318	169,192	137,178
Mermentau River and tributaries	258,840	458,493	382,755
Vermilion River and tributaries	74,094	138,086	126,049
Atchafalaya River and tributaries	23,342	31,920	30,895
Mississippi River direct	17,416	24,070	23,755
Tributaries of Mississippi River	2,853	5,358	3,473
Other Gulf streams	1,044	3,291	3,197

CAPITAL INVESTED AND COST OF OPERATION AND MAINTENANCE.

TABLE 7.—CAPITAL INVESTED IN IRRIGATION ENTERPRISES: 1900 TO 1920.

CENSUS YEAR.	Amount.	Per cent of increase.	AVERAGE PER ACRE.	
			Amount.	Per cent of increase.[1]
1920	$14,063,181	105.0	$19.30	55.6
1910	6,859,166	171.2	12.40	−1.1
1900	2,529,319	.....	12.54	.....

[1] A minus sign (−) denotes decrease.

TABLE 8.—CAPITAL INVESTED, CLASSIFIED BY DATE OF BEGINNING.

DATE OF BEGINNING.	Amount.	Per cent of total.	Average per acre.
Total	$14,063,181	100.0	$19.30
1870-1879	1,000	(1)	6.25
1880-1889	24,800	0.2	10.97
1890-1899	5,487,222	39.0	18.63
1900-1904	1,347,322	9.6	17.76
1905-1909	1,171,166	8.3	24.80
1910-1914	1,502,682	10.7	16.24
1915-1919	3,848,822	27.4	21.72
Not reported	680,167	4.8	17.44

[1] Less than one-tenth of 1 per cent.

TABLE 9.—CAPITAL INVESTED, 1920, AND COST OF OPERATION AND MAINTENANCE, 1919, CLASSIFIED BY SOURCE OF WATER SUPPLY.

[When water is pumped, cost of operation and maintenance includes cost of fuel and attendance.]

CLASS.	CAPITAL INVESTED, 1920.			OPERATION AND MAINTENANCE, 1919.	
	Amount.	Per cent of total.	Average per acre.	Area for which cost is reported (acres).	Average cost per acre.[1]
Total	$14,063,181	100.0	$19.30	431,413	$7.01
Streams, gravity	318,934	2.3	25.74	9,937	3.69
Streams, pumped	7,338,954	52.2	16.78	242,282	7.76
Streams, pumped and gravity	172,000	1.2	6.21	12,550	6.06
Wells, pumped	5,366,948	38.2	25.59	140,659	5.95
Wells, flowing	5,000	(2)	17.12	189	2.25
Wells, flowing and pumped	22,500	0.2	16.98	1,075	4.19
Lakes, pumped	356,960	2.5	35.20	6,716	9.17
Lakes, gravity	112,740	0.8	24.42	2,480	3.21
Stored storm water	1,500	(2)	6.55	10	5.00
Streams, gravity, and pumped wells	247,595	1.8	19.05	9,115	10.69
Other mixed	120,050	0.9	10.08	6,400	3.67

[1] Based on area irrigated in 1919. [2] Less than one-tenth of 1 per cent.

TABLE 10.—CAPITAL INVESTED, 1920, CLASSIFIED BY DRAINAGE BASIN.

DRAINAGE BASIN.	1920
Total	$14,063,181
Sabine River and tributaries	328,000
Calcasieu Lake, River, and tributaries	1,816,380
Mermentau River and tributaries	7,713,797
Vermilion River and tributaries	3,355,327
Atchafalaya River and tributaries	407,956
Mississippi River direct	302,385
Tributaries of Mississippi River	28,686
Other Gulf streams	110,650

TABLE 11.—CAPITAL INVESTED, 1920, AND COST OF OPERATION AND MAINTENANCE, 1919, CLASSIFIED BY CHARACTER OF ENTERPRISE.

[When water is pumped, cost of operation and maintenance includes cost of fuel and attendance.]

CLASS.	CAPITAL INVESTED, 1920.		OPERATION AND MAINTENANCE, 1919.	
	Amount.	Per cent of total.	Area for which cost is reported (acres).	Average cost per acre.[1]
Total	$14,063,181	100.0	431,413	$7.01
Individual and partnership	7,943,252	56.5	236,501	6.34
Cooperative	161,658	1.1	10,635	4.81
Commercial	5,958,271	42.4	184,274	7.35

[1] Based on area irrigated in 1919.

DRAINAGE OF IRRIGATED LAND.

TABLE 12.—ACREAGE WITHIN IRRIGATION ENTERPRISES FOR WHICH DRAINS HAVE BEEN INSTALLED AND ADDITIONAL ACREAGE IN NEED OF DRAINAGE: 1920.

Number of enterprises reporting land drained or needing drainage	406
Acreage included in enterprises reporting land drained or needing drainage	283,476
Acreage for which drains have been installed	167,138
Additional acreage needing drainage	21,262
Per cent that acreage for which drains have been installed is of total acreage included in enterprises reporting drainage	59.0
Per cent that acreage for which drains have been installed is of total acreage included in irrigation enterprises in the state	19.6
Per cent that acreage for which drains have been installed plus that needing drainage is of total acreage included in irrigation enterprises in the state	22.1

The acreages reported in Table 12 relate to lands within the boundaries of irrigation projects, and do not include lands within the vicinity of these projects. "Additional acreage needing drainage" includes all lands so reported by the owners of the enterprises, and includes lands producing partial crops as well as those wholly unproductive.

QUANTITY OF WATER USED.

The quantity of water used in 1919 was reported on only part of the irrigation schedules, and the figures given vary greatly. In order that proper values may be assigned to the figures given, those representing measurements and those representing estimates are reported separately in Table 13. While the data are incomplete, the reports represent sufficient acreages to serve as bases for reliable averages.

TABLE 13.—QUANTITY OF WATER USED IN 1919.

ITEM.	Total.	Measured.	Not measured.
Average volume of water entering canals ... second-feet	5,042	34	5,008
Area irrigated in 1919 ... acres	29,782	780	29,002
Average number of acres per second-foot	4	23	4
Total quantity of water entering canals ... acre-feet	198,942	7,022	191,920
Area irrigated in 1919 ... acres	65,424	780	64,644
Average quantity per acre ... acre-feet	3.0	9.0	2.9
Total quantity of water delivered ... acre-feet	16,497	.....	16,497
Area irrigated in 1919 ... acres	7,994	.....	7,944
Average quantity per acre ... acre-feet	2.1	.....	2.1

IRRIGATION WORKS.

TABLE 14.—IRRIGATION WORKS, CLASSIFIED BY DATE OF BEGINNING.

DATE OF BEGINNING.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.	
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).
Total	419	63	1,298	11,889	1,584	3,908	1,659	74	7,632
1870-1879	.....	1	.....	.....	.....	.....	.....	1	400
1880-1889	.....	.....	7	33	9	1	1	1	60
1890-1899	11	3	37	3,008	411	1,493	1,011	1	6
1900-1904	68	2	100	1,515	166	336	113	3	85
1905-1909	57	2	146	675	131	363	92	4	30
1910-1914	77	14	283	2,633	248	495	124	17	2,275
1915-1919	198	38	648	3,767	535	1,145	290	38	4,776
Not reported	8	3	77	258	84	75	28	9	.....

DATE OF BEGINNING.	Pipe lines, length (miles).	FLOWING WELLS.		PUMPED WELLS.		PUMPING PLANTS.			
								Pumps.	
		Number.	Capacity (gallons per minute).	Number.	Capacity (gallons per minute).	Number.	Engine capacity (horse-power).	Number.	Capacity (gallons per minute).
Total	50.1	9	6,235	812	1,607,637	1,250	85,628	1,941	4,968,686
1870-1879	.....	.....	.....	.....	.....	.....	.....	.....	.....
1880-1889	.....	.....	.....	1	7,000	5	280	5	21,000
1890-1899	0.2	.....	.....	9	96,200	27	18,390	85	2,124,715
1900-1904	2.9	.....	.....	64	132,850	90	6,735	146	477,200
1905-1909	1.0	.....	.....	117	199,100	128	7,985	193	352,250
1910-1914	0.9	2	2,500	179	338,550	258	17,052	494	666,808
1915-1919	44.9	5	3,330	339	688,320	576	29,135	790	1,178,993
Not reported	6.2	2	425	103	145,617	146	6,031	228	208,720

TABLE 15.—IRRIGATION WORKS, CLASSIFIED BY CHARACTER OF ENTERPRISE: 1920.

CLASS.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.	
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).
Total	419	63	1,298	11,889	1,584	3,908	1,659	74	7,632
Individual and partnership	419	62	1,264	8,773	1,110	2,383	522	74	7,632
Cooperative			6	35	19	35	33		
Commercial		1	28	3,081	455	1,490	1,104		

CLASS.	Pipe lines, length (miles).	FLOWING WELLS.		PUMPED WELLS.		PUMPING PLANTS.			
		Number.	Capacity (gallons per minute).	Number.	Capacity (gallons per minute).	Number.	Engine capacity (horse-power).	Pumps.	
								Number.	Capacity (gallons per minute).
Total	50.1	9	6,255	812	1,607,637	1,250	85,628	1,941	4,968,686
Individual and partnership	50.1	9	6,255	805	1,588,837	1,212	62,658	1,855	2,611,886
Cooperative				2	7,500	10	1,205	12	106,500
Commercial				5	11,300	28	21,765	74	2,250,300

TABLE 16.—IRRIGATION WORKS, CLASSIFIED BY DRAINAGE BASIN: 1920.

DRAINAGE BASIN.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.	
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).
Total	419	63	1,298	11,889	1,584	3,908	1,659	74	7,632
Sabine River and tributaries		2	1	111	40	25	25	1	
Calcasieu Lake, River, and tributaries	4	4	84	1,700	159	92	168	3	490
Mermentau River and tributaries	14	47	771	6,067	863	1,032	568	61	5,058
Vermilion River and tributaries			68	1,699	202	1,071	667	1	
Atchafalaya River and tributaries	17	1	91	728	109	62	42	1	2,041
Mississippi River direct	340		241	869	174	1,553	182	6	43
Tributaries of Mississippi River	39		37	707	29	58	2		
Other Gulf streams	5	9	5	8	8	15	5	1	

DRAINAGE BASIN.	Pipe lines, length (miles).	FLOWING WELLS.		PUMPED WELLS.		PUMPING PLANTS.				
		Number.	Capacity (gallons per minute).	Number.	Capacity (gallons per minute).	Number.	Engine capacity (horse-power).	Pumps.		Average lift (feet).
								Number.	Capacity (gallons per minute).	
Total	50.1	9	6,255	812	1,607,637	1,250	85,628	1,941	4,968,686	32
Sabine River and tributaries				2	27,500	3	1,050	6	54,500	41
Calcasieu Lake, River, and tributaries	0.4	5	5,800	92	243,400	128	13,933	161	937,294	30
Mermentau River and tributaries	0.1			594	1,209,750	800	56,300	1,293	2,927,213	35
Vermilion River and tributaries		2	425	82	67,007	136	7,052	222	694,044	29
Atchafalaya River and tributaries	42.2	1		42	59,980	105	4,070	171	230,675	19
Mississippi River direct	6.2					67	2,846	74	102,500	12
Tributaries of Mississippi River	0.8					5	285	5	22,300	15
Other Gulf streams	0.4	1	30			6	92	9	160	8

PARISH TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910.

[A minus sign (—) denotes decrease. Per cent not shown when base is less than 100.]

		THE STATE.	Acadia.	Allen.[1]	Ascension.	Assumption.	Calcasieu.[2]	Cameron.
1	Number of all farms in 1920	145,463	3,998	753	1,635	438	922	620
2	Number of farms reporting irrigation for rice growing in 1919	6,471	1,678	165	74	13	377	192
3	Per cent of all farms	4.4	54.3	21.9	4.5	3.0	40.9	31.0
4	Number of farms reporting irrigation for rice growing in 1909	2,690	1,002	.....	16	.....	815	21
5	Per cent of increase, 1909-1919	140.6	67.5	.....	.....	.....	.....	.....
	LAND AND FARM AREA.							
6	Approximate land area ... acres	29,061,760	414,080	424,320	148,240	309,760	695,040	960,640
7	All land in farms ... acres	10,019,522	322,661	94,659	108,982	79,282	145,391	132,513
8	Improved land in farms ... acres	5,620,226	278,909	42,328	72,536	53,856	104,197	33,264
9	Area irrigated for rice growing in 1919 ... acres	454,882	154,719	15,865	2,980	1,130	47,056	725
10	Per cent of improved land in farms	8.1	48.3	37.3	2.9	2.1	45.2	2.2
11	Area irrigated for rice growing in 1909 ... acres	360,209	167,466	.....	4,237	.....	131,208	7,228
12	Per cent of increase, 1909-1919	19.6	25.4	.....	−50.9	.....	.....	−90.0
13	Area enterprises were capable of irrigating in 1920 ... acres	728,742	146,218	28,500	2,635	1,530	121,612	4,290
14	Area enterprises were capable of irrigating in 1910 ... acres	553,220	167,969	.....	4,233	.....	191,752	11,190
15	Per cent of increase, 1910-1920	31.7	12.9	.....	−37.8	.....	.....	−62.2
16	Area included in enterprises in 1920 ... acres	851,211	208,799	30,705	2,635	1,530	147,115	4,310
17	Area included in enterprises in 1910 ... acres	581,965	171,917	.....	4,233	.....	208,404	12,280
18	Per cent of increase, 1910-1920	46.3	21.5	.....	−37.8	.....	.....	−64.9
	IRRIGATION WORKS.							
	Independent enterprises:							
19	Number, 1920	1,373	328	32	6	2	56	5
20	Number, 1910	1,237	272	.....	7	.....	355	8
	Main ditches:							
21	Number, 1920	1,298	340	37	8	1	38	5
22	Number, 1910	515	110	.....	4	.....	101	4
23	Length, 1920 ... miles	1,584	428	36	7	1	160	5
24	Length, 1910 ... miles	729	220	.....	3	.....	243	14
25	Capacity, 1920 ... second-feet	11,889	1,934	36	16	4	1,560	8
26	Capacity, 1910 ... second-feet	(3)	.....	.....	.....	.....	.....	.....
	Laterals:							
27	Number, 1920	3,908	604	19	1	.....	77	12
28	Number, 1910	180	82	.....	.....	.....	81	3
29	Length, 1920 ... miles	1,659	390	41	1	.....	145	5
30	Length, 1910 ... miles	439	187	.....	.....	.....	194	4
	Reservoirs:							
31	Number, 1920	74	11	.....	.....	.....	3	.....
32	Number, 1910	104	.....	.....	1	.....	9	1
33	Capacity, 1920 ... acre-feet	7,632	2,170	.....	.....	.....	460	.....
34	Capacity, 1910 ... acre-feet	19,482	.....	.....	2	.....	4,871	1,860
	Flowing wells:							
35	Number, 1920	9	.....	.....	.....	.....	5	.....
36	Number, 1910	(3)	.....	.....	.....	.....	.....	.....
37	Capacity, 1920 ... gallons per minute	6,255	.....	.....	.....	.....	5,800	.....
38	Capacity, 1910 ... gallons per minute	(3)	.....	.....	.....	.....	.....	.....
	Pumped wells:							
39	Number, 1920	812	280	32	.....	.....	28	1
40	Number, 1910	606	180	.....	.....	.....	223	5
41	Capacity, 1920 ... gallons per minute	1,607,637	428,300	89,700	.....	.....	196,800	2,600
42	Capacity, 1910 ... gallons per minute	1,108,236	313,727	.....	.....	.....	585,470	12,000
	Pumping plants:							
43	Number, 1920	1,250	347	45	7	2	57	5
44	Number, 1910	1,097	283	.....	7	.....	262	8
45	Engine capacity, 1920 ... horsepower	85,628	27,279	5,580	375	155	7,947	137
46	Engine capacity, 1910 ... horsepower	57,428	16,907	.....	473	.....	22,014	643
47	Pump capacity, 1920 ... gallons per minute	4,968,686	1,509,335	161,100	9,500	11,000	745,200	93,094
48	Pump capacity, 1910 ... gallons per minute	5,064,173	1,465,612	.....	31,213	.....	2,040,052	144,190
49	Average lift, 1920 ... feet	32	37	36	15	22	21	17
	CAPITAL INVESTED.							
50	Capital invested to Jan. 1, 1920 ... dollars	14,063,181	3,732,048	309,450	44,100	12,300	1,667,236	59,570
51	Capital invested to July 1, 1910 ... dollars	6,859,166	2,098,121	.....	21,025	.....	2,904,063	129,320
52	Per cent of increase, 1910-1920	105.0	77.9	.....	109.8	.....	.....	−53.9
53	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	19.30	26.04	10.82	16.74	8.17	13.71	14.08
54	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	12.40	12.50	.....	4.97	.....	18.14	11.57
	ESTIMATED FINAL COST.							
55	Estimated final cost of existing enterprises in 1920 ... dollars	14,264,178	3,795,013	310,950	44,100	12,300	1,669,936	59,570
56	Estimated final cost of existing enterprises in 1910 ... dollars	6,914,466	2,098,121	.....	21,025	.....	2,959,063	129,320
57	Per cent of increase, 1910-1920	106.3	80.9	.....	109.8	.....	.....	−53.9
58	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	16.76	18.18	10.13	16.74	8.17	11.35	13.82
59	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	11.88	12.20	.....	4.97	.....	14.20	10.53

[1] Formed from part of Calcasieu Parish in 1913.
[2] Parts taken to form Allen, Beauregard, and Jefferson Davis Parishes in 1913.
[3] Not reported in 1910.

PARISH TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910—Continued.

[A minus sign (−) denotes decrease. Per cent not shown when base is less than 100.]

		Evangeline.[1]	Iberia.	Iberville.	Jefferson Davis.[2]	Lafayette.	Plaquemines.	Pointe Coupee.	St. Charles.
1	Number of all farms in 1920	3,550	1,481	669	1,163	3,048	571	3,303	258
2	Number of farms reporting irrigation for rice growing in 1919	601	197	35	776	104	159	2	34
3	Per cent of all farms	16.9	13.3	5.2	66.7	3.4	27.8	0.1	13.2
4	Number of farms reporting irrigation for rice growing in 1909		29	13		23	150	10	39
5	Per cent of increase, 1909–1919						6.0		
	LAND AND FARM AREA.								
6	Approximate land area ... acres	616,960	376,960	373,760	466,560	178,560	644,480	368,640	188,800
7	All land in farms ... acres	179,229	119,646	113,802	264,063	141,154	69,348	194,964	49,908
8	Improved land in farms ... acres	149,359	95,037	72,434	231,970	128,526	22,419	120,536	24,740
9	Area irrigated for rice growing in 1919 ... acres	12,058	11,891	2,275	99,534	4,485	4,813	500	1,086
10	Per cent of improved land in farms	8.5	12.4	3.1	42.9	3.5	21.5	0.4	4.4
11	Area irrigated for rice growing in 1909 ... acres		3,865	7,922		2,212	6,375	3,205	4,878
12	Per cent of increase, 1909–1919		205.3	−71.3		102.8	−24.5	−84.4	−77.7
13	Area enterprises were capable of irrigating in 1920 ... acres	17,502	11,505	2,475	139,730	5,625	7,338	1,200	1,500
14	Area enterprises were capable of irrigating in 1910 ... acres		4,090	7,845		2,562	10,481	3,830	5,586
15	Per cent of increase, 1910–1920		181.3	−68.5		119.6	−30.0	−68.7	−73.1
16	Area included in enterprises in 1920 ... acres	18,812	12,095	2,540	191,889	5,725	9,473	1,200	1,500
17	Area included in enterprises in 1910 ... acres		4,090	7,845		3,402	12,516	3,830	5,706
18	Per cent of increase, 1910–1920		194.3	−67.6		68.3	−24.3	−68.7	−73.7
	IRRIGATION WORKS.								
	Independent enterprises:								
19	Number, 1920	83	43	7	209	14	157	1	6
20	Number, 1910		16	20		15	109	7	25
	Main ditches:								
21	Number, 1920	59	37	1	231	19	231		1
22	Number, 1910		13	14		3	84	4	19
23	Length, 1920 ... miles	35	42		303	12	150		
24	Length, 1910 ... miles		5	5		4	23	3	9
25	Capacity, 1920 ... second-feet	127	381	9	1,850	53	726		12
26	Capacity, 1910 ... second-feet								
	Laterals:								
27	Number, 1920	70	35		184	32	1,551		
28	Number, 1910								
29	Length, 1920 ... miles	21	25		110	12	159		
30	Length, 1910 ... miles								
	Reservoirs:								
31	Number, 1920	10	1	2	4				
32	Number, 1910			2				5	
33	Capacity, 1920 ... acre-feet	255	2,041	43	55				
34	Capacity, 1910 ... acre-feet			2				30	
	Flowing wells:								
35	Number, 1920		1						
36	Number, 1910								
37	Capacity, 1920 ... gallons per minute								
38	Capacity, 1910 ... gallons per minute								
	Pumped wells:								
39	Number, 1920	26	35		259	15			
40	Number, 1910					15			
41	Capacity, 1920 ... gallons per minute	59,150	40,580		631,700	28,900			
42	Capacity, 1910 ... gallons per minute					29,074			
	Pumping plants:								
43	Number, 1920	57	46	9	282	14	14	2	6
44	Number, 1910		16	22		15	5	8	20
45	Engine capacity, 1920 ... horsepower	2,451	1,826	435	21,565	880	169	225	230
46	Engine capacity, 1910 ... horsepower		775	1,190		547	102	394	714
47	Pump capacity, 1920 ... gallons per minute	71,076	99,275	25,900	1,093,050	28,900	3,300	21,000	5,500
48	Pump capacity, 1910 ... gallons per minute		41,962	71,565		29,074	6,135	34,450	56,562
49	Average lift, 1920 ... feet	34	19	13	38	36	5	25	10
	CAPITAL INVESTED.								
50	Capital invested to Jan. 1, 1920 ... dollars	487,977	201,626	25,200	2,868,348	144,000	66,628	12,960	16,400
51	Capital invested to July 1, 1910 ... dollars		29,971	53,638		39,112	26,891	15,483	23,872
52	Per cent of increase, 1910–1920		572.7	−53.0		268.2	147.8	−16.3	−31.3
53	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	27.88	17.53	10.18	20.53	25.60	9.08	10.80	10.93
54	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars		7.33	6.84		15.27	2.57	4.04	4.27
	ESTIMATED FINAL COST.								
55	Estimated final cost of existing enterprises in 1920 ... dollars	521,652	201,626	25,200	2,902,520	144,000	66,763	12,960	16,400
56	Estimated final cost of existing enterprises in 1910 ... dollars		29,971	53,638		39,112	26,891	15,483	23,872
57	Per cent of increase, 1910–1920		572.7	−53.0		268.2	148.3	−16.3	−31.3
58	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	27.73	16.75	9.92	15.13	25.15	7.05	10.80	10.93
59	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars		7.33	6.84		11.50	2.15	4.04	4.18

[1] Formed from part of St. Landry Parish in 1911.

[2] Formed from part of Calcasieu Parish in 1913.

PARISH TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910—Continued.

[A minus sign (−) denotes decrease. Per cent not shown when base is less than 100 or when per cent is more than 1,000.]

		St. James.	St. John the Baptist.	St. Landry.[1]	St. Martin.	St. Mary.	Vermilion.	All other parishes.
1	Number of all farms in 1920	289	227	6,575	2,008	416	2,958	101,504
2	Number of farms reporting irrigation for rice growing in 1919	86	52	198	203	28	1,461	36
3	Per cent of all farms	29.8	22.9	3.0	10.1	6.8	49.4	(2)
4	Number of farms reporting irrigation for rice growing in 1909	59	42	119			272	80
5	Per cent of increase, 1909-1919						437.1	
	LAND AND FARM AREA.							
6	Approximate land area ... acres	192,560	147,840	435,840	336,000	494,480	776,329	20,593,920
7	All land in farms ... acres	54,324	31,610	302,175	153,672	122,944	258,103	7,149,791
8	Improved land in farms ... acres	39,747	21,813	228,315	81,270	79,774	201,001	3,561,471
9	Area irrigated for rice growing in 1919 ... acres	5,221	3,214	10,258	6,267	3,046	87,830	994
10	Per cent of improved land in farms	13.1	14.7	4.5	7.7	4.3	43.7	(2)
11	Area irrigated for rice growing in 1909 ... acres	8,140	6,124	9,387	526	525	52,196	24,718
12	Per cent of increase, 1909-1919	−35.9	−47.5			479.0	68.3	−96.0
13	Area enterprises were capable of irrigating in 1920 ... acres	6,109	4,497	21,022	10,475	4,340	147,448	3,147
14	Area enterprises were capable of irrigating in 1910 ... acres	8,215	6,292	12,736	520	725	79,866	35,418
15	Per cent of increase, 1910-1920	−25.7	−28.5			498.6	84.6	−91.1
16	Area included in enterprises in 1920 ... acres	6,109	4,497	23,611	10,575	4,340	160,576	3,241
17	Area included in enterprises in 1910 ... acres	8,215	6,292	12,916	520	725	81,581	37,493
18	Per cent of increase, 1910-1920	−25.7	−28.5			498.6	96.8	−91.4
	IRRIGATION WORKS.							
	Independent enterprises:							
19	Number, 1920	21	11	116	32	13	165	6
20	Number, 1910	36	24	157			93	90
	Main ditches:							
21	Number, 1920	28	9	122	29	13	85	4
22	Number, 1910	28	21	28		2	38	42
23	Length, 1920 ... miles	35	9	70	46	11	225	9
24	Length, 1910 ... miles	24	16	11		1	95	53
25	Capacity, 1920 ... second-feet	101	791	2,309	232	28	1,767	15
26	Capacity, 1910 ... second-feet							
	Laterals:							
27	Number, 1920	71	3	123	12	5	1,109	
28	Number, 1910						14	
29	Length, 1920 ... miles	25	4	22	2	5	692	
30	Length, 1910 ... miles						54	
	Reservoirs:							
31	Number, 1920		4	38				1
32	Number, 1910	4	3	69				10
33	Capacity, 1920 ... acre-feet			2,608				
34	Capacity, 1910 ... acre-feet	3	12	12,736				326
	Flowing wells:							
35	Number, 1920						2	1
36	Number, 1910							
37	Capacity, 1920 ... gallons per minute						425	30
38	Capacity, 1910 ... gallons per minute							
	Pumped wells:							
39	Number, 1920			28	4		104	
40	Number, 1910			10	1		65	7
41	Capacity, 1920 ... gallons per minute			51,600	15,000		155,307	
42	Capacity, 1910 ... gallons per minute			17,900	350		130,910	18,825
	Pumping plants:							
43	Number, 1920	21	11	87	32	15	185	6
44	Number, 1910	28	20	40	3	2	92	76
45	Engine capacity, 1920 ... horsepower	990	572	4,320	1,236	470	8,664	72
46	Engine capacity, 1910 ... horsepower	958	742	1,003	74	95	5,506	5,289
47	Pump capacity, 1920 ... gallons per minute	44,800	800	124,200	96,100	12,900	809,502	3,160
48	Pump capacity, 1910 ... gallons per minute	57,301	66,135	76,230	5,720	5,250	528,719	403,963
49	Average lift, 1920 ... feet	13	14	56	29	15	19	9
	CAPITAL INVESTED.							
50	Capital invested to Jan. 1, 1920 ... dollars	52,132	68,850	536,222	119,310	55,650	3,477,876	110,498
51	Capital invested to July 1, 1910 ... dollars	40,895	37,686	73,065	6,198	2,250	1,075,561	282,015
52	Per cent of increase, 1910-1920	27.5	82.7				223.4	−60.8
53	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	8.54	15.31	25.22	11.39	12.82	23.58	35.11
54	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	4.98	5.99	5.73	11.92	3.10	13.47	7.96
	ESTIMATED FINAL COST.							
55	Estimated final cost of existing enterprises in 1920 ... dollars	52,132	68,850	548,022	120,810	55,650	3,479,026	156,498
56	Estimated final cost of existing enterprises in 1910 ... dollars	40,895	37,686	73,065	6,198	2,250	1,075,561	282,015
57	Per cent of increase, 1910-1920	27.5	82.7				223.5	−44.5
58	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	8.54	15.31	23.21	11.42	12.82	21.67	48.29
59	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	4.98	5.99	5.66	11.92	3.10	13.18	7.52

[1] Part taken to form Evangeline Parish in 1911.

[2] Less than one-tenth of 1 per cent.

MONTANA.

INTRODUCTION.

The following pages present the statistics of irrigation for the state of Montana collected at the census of 1920. Statistics of acreage irrigated, of acreage, yield, and value of crops grown on irrigated land, and of cost of operation and maintenance relate to the year 1919; other items relate to the year 1920. Throughout the report figures for the census of 1910 are given for purposes of comparison; and, for the purpose of showing the historical development of irrigation, items which have been reported in censuses previous to 1910 are presented.

Statistics of number of farms irrigated and of acreage, yield, and value of crops grown on irrigated land were collected in the general census of agriculture. All other statistics were obtained in a special canvass of irrigation enterprises.

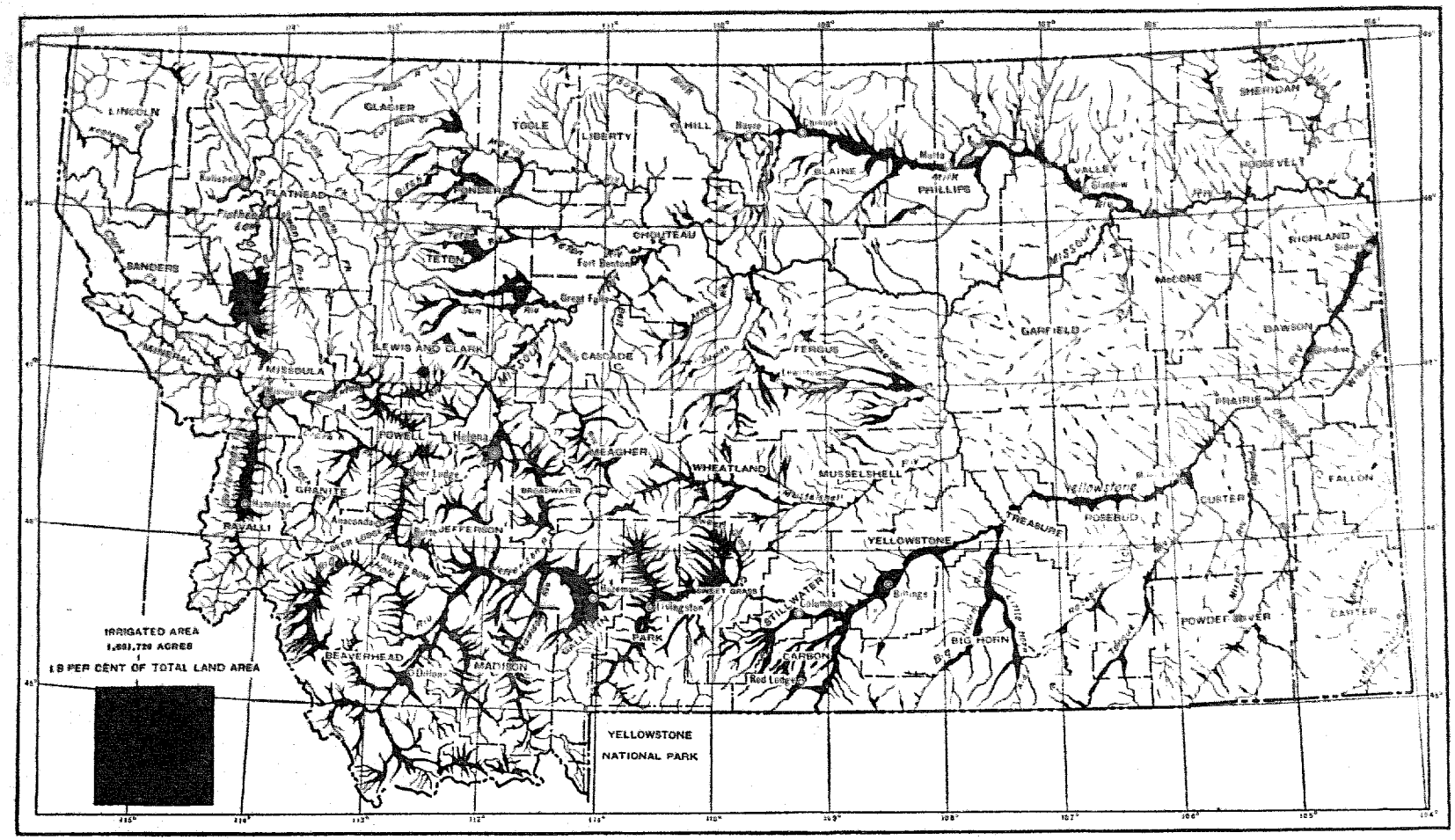
TABLE 1.—SUMMARY FOR THE STATE: 1920 AND 1910.

ITEM.	CENSUS OF—		INCREASE.[1]	
	1920	1910	Amount.	Per cent.
Number of all farms	57,677	26,214	31,463	120.0
Approximate land area of the state ... acres	93,523,840	93,568,640	[2] −44,800	(3)
All land in farms ... acres	35,070,656	13,545,603	21,525,053	158.9
Improved land in farms ... acres	11,007,278	3,640,309	7,366,969	202.4
Number of farms irrigated	10,807	8,970	1,837	20.5
Area irrigated ... acres	1,681,729	1,679,084	2,645	0.2
Area enterprises were capable of irrigating ... acres	2,753,498	2,205,155	548,343	24.9
Area included in enterprises ... acres	4,329,148	3,515,602	813,546	23.1
Per cent irrigated:				
Number of all farms	18.7	34.2	−15.5	.....
Approximate land area of the state	1.8	1.8	.....	.....
Land in farms	4.8	12.4	−7.6	.....
Improved land in farms	15.3	46.1	−30.8	.....
Excess of area enterprises were capable of irrigating over area irrigated ... acres	1,071,769	526,071	545,698	103.7
Excess of area included in enterprises over area irrigated ... acres	2,647,419	1,836,518	810,901	44.2
Area of irrigated land reported as available for settlement ... acres	207,530	(4)	.....	.....
Capital invested	$52,143,363	$22,970,958	$29,172,405	127.0
Average per acre enterprises were capable of irrigating	$18.94	$10.42	$8.52	81.8
Estimated final cost of existing enterprises	$70,079,028	$32,382,077	$37,696,951	116.4
Average per acre included in enterprises	$16.19	$9.21	$6.98	75.8
Average cost of operation and maintenance per acre	$1.26	$0.89	$0.37	41.6
IRRIGATION WORKS.				
Number of enterprises	6,035	5,534	501	9.1
Number of main ditches	8,819	6,673	2,146	32.2
Length of main ditches ... miles	16,411	12,990	3,421	26.3
Capacity of main ditches ... second-feet	94,429	83,849	10,580	12.6
Number of lateral ditches	10,680	8,307	2,373	28.6
Length of lateral ditches ... miles	6,085	5,944	141	2.4
Number of reservoirs	468	827	−359	−43.4
Capacity of reservoirs ... acre-feet	1,571,720	580,261	991,459	170.9
Number of flowing wells	41	15	26	173.3
Capacity of flowing wells ... gallons per minute	4,608	22,185	−17,577	−79.2
Number of pumped wells	22	10	12	120.0
Capacity of pumped wells ... gallons per minute	11,085	5,263	5,822	110.6
Number of pumping plants	253	125	128	102.4
Engine capacity ... horsepower	10,341	3,511	6,830	94.5
Pump capacity ... gallons per minute	453,231	281,199	172,032	61.2
Average lift ... feet	20	(4)	20	.....

[1] A minus sign (−) denotes decrease.
[2] Decrease due to the building of several reservoirs in connection with irrigation projects.
[3] Less than one-tenth of 1 per cent decrease.
[4] Not reported in 1910.

MONTANA

APPROXIMATE LOCATION AND EXTENT OF IRRIGATED LAND.



CLIMATIC CONDITIONS.

The climatic conditions having the greatest influence in determining the necessity for irrigation are the amount and seasonal distribution of precipitation, especially rainfall. Temperature and wind movement also have an influence through their effect on evaporation from soil and plants.

The surface of Montana is divided approximately equally between the plains and the mountainous sections, the eastern part of the state consisting of high, rolling prairies and the western part of mountains and intervening valleys. The main range of the Rocky Mountains forms the boundary between Montana and Idaho for a considerable distance, then turns to the east and again to the north, leaving the northwestern part of the state on the Pacific slope, while all the rest of the state is in the drainage basin of the Missouri River and slopes to the east.

In the mountainous section the precipitation varies greatly with the altitude, the normal annual precipitation varying from about 10 inches in the lower portion of the Jefferson River drainage basin and along the Missouri, immediately below the point where this stream is formed by the confluence of the Madison, Jefferson, and Gallatin Rivers, to 20 inches in the vicinity of Yellowstone National Park and to 25 inches or more in the northwest corner of the state. In most of the valleys of this part of the state crops are grown without irrigation near the base of the mountains, while irrigation is practiced in the central portions. The mountain ranges prevent strong winds and tend to decrease the water requirements of plants. As a rule the precipitation is lightest in the autumn and winter, and the wettest season is from April to June, when water is most needed for grain crops.

On the plains the precipitation is lighter, the normal annual precipitation being from 12 to 15 inches, and the heat and wind velocity during the growing season are much greater than in the mountainous part of the state. In this section the demand for moisture is greater and the supply is smaller.

The year 1919 was the third in succession in which the precipitation was below normal, the summer season being drier than either of the two preceding. This condition not only brought about a general failure of "dry-farm" crops, but decreased greatly the supply of water available for irrigation, particularly from streams originating on the plains, which are not fed by melting snows in the mountains. As a result much land covered by irrigation ditches and ordinarily irrigated was not watered in 1919, and to that extent the figures for that year do not correctly represent the status of irrigation development in the state.

WATER SUPPLY FOR IRRIGATION.

In the mountains of western Montana the precipitation is heavy, while the area of irrigable land is limited to the comparatively narrow valleys. Consequently there is an abundant supply of water for irrigation. The northwestern part of the state is drained by the Kootenai River and the Clark Fork of the Columbia and their tributaries. Both of these streams carry large volumes of water from the state.

The southwestern part of the state is drained by the headwaters of the Missouri. The Beaverhead and the Big Hole, which unite to form the Jefferson, drain the northern and eastern slopes of the main range of the Rocky Mountains, and the Madison and the Gallatin rise in Yellowstone National Park and flow north to their junction with the Jefferson to form the Missouri. From its head the Missouri flows northward through mountain valleys for slightly more than 100 miles and then turns to the east and flows to the eastern border of the state, roughly paralleling the northern line at distances varying between 60 and 100 miles.

Between the Missouri and the Canadian border are the Sun, Teton, Marias, and Milk Rivers, which rise in the main range of the Rocky Mountains and flow eastward to their junctions with the Missouri.

South of the Missouri is the Yellowstone, which rises in Yellowstone Lake in Yellowstone National Park. It flows northward for about 50 miles and from that point flows northeastward across the state to its confluence with the Missouri, just east of the Montana-North Dakota line. Between the Missouri and the Yellowstone there are many smaller streams, tributary to one or the other of these rivers. From the south the Yellowstone receives several large tributaries, which rise in Wyoming and flow northward into Montana, and many small tributaries rising on the plains. The principal tributaries of the Yellowstone are Clark Fork, Big Horn, Tongue, and Powder Rivers.

The streams rising in the mountains receive their water from melting snows and maintain a summer flow, while most of those rising on the plains become dry, or nearly so, in the summer. In the larger streams which rise in the mountains the water supply is generally sufficient for the land in their valleys. The supply would not be sufficient to water the great areas of arable land on the plains between the large rivers, but crops are grown on these lands without irrigation and there is no great demand for their irrigation.

As previously stated, the succession of dry years, of which 1919 was the third, decreased the supply of water to such an extent that much land ordinarily irrigated was not watered in 1919.

FARMS AND ACREAGE IRRIGATED.

TABLE 2.—NUMBER OF FARMS AND ACREAGE IRRIGATED: 1890 TO 1920.

CENSUS YEAR.	FARMS IRRIGATED.			AREA IRRIGATED.				
	Number.	Per cent of increase.	Per cent of all farms.	Acres.	Per cent of increase.	Per cent of total land area.	Per cent of land in farms.	Per cent of improved land in farms.
1920	10,807	20.5	18.7	1,681,729	0.2	1.8	4.8	15.3
1910	8,970	11.5	34.2	1,679,084	76.5	1.8	12.4	46.1
1900	8,043	117.6	60.2	951,154	171.3	1.0	8.8	54.8
1890	3,706	.....	37.1	350,382	.....	0.4	17.8	38.3

TABLE 3.—ACREAGE, CLASSIFIED BY DATE OF BEGINNING OF ENTERPRISES SUPPLYING WATER FOR IRRIGATION.

DATE OF BEGINNING.	Number of enterprises.	Area included in enterprises, 1920 (acres).	AREA IRRIGATED IN 1919.		Area enterprises were capable of irrigating in 1920 (acres).
			Acres.	Per cent of acreage in enterprises.	
Total	6,625	4,329,148	1,681,729	38.8	2,753,498
Before 1860	10	5,755	4,586	79.7	5,595
1860–1869	503	252,161	116,225	43.7	179,832
1870–1879	516	283,961	114,804	40.4	185,018
1880–1889	1,343	966,539	470,529	48.7	697,811
1890–1899	1,195	765,658	361,563	47.2	580,515
1900–1904	667	321,648	148,075	46.0	226,249
1905–1909	487	937,065	272,239	29.1	500,853
1910–1914	416	302,981	59,280	19.6	125,847
1915–1919	367	294,323	38,556	13.1	195,276
Not reported	531	199,066	101,872	51.2	140,510

TABLE 4.—ACREAGE, CLASSIFIED BY SOURCE OF WATER SUPPLY: 1919 AND 1909.

CLASS.	AREA IRRIGATED (ACRES).				Area enterprises were capable of irrigating in 1920 (acres).	Area included in enterprises, 1920 (acres).
	1919	1909	Increase.[1]			
			Amount.	Per cent.		
Total	1,681,729	1,679,084	2,645	0.2	2,753,498	4,329,148
Streams, gravity	1,515,212	1,624,656	−109,444	−6.7	2,451,190	3,903,211
Streams, pumped	15,743	7,963	7,780	97.7	36,756	47,178
Streams, pumped and gravity	19,872	(2)	19,872	.....	33,599	34,149
Wells, pumped	139	55	84	.....	153	193
Wells, flowing	232	227	5	2.4	403	724
Lakes, gravity	16,653	5,617	11,036	196.5	22,512	24,840
Lakes, pumped	79	5	74	.....	189	351
Springs	14,945	17,967	−3,022	−16.8	22,695	37,337
Stored storm water	3,280	22,614	−19,334	−85.5	12,152	32,261
City water	15	(2)	15	.....	15	20
Sewage	245	(2)	245	.....	820	983
Streams, gravity, and pumped wells	155	(2)	155	.....	170	170
Streams, gravity, and flowing wells	6,068	(2)	6,068	.....	12,063	12,443
Other mixed	89,070	(2)	89,070	.....	160,603	237,120
Other and not reported	41	(2)	41	.....	168	168

[1] A minus sign (−) denotes decrease. Per cent not shown when base is less than 100.
[2] Not included in classification in 1910.

ACREAGE, BY CHARACTER OF ENTERPRISE.

Montana enacted an irrigation district law in 1907, and has amended this law from time to time since that date. Generally, in Montana irrigation districts have not built irrigation works, but have been organized to take over works built by other agencies.

The state of Montana accepted the terms of the Federal Carey Act (act of Congress, Aug. 18, 1894) in 1895, and at first undertook construction of irrigation works by direct state action. The law has been amended from time to time, and state construction has been abandoned for the contract system common to the Western states.

The small area reported under "State" in Table 5 belongs to a State institution and does not represent a scheme of state construction.

TABLE 5.—ACREAGE, CLASSIFIED BY CHARACTER OF ENTERPRISE: 1920 AND 1910.

ITEM AND CLASS.	CENSUS OF—		INCREASE.[1]	
	1920	1910	Acres.	Per cent.
ACREAGE IRRIGATED.				
Total	1,681,729	1,679,084	2,645	0.2
Individual and partnership	976,615	1,191,060	−214,445	−18.0
Cooperative	393,257	333,926	59,331	17.8
Irrigation district	35,153	412	34,741	.....
Carey Act	54,771	9,648	45,123	467.7
Commercial	34,115	62,544	−28,429	−45.5
U. S. Reclamation Service	88,291	14,077	74,214	527.2
U. S. Indian Service	98,887	67,417	31,470	46.7
State	20	(2)	20	.....
City	320	(2)	320	.....
Other	300	(2)	300	.....
ACREAGE ENTERPRISES WERE CAPABLE OF IRRIGATING.				
Total	2,753,498	2,205,155	548,343	24.9
Individual and partnership	1,617,617	1,495,513	122,104	8.2
Cooperative	553,952	373,022	180,930	48.5
Irrigation district	70,650	6,640	64,010	964.0
Carey Act	83,913	49,500	34,413	69.5
Commercial	38,215	80,895	−42,680	−52.8
U. S. Reclamation Service	172,206	85,245	86,961	102.0
U. S. Indian Service	215,940	114,340	101,600	88.9
State	50	(2)	50	.....
City	390	(2)	390	.....
Other	565	(2)	565	.....
ACREAGE INCLUDED IN ENTERPRISES.				
Total	4,329,148	3,515,602	813,546	23.1
Individual and partnership	2,372,086	1,982,220	389,866	19.7
Cooperative	699,310	518,209	181,101	34.9
Irrigation district	71,687	6,640	65,047	979.6
Carey Act	181,873	306,997	−125,124	−40.8
Commercial	39,160	146,852	−107,692	−73.3
U. S. Reclamation Service	436,982	113,744	323,238	284.2
U. S. Indian Service	526,690	440,940	85,750	19.4
State	100	(2)	100	.....
City	530	(2)	530	.....
Other	730	(2)	730	.....

[1] A minus sign (−) denotes decrease. Per cent not shown when more than 1,000.
[2] Not included in classification in 1910.

ACREAGE, BY CHARACTER OF WATER RIGHTS.

The laws of Montana relating to water rights are summarized in the following paragraphs:

In 1865 the territory of Montana enacted a law recognizing the right of any person holding land bordering on or in the neighborhood of a stream to take water from the stream for irrigation, and providing for obtaining the right of way for ditches over the land of others.

This law was repealed in 1870 by one extending the right to take water for irrigation to the holder of land anywhere in the territory and recognizing priority among users.

In 1885 a more comprehensive law was enacted. This provided that rights might be acquired by "appropriation"; that the appropriation must be for a useful or beneficial purpose; that the place of use might be changed; and that "among appropriations the first in time is the first in right." This law provided also that persons desiring to appropriate water must post notices stating their claims, and must file copies of these claims with the county recorders; and, further, that persons who had acquired rights prior to the passage of the act should file with the proper county recorders declarations of their claims. The law provided also that controversies regarding water rights should be settled in the courts.

This law is still in effect, the state never having provided for applications for permits to appropriate water, as has been done in most of the Western states.

The constitution of the state, ratified in 1889, contains the following section relating to irrigation:

"The use of all water now appropriated, or that may hereafter be appropriated for sale, rental, distribution or other beneficial use and right of way over the lands of others for all ditches, drains, flumes, canals and aqueducts, necessarily used in connection therewith, as well as the sites for reservoirs necessary for collecting and storing the same shall be held to be a public use." (Art. 3, sec. 15.)

Under the rulings of the courts riparian rights are recognized in Montana to a limited extent.

TABLE 6.—ACREAGE IRRIGATED, CLASSIFIED BY CHARACTER OF RIGHTS UNDER WHICH WATER IS RECEIVED: 1919 AND 1909.

CLASS.	1919		1909, per cent of total.
	Acres.	Per cent of total.	
Total	1,681,729	100.0	[1] 100.0
Appropriation and use	229,887	13.7	15.0
Notice filed and posted	666,305	39.6	44.4
Adjudicated by court	701,015	41.7	38.0
Permit from state	595	(2)	.....
Riparian rights	5,500	0.3	.....
Underground	482	(2)	(2)
Other and mixed	8,561	0.5	(3)
Not reported	69,384	4.1	(3)

[1] Small areas were incorrectly reported in some classes in 1910. These are not included here.
[2] Less than one-tenth of 1 per cent.
[3] All land for which the class of water rights was not reported was included in "Appropriation and use."

ACREAGE, BY DRAINAGE BASIN.

The report of a special census taken in 1902 presented all data by drainage basins rather than by counties. The results of the census of 1920 have been tabulated on the same basis, and the data for 1902 are presented for purposes of comparison. For no other census have the results been tabulated in this form. The acreage reported for each drainage basin in 1919 comprises all the irrigated land in that drainage basin, including that watered from springs and wells. In the 1902 results the acreages irrigated from springs and wells were not reported for the smaller tributary streams, but the acreages for the tributaries were included in those reported for the main streams. This area is so small, however, that the comparison of the areas reported for the tributary streams is not seriously affected.

TABLE 7.—ACREAGE IRRIGATED, CLASSIFIED BY DRAINAGE BASIN: 1919 AND 1902.

DRAINAGE BASIN.	AREA IRRIGATED (ACRES).			Area included in enterprises, 1920 (acres).	Area enterprises were capable of irrigating in 1920 (acres).
	1919	1902	Per cent of increase.[1]		
Total	1,681,729	1,140,694	47.4	4,329,148	2,753,498
Missouri River and tributaries	1,399,763	908,245	53.9	3,713,068	2,299,910
Missouri River direct	15,635	11,390	37.3	34,194	28,174
Jefferson River and tributaries	425,695	231,788	83.7	831,298	574,672
Jefferson River direct	21,276	15,723	35.3	49,347	34,804
Beaverhead River	145,673	99,014	47.1	296,079	198,797
Big Hole River	184,655	67,422	173.9	306,885	227,929
Boulder River	7,265	9,333	−22.2	40,677	13,297
Ruby River	34,474	21,101	63.4	78,107	48,936
Other tributaries of Jefferson River	32,342	[2] 19,197	68.5	71,303	50,728
Madison River	34,425	20,358	69.3	88,534	62,065
Gallatin River	95,063	58,994	61.9	228,056	152,515
Smith River	16,861	18,677	−9.7	38,369	29,691
Sun River	31,785	32,927	−3.5	244,671	95,522
Teton River	44,945	34,961	28.6	146,468	82,241
Marias River	63,758	22,188	187.4	308,158	122,431
Judith River	15,173	44,672	−66.0	49,993	35,459
Musselshell River	45,559	87,233	−47.8	141,363	113,964
Milk River and tributaries	108,555	56,597	91.8	349,716	179,063
Milk River direct	19,766	24,305	−18.7	26,358	23,443
Sage Creek	.....	4,947	.....	2,859	1,780
Snake River	910	2,135	−57.4	3,130	2,275
Other tributaries of Milk River	87,879	[2] 25,210	248.6	317,378	151,565
Yellowstone River and tributaries	449,354	209,137	110.6	858,817	668,355
Yellowstone River direct	189,453	40,015	373.5	279,211	262,801
Shields River	25,949	19,836	30.8	94,238	53,062
Stillwater River	23,561	13,572	73.6	34,278	29,664
Clark Fork	68,839	64,628	6.5	123,367	116,506
Big Horn River	51,103	1,645	.....	92,099	66,206
Rosebud River	365	13,618	−97.3	1,365	1,305
Tongue River	11,179	12,622	−11.5	31,396	21,403
Powder River	728	2,390	−69.5	5,871	4,841
Other tributaries of Yellowstone River	69,195	[2] 40,811	69.5	195,055	112,567
Little Missouri River	360	2,865	−86.7	3,295	1,480
Other tributaries of Missouri River	51,585	[3] 77,466	−33.4	399,236	154,278
Tributaries of Columbia River	281,966	232,451	25.0	616,080	453,588
Clark Fork and tributaries	285,984	229,351	24.4	601,657	443,864
Clark Fork direct	2,982	[3] 8,808	−67.3	14,493	4,722
Missoula River and tributaries	238,769	221,043	8.0	433,021	325,992
Missoula River direct	2,559	1,181	115.9	8,322	5,777
Hellgate River	77,281	78,139	−1.0	165,391	108,161
Big Blackfoot River	40,604	36,622	10.9	83,716	61,476
Bitter Root River	112,622	98,965	13.8	158,241	139,481
Other tributaries of Missoula River	5,642	[3] 6,136	−8.3	17,351	11,097
Flathead River	44,333	(4)	.....	154,233	112,150
Kootenai River	5,982	2,600	130.1	14,423	9,724

[1] A minus sign (−) denotes decrease. Per cent not shown when more than 1,000.
[2] Includes springs and wells.
[3] Includes springs and wells and all sources in the Columbia River drainage basin, exclusive of the Missoula and Kootenai Rivers.
[4] Not reported separately in 1902.

CAPITAL INVESTED AND COST OF OPERATION AND MAINTENANCE.

TABLE 8.—CAPITAL INVESTED IN IRRIGATION ENTERPRISES: 1890 TO 1920.

CENSUS YEAR.	Amount.	Per cent of increase.	AVERAGE PER ACRE.	
			Amount.	Per cent of increase.
1920	$52,143,363	127.0	$18.94	81.8
1910	22,970,958	390.5	10.42	111.3
1900	4,683,073	188.5	4.92	6.3
1890	1,628,195	.....	4.63	.....

TABLE 9.—CAPITAL INVESTED, CLASSIFIED BY DATE OF BEGINNING.

DATE OF BEGINNING.	Amount.	Per cent of total.	Average per acre.
Total	$52,143,363	100.0	$18.94
Before 1860	55,527	0.1	9.94
1860-1869	1,323,315	2.5	7.26
1870-1879	2,063,841	3.9	11.15
1880-1889	3,485,794	6.7	7.29
1890-1899	7,045,254	13.5	12.14
1900-1904	3,065,519	5.8	13.17
1905-1909	25,502,156	49.1	50.49
1910-1914	2,756,019	5.3	22.25
1915-1919	3,631,364	7.0	34.49
Not reported	1,584,344	3.0	11.28

TABLE 10.—CAPITAL INVESTED, 1920, AND COST OF OPERATION AND MAINTENANCE, 1919, CLASSIFIED BY SOURCE OF WATER SUPPLY.

[When water is pumped, cost of operation and maintenance includes cost of fuel and attendance.]

CLASS.	CAPITAL INVESTED, 1920.			OPERATION AND MAINTENANCE, 1919.	
	Amount.	Per cent of total.	Average per acre.	Area for which cost is reported (acres).	Average cost per acre.[1]
Total	$52,143,363	100.0	$18.94	1,369,651	$1.26
Streams, gravity	47,016,339	90.2	19.18	1,249,390	1.18
Streams, pumped	999,216	1.7	24.49	11,414	5.63
Streams, pumped and gravity	1,612,316	3.1	47.99	19,872	1.77
Wells, pumped	16,295	(2)	106.44	49	5.41
Wells, flowing	10,097	(2)	24.83	154	7.24
Lakes, pumped	8,250	(2)	49.95	41	11.67
Lakes, gravity	271,760	0.5	12.67	8,063	5.46
Springs	247,694	0.5	15.89	7,821	1.37
Stored storm water	298,392	0.6	24.55	1,957	5.74
Sewage	6,724	(2)	8.20	.....	.....
Streams, gravity, and pumped wells	3,000	(2)	17.65	150	6.67
Streams, gravity, and flowing wells	433,000	0.9	35.89	6,065	1.41
Other mixed	1,318,593	2.5	8.21	64,675	0.99
Other and not reported	1,382	(2)	8.23	.....	.....

[1] Based on area irrigated in 1919. [2] Less than one-tenth of 1 per cent.

TABLE 11.—CAPITAL INVESTED, CLASSIFIED BY DRAINAGE BASIN: 1920 AND 1902.

DRAINAGE BASIN.	1920	1902	INCREASE.[1]	
			Amount.	Per cent.
Total	$52,143,363	$5,576,975	$46,566,388	835.0
Missouri River and tributaries	43,507,296	4,254,950	39,252,346	922.5
Missouri River direct	440,345	81,162	359,183	442.6
Jefferson River and tributaries	5,370,454	760,328	4,610,126	606.3
Jefferson River direct	587,388	115,995	471,393	406.4
Beaverhead River	1,723,746	255,779	1,467,967	573.9
Big Hole River	1,669,767	135,609	1,534,158	.....
Boulder River	148,655	43,310	105,145	244.0
Ruby River	559,009	122,668	436,342	355.7
Other tributaries of Jefferson River	680,898	[2] 96,777	584,121	604.7
Madison River	460,823	92,996	367,827	395.6
Gallatin River	977,786	454,845	522,941	115.0
Smith River	190,826	64,777	126,059	194.6
Sun River	4,709,363	173,359	4,535,904	.....
Teton River	1,291,130	111,990	1,139,146	.....
Marias River	5,502,770	142,443	5,360,327	.....
Judith River	281,842	124,513	157,329	126.4
Musselshell River	986,755	285,868	700,887	245.2
Milk River and tributaries	7,271,098	263,698	7,007,400	.....
Milk River direct	154,208	119,209	35,008	29.4
Sage Creek	2,409,248	16,127	2,384,121	.....
Snake River	8,600	9,935	−1,335	−13.4
Other tributaries of Milk River	4,708,042	[2] 118,436	4,589,606	.....
Yellowstone River and tributaries	13,762,337	1,306,838	12,455,499	953.1
Yellowstone River direct	7,508,390	303,888	7,204,502	.....
Shields River	424,103	109,074	315,029	288.8
Stillwater River	298,570	51,502	247,068	479.7
Clark Fork	1,105,491	295,302	812,189	275.3
Big Horn River	2,339,457	3,425	2,336,032	.....
Rosebud River	9,323	61,768	−52,405	−84.9
Tongue River	608,504	211,870	396,634	187.2

[1] A minus sign (−) denotes decrease. Per cent not shown when more than 1,000.
[2] Includes springs and wells.

TABLE 11.—CAPITAL INVESTED, CLASSIFIED BY DRAINAGE BASIN: 1920 AND 1902—Continued.

DRAINAGE BASIN.	1920	1902	INCREASE.[1]	
			Amount.	Per cent.
Missouri River and tributaries—Continued.				
Yellowstone River and tributaries—Continued.				
Powder River	$35,402	$12,500	$22,902	183.2
Other tributaries of Yellowstone River	1,430,417	[2] 257,569	1,172,848	455.4
Little Missouri River	15,064	33,747	−18,683	−55.4
Other tributaries of Missouri River	2,286,753	358,356	1,928,397	538.1
Tributaries of Columbia River	8,636,067	1,322,025	7,314,042	553.2
Clark Fork and tributaries	8,414,091	1,308,486	7,105,605	543.0
Clark Fork direct	202,256	[2] 64,591	137,665	213.1
Missoula River and tributaries	3,474,524	1,243,895	2,230,629	179.3
Missoula River direct	159,771	27,367	132,404	483.8
Hellgate River	1,349,403	392,065	957,338	244.2
Big Blackfoot River	624,291	114,450	509,841	445.5
Bitter Root River	1,138,329	674,130	464,199	68.9
Other tributaries of Missoula River	202,730	[2] 35,883	166,847	465.0
Flathead River	4,737,311	(4)	.....	.....
Kootenai River	221,976	13,539	208,437	.....

[1] A minus sign (−) denotes decrease. Per cent not shown when more than 1,000.
[2] Includes springs and wells.
[3] Includes springs and wells and all sources in the Columbia River drainage basin exclusive of the Missoula and Kootenai Rivers.
[4] Not reported separately in 1902.

In classifying capital invested by type of enterprise (Table 12) the average capital invested per acre is not presented, for the reason that it is not possible to compute this correctly. The United States Reclamation Service supplies stored water to enterprises controlled by agencies of most of the other classes shown in the table and a part of its expenditure is properly chargeable to those lands; but it is not possible to tell how much should be so charged or how it should be distributed among the various classes.

TABLE 12.—CAPITAL INVESTED, 1920, AND COST OF OPERATION AND MAINTENANCE, 1919, CLASSIFIED BY CHARACTER OF ENTERPRISE.

[When water is pumped, cost of operation and maintenance includes cost of fuel and attendance.]

CLASS.	CAPITAL INVESTED, 1920.		OPERATION AND MAINTENANCE, 1919.	
	Amount.	Per cent of total.	Area for which cost is reported (acres).	Average cost per acre.[1]
Total	$52,143,363	100.0	1,369,651	$1.26
Individual and partnership	15,543,287	29.8	747,131	1.07
Cooperative	6,692,877	12.8	349,499	0.86
Irrigation district	1,708,851	3.3	34,983	0.98
Carey Act	4,834,407	9.3	54,748	1.76
Commercial	676,535	1.3	34,115	2.14
U. S. Reclamation Service	14,381,318	27.6	45,786	2.09
U. S. Indian Service	8,193,390	15.7	103,309	3.01
State	100	(2)	20	0.75
City	105,538	0.2	.....	.....
Other	7,060	(2)	60	2.67

[1] Based on acreage irrigated in 1919. [2] Less than one-tenth of 1 per cent.

DRAINAGE OF IRRIGATED LAND.

The acreages reported in Table 13 relate to lands within the boundaries of irrigation projects, and do not include lands within the vicinity of these projects. "Additional acreage needing drainage" includes all lands so reported by the owners of the enterprises, and includes lands producing partial crops as well as those wholly unproductive.

TABLE 13.—ACREAGE WITHIN IRRIGATION ENTERPRISES FOR WHICH DRAINS HAVE BEEN INSTALLED AND ADDITIONAL ACREAGE IN NEED OF DRAINAGE: 1920.

Number of enterprises reporting land drained or needing drainage	276
Acreage included in enterprises reporting land drained or needing drainage	751,274
Acreage for which drains have been installed	62,872
Additional acreage needing drainage	50,901
Per cent that acreage for which drains have been installed is of total acreage included in enterprises reporting drainage	8.4
Per cent that acreage for which drains have been installed is of total acreage included in irrigation enterprises in the state	1.5
Per cent that acreage for which drains have been installed plus that needing drainage is of total acreage included in irrigation enterprises in the state	2.6

QUANTITY OF WATER USED.

The quantity of water used in 1919 was reported on only part of the irrigation schedules, and the figures given vary greatly. In order that proper values may be assigned to the figures given, those representing measurements and those representing estimates are reported separately in Table 14. While the data are incomplete, the reports represent sufficient acreages to serve as bases for reliable averages.

TABLE 14.—QUANTITY OF WATER USED IN 1919.

ITEM.	Total.	Measured.	Not measured.
Average volume of water entering canals, second-feet	22,808	10,176	12,632
Area irrigated in 1919 ... acres	794,762	425,618	369,144
Average number of acres per second-foot	35	42	29
Total quantity of water entering canals, acre-feet	4,103,486	1,882,871	2,300,615
Area irrigated in 1919 ... acres	745,925	424,712	321,213
Average quantity per acre ... acre-feet	5.5	4.2	7.2
Total quantity of water delivered ... acre-feet	968,991	409,939	559,052
Area irrigated in 1919 ... acres	290,984	181,430	109,454
Average quantity per acre ... acre-feet	3.3	2.3	5.1

IRRIGATION WORKS.

TABLE 15.—IRRIGATION WORKS, CLASSIFIED BY DATE OF BEGINNING.

DATE OF BEGINNING.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.	
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).
Total	3,545	523	8,819	94,429	16,411	10,680	6,085	468	1,571,720
Before 1860	5	1	15	89	10	3	3	.....	.....
1860-1869	235	22	798	4,644	1,259	249	146	21	6,299
1870-1879	373	10	876	6,284	1,516	876	570	7	40
1880-1889	1,064	58	2,222	19,259	3,995	2,538	865	43	55,430
1890-1899	763	91	1,861	16,762	3,429	3,070	1,554	79	52,572
1900-1904	339	95	870	12,275	1,596	892	421	88	43,666
1905-1909	272	97	615	22,983	1,968	1,581	1,887	81	555,349
1910-1914	197	87	484	4,672	896	579	245	84	758,984
1915-1919	163	38	407	3,241	808	395	402	43	95,791
Not reported	131	24	671	4,310	934	506	192	22	3,679

DATE OF BEGINNING.	Pipe lines, length (miles).	FLOWING WELLS.		PUMPED WELLS.		PUMPING PLANTS.			
		Number.	Capacity (gallons per minute).	Number.	Capacity (gallons per minute).	Number.	Engine capacity (horse-power).	Pumps.	
								Number.	Capacity (gallons per minute).
Total	48.0	41	4,608	22	11,685	253	10,341	299	453,231
Before 1860	.....	.....	.....	1	.....	1	2	1	.....
1860-1869	0.2	2	.....	.....	.....	1	.....	1	.....
1870-1879	2.9	4	2,257	.....	.....	2	30	2	1,000
1880-1889	2.0	1	.....	4	995	6	38	7	1,905
1890-1899	6.9	1	50	.....	.....	15	479	24	28,311
1900-1904	3.3	5	51	6	5,610	36	932	37	62,760
1905-1909	14.6	7	1,032	2	10	37	2,368	48	76,165
1910-1914	11.5	5	109	1	.....	54	4,539	73	121,635
1915-1919	4.7	13	1,109	5	2,090	84	1,714	89	145,394
Not reported	1.9	3	.....	3	3,070	17	239	17	16,121

TABLE 16.—IRRIGATION WORKS, CLASSIFIED BY CHARACTER OF ENTERPRISE: 1920.

CLASS.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.	
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).
Total	3,545	523	8,819	94,429	16,411	10,680	6,085	468	1,571,720
Individual and partnership	3,352	454	8,378	68,461	13,515	8,949	2,813	397	300,131
Cooperative	136	32	324	16,191	1,725	747	770	38	934,595
Irrigation district	10	5	24	1,680	212	30	62	4	30,313
Carey Act	3	6	8	1,977	82	250	588	4	18,000
Commercial	4	4	19	514	134	136	27	4	656,720
U. S. Reclamation Service	8	6	12	3,155	337	192	367	6	102,873
U. S. Indian Service	30	15	45	2,358	396	349	1,453	14	128,995
State	2	.....	1	19	2	3	2	.....	.....
City	.....	.....	1	68	5	1	1	.....	.....
Other	.....	1	7	26	7	3	2	1	126

TABLE 16.—IRRIGATION WORKS, CLASSIFIED BY CHARACTER OF ENTERPRISE: 1920—Continued.

CLASS.	Pipe lines, length (miles).	FLOWING WELLS.		PUMPED WELLS.		PUMPING PLANTS.			
		Number.	Capacity (gallons per minute).	Number.	Capacity (gallons per minute).	Number.	Engine capacity (horse-power).	Pumps.	
								Number.	Capacity (gallons per minute).
Total	48.9	41	4,608	22	11,085	253	10,341	299	453,231
Individual and partnership	33.8	37	3,608	22	11,085	243	5,630	272	315,031
Cooperative	2.9	4	1,000			1	36	1	50
Irrigation district	1.9					4	260	10	61,650
Carey Act	1.3								
Commercial	4.8					2	3,680	11	73,500
U. S. Reclamation Service	1.5					2	710	4	
U. S. Indian Service	0.2					1	25	1	3,000
State									
City									
Other	2.5								

TABLE 17.—IRRIGATION WORKS, CLASSIFIED BY DRAINAGE BASIN: 1920.

DRAINAGE BASIN.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.	
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).
Total	3,545	523	8,819	94,429	16,411	10,680	6,085	468	1,571,720
Missouri River and tributaries	2,805	414	6,672	78,815	13,194	8,893	4,956	396	1,477,741
Missouri River direct	19	11	73	778	456	178	55	13	870,709
Jefferson River and tributaries	1,174	45	2,196	25,319	3,422	3,468	890	59	165,003
Jefferson River direct	23	2	52	1,331	189	18	39		
Beaverhead River	516	15	865	5,340	1,120	954	253	16	130,275
Big Hole River	442	8	726	7,171	1,132	2,231	480	10	6,171
Boulder River	48	3	105	649	185	83	2	3	11
Ruby River	54	7	184	1,456	298	101	61	18	19,676
Other tributaries of Jefferson River	91	10	234	9,372	498	81	55	12	8,870
Madison River	100	10	251	2,769	560	129	112	12	4,602
Gallatin River	88	5	410	4,243	885	146	228	2	1,200
Smith River	66	4	285	983	325	600	124	7	181
Sun River	91	14	199	2,467	313	166	199	16	854
Teton River	21	7	76	2,566	296	74	112	7	145,742
Marias River	38	15	76	2,634	227	260	719	15	22,926
Judith River	147	5	214	1,479	311	252	84	7	85
Musselshell River	192	35	443	4,277	866	806	286	16	34,479
Milk River and tributaries	201	104	301	7,416	692	895	554	94	146,041
Milk River direct	5		7	290	31	9	2	1	16
Sage Creek	5	6	8	11	12	16	15	5	2,089
Snake River	13	6	17	72	23	86	38	4	158
Other tributaries of Milk River	178	92	269	7,133	626	784	499	84	143,778
Yellowstone River and tributaries	449	86	1,463	19,605	3,435	1,332	1,248	70	31,388
Yellowstone River direct	14	11	102	5,508	720	279	447	11	2,519
Shields River	88	1	208	1,620	457	210	75	5	9,016
Stillwater River	5		128	1,284	279	40	46	2	2
Clark Fork	101	5	300	3,139	707	397	217	1	91
Big Horn River	45	1	51	1,675	198	24	218		
Rosebud River	11	2	17	73	21	6		2	18
Tongue River	23	12	59	974	130	78	28	9	150
Powder River	17	13	34	111	23	17	3	10	50
Other tributaries of Yellowstone River	145	41	564	5,221	900	281	214	30	19,542
Little Missouri River	12	7	19	70	16	35	13	14	1,513
Other tributaries of Missouri River	207	66	846	4,269	1,429	552	332	64	53,018
Tributaries of Columbia River	740	109	2,147	15,614	3,217	1,787	1,129	72	93,979
Clark Fork (of Columbia) and tributaries	710	102	2,083	14,519	3,124	1,746	1,103	59	93,655
Clark Fork direct	1		64	1,300	73	9	1		
Missoula River and tributaries	609	79	1,863	11,998	2,655	1,217	367	46	8,640
Missoula River direct	5	1	15	200	116	11		1	
Hellgate River	246	37	777	4,623	1,195	455	142	24	527
Big Blackfoot River	137	19	310	2,378	364	193	48	3	200
Bitter Root River	173	37	644	4,073	870	424	158	10	7,634
Other tributaries of Missoula River	48	4	117	724	110	134	19	8	279
Flathead River	100	23	156	1,221	396	520	735	13	85,015
Kootenai River	30	7	64	1,095	93	41	26	13	324

TABLE 17.—IRRIGATION WORKS, CLASSIFIED BY DRAINAGE BASIN: 1920—Continued.

DRAINAGE BASIN.	Pipe lines, length (miles).	FLOWING WELLS.		PUMPED WELLS.		PUMPING PLANTS.				
		Number.	Capacity (gallons per minute).	Number.	Capacity (gallons per minute).	Number.	Engine capacity (horse power).	Pumps.		Average lift (feet).
								Number.	Capacity (gallons per minute).	
Total	48.0	41	4,608	22	11,085	253	10,341	299	455,231	20
Missouri River and tributaries	17.6	28	1,245	19	11,005	225	10,058	271	440,779	19
Missouri River direct	4.0					26	4,494	34	115,975	24
Jefferson River and tributaries	0.1	2	2			3	135	4	4,968	25
Jefferson River direct	0.1					2	25	2	1,968	24
Beaverhead River		1								
Boulder River						1	110	2	3,000	24
Other tributaries of Jefferson River		1	2							
Gallatin River	0.5					4	70	4	5,329	16
Smith River						1	18	1	6,000	9
Sun River	1.2					15	326	20	26,210	15
Teton River	0.5	3	1,000	1	10	8	130	8	13,410	17
Marias River	1.6			3	8,000	22	623	22	37,165	15
Judith River	2.4			1	1,500	8	72	16	10,600	11
Musselshell River						10	178	12	16,250	19
Milk River and tributaries	1.2	1	50			22	377	23	24,345	16
Milk River direct						4	70	4	2,570	18
Other tributaries of Milk River	1.2	1	50			18	307	19	21,775	16
Yellowstone River and tributaries	2.7	18	188	2	50	75	3,173	90	166,553	19
Yellowstone River direct	2.0	3	69			35	2,501	45	127,662	24
Shields River				1	40					
Clark Fork						2	10	2	470	8
Big Horn River	0.1					2	38	3	1,850	17
Tongue River	0.1					16	286	16	14,575	15
Powder River		15	119	1	10	9	221	13	13,365	15
Other tributaries of Yellowstone River	0.5					11	117	11	8,631	12
Other tributaries of Missouri River	3.4	4	5	12	1,445	31	462	37	19,974	18
Tributaries of Columbia River	30.4	13	3,363	3	80	28	283	28	12,452	31
Clark Fork (of Columbia) and tributaries	26.8	11	3,323	3	80	27	283	27	12,447	8
Clark Fork direct	1.5									8
Missoula River and tributaries	17.2	1	2,250	3	80	11	106	11	3,282	24
Missoula River direct	3.8			2		6	52	6	1,096	29
Hellgate River	3.2	1	2,250	1	80	2	10	2	130	29
Big Blackfoot River	0.4					1	16	1	650	12
Bitter Root River	3.4					1	12	1	1,406	7
Other tributaries of Missoula River	6.4					1	16	1		
Flathead River	8.1	10	1,023			16	177	16	9,165	37
Kootenai River	3.6	2	20			1		1	5	10

CROPS.

TABLE 18.—ACREAGE, YIELD, AND VALUE OF PRINCIPAL CROPS GROWN ON IRRIGATED LAND, AND COMPARISONS WITH TOTALS FOR THE STATE: 1919 AND 1909.

[Totals for the state, used in making comparisons, are shown in state bulletin on agriculture.]

	Crop.	Area harvested.					Quantity harvested.					
		1919		1909				1919		1909		
		Acres.	Per cent of total for state.	Acres.	Per cent of total for state.	Per cent of increase.[1]	Unit.	Amount.	Per cent of total for state.	Amount.	Per cent of total for state.	Per cent of increase.[1]
	Cereals:											
1	Corn	2,436	13.0	1,649	17.2	48.5	Bu.	34,132	21.4	51,488	18.8	−33.7
2	Oats	45,153	28.6	159,658	47.9	−71.7	Bu.	1,183,068	45.8	6,965,254	50.5	−83.0
3	Winter wheat	39,396	7.3	45,568	17.6	253.8	Bu.	331,668	11.9	1,236,137	19.8	52.4
4	Spring wheat	121,864	10.5				Bu.	1,551,685	31.0			
5	Barley	10,286	35.1	9,271	34.0	10.9	Bu.	185,866	53.6	273,827	36.4	−32.1
6	Rye	1,379	1.8	867	14.4	58.9	Bu.	6,826	3.0	15,438	13.9	−55.8
	Hay and forage:											
7	Timothy alone	35,781	44.3	48,868	41.5	−26.8	Tons	35,613	56.8	76,230	44.6	−53.3
8	Timothy and clover mixed	91,912	65.3	60,437	66.8	52.1	Tons	105,845	70.4	102,660	65.8	3.1
9	Clover alone	5,576	42.4	8,433	72.9	−33.9	Tons	6,967	51.0	17,350	72.0	−59.8
10	Alfalfa	220,281	58.9	183,264	81.7	20.2	Tons	408,993	69.7	514,803	85.8	−20.6
11	Other tame grasses	39,254	32.6	22,195	37.5	76.9	Tons	39,523	61.6	37,424	47.6	5.6
12	Annual legumes cut for hay	779	12.1	5,988	13.0	336.2	Tons	1,184	25.4	10,418	14.8	86.0
13	Small grains cut for hay	35,349	5.4				Tons	18,194	10.6			
14	Wild, salt, or prairie grasses	177,385	39.3	329,579	56.4	−46.2	Tons	131,652	46.8	339,821	57.6	−61.3
15	Silage crops	620	32.3	(2)			Tons	3,357	43.2	(2)		
	Vegetables:											
16	Potatoes	4,903	22.1	11,137	53.8	−56.0	Bu.	568,008	34.2	1,938,677	59.8	−70.7
	Fruits:											
17	Apples	[3] 761,904	71.9	(2)			Bu.	477,796	70.9	(2)		
18	Cherries	[3] 47,600	72.5	(2)			Bu.	9,595	65.0	(2)		
	Miscellaneous:											
19	Sugar beets grown for sugar	7,686	89.4	7,551	86.7	1.8	Tons	67,297	91.2	91,509	84.1	−26.5
20	Clover and alfalfa seed[4]	3,330	34.6	1,527	41.3	118.1	Bu.	8,824	37.8	4,817	46.4	83.2
21	Dry beans	1,022	44.5				Bu.	14,576	55.8	(2)		
22	Dry peas	12,670	81.2	951	89.3		Bu.	143,042	85.9	19,966	92.1	616.4
23	Flaxseed	3,740	2.9	(2)			Bu.	22,534	6.9	(2)		
24	Sugar-beet seed	965	56.3	(2)			Lbs.	508,385	52.0	(2)		

	Crop.	Average yield per acre, 1919.						Value.				
		Unit.	For state.	On non-irrigated land.	On irrigated land.			1919		1909		Per cent of increase.[1]
					Average.	Per cent of average for state.	Per cent of average on non-irrigated land.	Amount.	Per cent of total for state.	Amount.	Per cent of total for state.	
	Cereals:											
1	Corn	Bu.	8.5	7.7	14.0	164.7	181.8	$58,024	21.4	$38,613	20.8	50.3
2	Oats	Bu.	13.5	9.6	26.2	194.1	272.9	1,183,068	45.8	3,273,203	53.2	−63.9
3	Winter wheat	Bu.	5.2	4.9	8.4	161.5	171.4	702,687	11.9	1,064,794	20.0	322.7
4	Spring wheat	Bu.	4.3	3.3	12.7	295.3	384.8	3,708,527	31.0			
5	Barley	Bu.	11.8	8.5	18.1	153.4	212.9	278,799	53.6	189,952	39.7	46.8
6	Rye	Bu.	3.0	3.0	5.0	166.7	166.7	11,263	3.0	10,985	13.3	2.5
	Hay and forage:											
7	Timothy alone	Tons	0.78	0.60	1.00	128.2	166.7	1,050,584	56.8	736,041	46.2	42.7
8	Timothy and clover mixed	Tons	1.07	0.91	1.15	107.5	126.4	3,175,350	70.4	952,118	65.3	233.5
9	Clover alone	Tons	1.04	0.88	1.25	120.2	142.0	205,526	51.0	126,659	71.8	62.3
10	Alfalfa	Tons	1.57	1.15	1.86	118.5	161.7	11,247,308	69.7	3,188,918	84.1	252.7
11	Other tame grasses	Tons	0.85	0.68	1.01	118.8	148.5	1,047,360	61.6	318,494	55.0	228.8
12	Annual legumes cut for hay	Tons	0.73	0.62	1.54	211.0	248.4	28,416	25.4	81,597	13.8	470.0
13	Small grains cut for hay	Tons	0.37	0.35	0.72	194.6	205.7	436,656	10.6			
14	Wild, salt, or prairie grasses	Tons	0.62	0.55	0.74	119.4	134.5	3,093,822	46.8	2,392,486	57.9	29.3
15	Silage crops	Tons	4.05	3.40	5.41	133.6	159.1	40,284	43.2	(2)		
	Vegetables:											
16	Potatoes	Bu.	74.8	63.2	115.8	154.8	183.2	1,334,819	34.2	755,968	58.2	76.9
	Fruits:											
17	Apples	Bu.	[5] 0.6	[5] 0.7	[5] 0.6	100.0	85.7	788,363	70.9	(2)		
18	Cherries	Bu.	[5] 0.2	[5] 0.3	[5] 0.2	100.0	66.7	39,819	65.0	(2)		
	Miscellaneous:											
19	Sugar beets grown for sugar	Tons	8.58	7.14	8.76	102.1	122.7	740,267	91.2	461,208	84.9	60.5
20	Clover and alfalfa seed[4]	Bu.	2.4	2.3	2.6	108.3	113.0	211,776	37.8	36,007	40.7	488.2
21	Dry beans	Bu.	11.4	9.1	14.3	125.4	157.1	61,219	55.8	(2)		
22	Dry peas	Bu.	11.2	8.4	11.9	106.2	141.7	443,430	85.9	31,824	84.3	
23	Flaxseed	Bu.	2.5	2.4	6.0	240.0	250.0	100,276	6.9	(2)		
24	Sugar-beet seed	Lbs.	571.1	628.2	526.8	92.2	83.9	305,031	52.0	(2)		

[1] A minus sign (—) denotes decrease. Per cent not shown when more than 1,000.
[2] Not reported separately in 1919.
[3] Number of trees of bearing age.
[4] Not including red clover seed.
[5] Yield per tree.

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910.

[A minus sign (−) denotes decrease.]

		THE STATE.	Beaverhead.[1]	Big Horn.[2]	Blaine.[3]	Broadwater.	Carbon.[4]	Carter.[5]	Cascade.	Chouteau.[6]	Custer.[7]
1	Number of all farms in 1920	[8] 57,677	642	791	1,761	406	1,353	855	1,703	2,573	941
2	Number of farms irrigated in 1919	10,807	479	341	162	196	768	13	218	32	112
3	Per cent of all farms	18.7	74.6	43.1	9.2	42.1	56.8	1.5	12.8	1.2	11.9
4	Number of farms irrigated in 1909	8,970	480	.....	.....	231	912	.....	194	354	129
5	Per cent of increase, 1909-1919	20.5	.....	.....	.....	−15.2	.....	.....	12.4	.....	.....
	LAND AND FARM AREA.										
6	Approximate land area ....acres..	[8] 93,523,840	3,620,480	3,178,240	2,706,560	771,840	1,318,400	2,160,000	2,163,040	2,696,320	2,394,240
7	All land in farms ....acres..	[8] 35,979,656	637,009	748,749	1,159,056	394,482	446,386	567,495	1,252,262	1,508,898	997,169
8	Improved land in farms ....acres..	[8] 11,607,278	279,603	156,363	291,431	110,566	178,503	83,763	278,035	399,342	121,698
9	Area irrigated in 1919 ....acres..	1,681,729	302,375	48,306	59,119	25,733	99,235	340	14,864	6,629	8,469
10	Per cent of improved land in farms	15.3	111.7	30.5	20.3	23.3	55.6	0.5	5.9	1.6	7.0
11	Area irrigated in 1909 ....acres..	1,679,084	221,716	.....	.....	39,612	121,174	.....	25,063	110,291	19,399
12	Per cent of increase, 1909-1919	0.2	.....	.....	.....	−35.0	.....	.....	−40.7	.....	.....
13	Area enterprises were capable of irrigating in 1920 ....acres..	2,753,498	385,619	60,591	99,764	61,175	147,195	1,320	53,163	18,790	21,960
14	Area enterprises were capable of irrigating in 1910 ....acres..	2,205,155	238,267	.....	.....	50,870	129,922	.....	50,354	138,063	32,872
15	Per cent of increase, 1910-1920	24.9	.....	.....	.....	20.3	.....	.....	5.6	.....	.....
16	Area included in enterprises in 1920 ....acres..	4,329,148	525,181	87,765	190,347	109,435	156,675	3,045	144,376	49,244	25,872
17	Area included in enterprises in 1910 ....acres..	3,515,602	347,877	.....	.....	72,436	165,509	.....	81,279	153,849	37,191
18	Per cent of increase, 1910-1920	23.1	.....	.....	.....	51.1	.....	.....	77.6	.....	.....
19	Area of irrigated land reported as available for settlement ....acres..	207,530	1,800	.....	47,507	450	.....	.....	168	150	.....
	IRRIGATION WORKS.										
	Independent enterprises:										
20	Number, 1920	6,035	521	38	87	211	258	10	100	98	44
21	Number, 1910	5,534	446	.....	.....	180	288	.....	93	247	89
	Main ditches:										
22	Number, 1920	8,819	1,318	67	165	299	343	18	127	134	41
23	Number, 1910	6,673	901	.....	.....	221	284	.....	100	306	78
24	Length, 1920 ....miles..	16,411	2,004	209	358	591	831	15	213	491	88
25	Length, 1910 ....miles..	12,990	1,415	.....	.....	417	805	.....	217	747	169
26	Capacity, 1920 ....second-feet..	94,129	10,119	1,549	2,119	1,983	3,772	70	1,204	972	882
27	Capacity, 1910 ....second-feet..	83,849	8,596	.....	.....	1,938	4,112	.....	1,019	5,392	1,143
	Laterals:										
28	Number, 1920	10,680	2,931	18	271	96	406	33	122	318	13
29	Number, 1910	8,307	1,163	.....	.....	93	401	.....	192	630	119
30	Length, 1920 ....miles..	6,085	669	204	299	49	230	11	47	201	4
31	Length, 1910 ....miles..	5,944	[9] 555	.....	.....	61	335	.....	156	344	76
	Reservoirs:										
32	Number, 1920	468	25	8	45	4	1	13	15	27	18
33	Number, 1910	827	27	.....	.....	14	8	.....	62	137	76
34	Capacity, 1920 ....acre-feet..	1,871,720	136,449	128	15,671	211	91	1,513	218,686	3,124	844
35	Capacity, 1910 ....acre-feet..	580,261	158,772	.....	.....	430	467	.....	39,772	44,146	7,728
	Flowing wells:										
36	Number, 1920	41	1	.....	.....	.....	.....	.....	.....	.....	1
37	Number, 1910	15	.....	.....	.....	.....	1	.....	.....	.....	4
38	Capacity, 1920 ....gallons per minute..	4,608	.....	.....	.....	.....	.....	.....	.....	.....	1
39	Capacity, 1910 ....gallons per minute..	22,185	.....	.....	.....	.....	2,138	.....	.....	.....	42
	Pumped wells:										
40	Number, 1920	22	.....	.....	.....	5	.....	.....	.....	1	.....
41	Number, 1910	10	.....	.....	.....	3	.....	.....	.....	.....	.....
42	Capacity, 1920 ....gallons per minute..	11,083	.....	.....	.....	.....	.....	.....	.....	10	.....
43	Capacity, 1910 ....gallons per minute..	5,263	.....	.....	.....	195	.....	.....	.....	.....	.....
	Pumping plants:										
44	Number, 1920	253	.....	9	7	8	4	.....	22	26	12
45	Number, 1910	125	.....	.....	.....	4	4	.....	11	21	8
46	Engine capacity, 1920 ....horsepower..	10,341	.....	172	136	94	26	.....	565	577	375
47	Engine capacity, 1910 ....horsepower..	3,511	.....	.....	.....	16	59	.....	377	709	568
48	Pump capacity, 1920 ....gallons per minute..	453,231	.....	10,225	8,785	2,688	1,741	.....	32,310	42,260	28,250
49	Pump capacity, 1910 ....gallons per minute..	281,199	.....	.....	.....	1,438	1,182	.....	29,225	51,244	42,925
50	Average lift, 1920 ....feet..	20	.....	14	20	16	10	.....	18	18	14
	CAPITAL INVESTED.										
51	Capital invested to Jan. 1, 1920 ....dollars..	52,143,363	2,385,045	2,311,418	2,549,735	476,675	1,456,983	14,095	2,555,363	649,656	299,355
52	Capital invested to July 1, 1910 ....dollars..	22,970,958	4,003,286	.....	.....	379,681	546,894	.....	832,204	849,450	375,414
53	Per cent of increase, 1910-1920	127.0	.....	.....	.....	25.5	.....	.....	207.1	.....	.....
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ..dollars..	18.94	6.18	38.13	25.56	7.79	9.90	10.68	48.07	34.10	13.63
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ..dollars..	10.42	16.80	.....	.....	7.46	4.21	.....	16.53	6.15	11.42
	ESTIMATED FINAL COST.										
56	Estimated final cost of existing enterprises in 1920 ....dollars..	70,679,028	2,433,395	2,686,470	2,737,185	482,625	1,463,619	18,095	5,120,595	1,051,398	376,180
57	Estimated final cost of existing enterprises in 1910 ....dollars..	32,382,077	4,003,286	.....	.....	379,681	546,894	.....	912,194	890,801	379,469
58	Per cent of increase, 1910-1920	118.4	.....	.....	.....	27.1	.....	.....	461.3	.....	.....
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ..dollars..	16.19	4.63	30.61	14.38	4.41	9.34	5.94	35.47	26.13	14.54
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ..dollars..	9.21	11.51	.....	.....	5.24	3.30	.....	11.22	4.60	6.63

[1] Part of Madison annexed in 1911.
[2] Organized from parts of Rosebud and Yellowstone in 1913.
[3] Organized from part of Chouteau in 1912; part taken to form part of Phillips in 1915.
[4] Part taken to form part of Stillwater in 1913; part annexed to Yellowstone and part of Yellowstone annexed in 1919.
[5] Organized from part of Fallon in 1917.
[6] Parts taken to form Blaine and Hill in 1912, and parts of Pondera and Liberty in 1919.
[7] Part, including Northern Cheyenne Indian Reservation and part of Crow Indian Reservation, taken to form Rosebud in 1901; parts taken to form Fallon in 1913, part of Prairie in 1915, and Powder River in 1919.
[8] Includes Liberty and McCone Counties and that part of Yellowstone National Park which is in Montana, for which no irrigation is reported in 1919.

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910—Continued.

[A minus sign (−) denotes decrease.]

		Dawson.[1]	Deer Lodge.[2]	Fallon.[3]	Fergus.[4]	Flathead.[5]	Gallatin.	Garfield.[6]	Glacier.[7]	Granite.	Hill.[8]
1	Number of all farms in 1920	1,195	302	758	4,226	1,923	1,349	1,530	372	354	2,257
2	Number of farms irrigated in 1919	14	120	2	154	247	782	3	19	189	34
3	Per cent of all farms	1.2	39.4	0.3	3.6	12.8	58.0	0.2	5.1	53.4	1.5
4	Number of farms irrigated in 1909	100	170	.....	191	63	802	.....	.....	175	.....
5	Per cent of increase, 1909-1919	.....	.....	.....	.....	.....	−2.5	.....	.....	8.0	.....
	LAND AND FARM AREA.										
6	Approximate land area ... acres	1,509,760	476,800	1,929,120	4,573,440	3,909,760	1,604,480	3,095,680	1,907,840	1,098,880	1,850,880
7	All land in farms ... acres	747,993	58,484	576,754	2,573,981	470,283	783,189	874,129	545,256	254,148	1,107,399
8	Improved land in farms ... acres	296,620	24,210	171,815	1,047,819	179,201	350,776	136,554	168,338	72,336	491,358
9	Area irrigated in 1919 ... acres	1,674	13,474	.....	33,499	11,244	103,975	370	9,767	31,177	2,528
10	Per cent of improved land in farms	0.6	55.7	.....	3.2	6.3	29.6	0.3	5.8	43.1	0.5
11	Area irrigated in 1909 ... acres	11,158	29,881	.....	48,232	14,527	127,449	.....	.....	24,107	.....
12	Per cent of increase, 1909-1919	.....	.....	.....	.....	.....	−18.4	.....	.....	29.3	.....
13	Area enterprises were capable of irrigating in 1920 ... acres	6,860	24,271	260	82,521	24,642	174,906	390	25,600	38,500	12,033
14	Area enterprises were capable of irrigating in 1910 ... acres	46,741	39,949	.....	84,558	19,908	139,050	.....	.....	28,350	.....
15	Per cent of increase, 1910-1920	.....	.....	.....	.....	.....	25.8	.....	.....	35.8	.....
16	Area included in enterprises in 1920 ... acres	7,663	40,125	260	96,690	33,787	287,590	4,090	118,500	58,394	14,824
17	Area included in enterprises in 1910 ... acres	72,051	45,858	.....	100,364	86,287	169,926	.....	.....	33,916	.....
18	Per cent of increase, 1910-1920	.....	.....	.....	.....	.....	69.2	.....	.....	72.2	.....
19	Area of irrigated land reported as available for settlement ... acres	793	560	.....	2,480	.....	3,270	.....	.....	.....	.....
	IRRIGATION WORKS.										
	Independent enterprises:										
20	Number, 1920	14	90	2	232	129	463	2	2	170	42
21	Number, 1910	30	161	.....	296	42	389	.....	.....	151	.....
	Main ditches:										
22	Number, 1920	11	142	2	360	109	531	5	6	277	67
23	Number, 1910	27	200	.....	253	40	334	.....	.....	172	.....
24	Length, 1920 ... miles	10	285	2	580	283	1,127	15	114	272	95
25	Length, 1910 ... miles	108	341	.....	536	82	770	.....	.....	231	.....
26	Capacity, 1920 ... second-feet	83	1,304	2	3,263	1,292	5,315	3	341	1,822	235
27	Capacity, 1910 ... second-feet	1,275	1,677	.....	2,847	454	5,552	.....	.....	1,177	.....
	Laterals:										
28	Number, 1920	37	399	6	472	162	204	.....	.....	143	282
29	Number, 1910	56	155	.....	369	45	479	.....	.....	94	.....
30	Length, 1920 ... miles	10	65	2	195	139	269	.....	.....	44	91
31	Length, 1910 ... miles	143	79	.....	191	46	362	.....	.....	41	.....
	Reservoirs:										
32	Number, 1920	2	9	2	16	11	4	.....	3	2	31
33	Number, 1910	16	20	.....	31	7	12	.....	.....	16	.....
34	Capacity, 1920 ... acre-feet	2	169	80	31,638	38,161	2,199	.....	95,000	330	7,205
35	Capacity, 1910 ... acre-feet	1,119	143	.....	655	12,281	1,420	.....	.....	68	.....
	Flowing wells:										
36	Number, 1920	.....	1	.....	.....	9	.....	.....	.....	.....	1
37	Number, 1910	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
38	Capacity, 1920 ... gallons per minute	.....	2,250	.....	.....	1,063	.....	.....	.....	.....	50
39	Capacity, 1910 ... gallons per minute	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Pumped wells:										
40	Number, 1920	.....	.....	.....	1	.....	.....	.....	.....	.....	1
41	Number, 1910	2	.....	.....	.....	.....	1	.....	.....	.....	.....
42	Capacity, 1920 ... gallons per minute	.....	.....	.....	1,500	.....	.....	.....	.....	.....	3,000
43	Capacity, 1910 ... gallons per minute	4,550	.....	.....	.....	.....	135	.....	.....	.....	.....
	Pumping plants:										
44	Number, 1920	4	.....	.....	14	15	6	.....	.....	.....	12
45	Number, 1910	12	.....	.....	2	.....	3	.....	.....	.....	.....
46	Engine capacity, 1920 ... horsepower	487	.....	.....	204	170	115	.....	.....	.....	352
47	Engine capacity, 1910 ... horsepower	205	.....	.....	35	.....	24	.....	.....	.....	.....
48	Pump capacity, 1920 ... gallons per minute	7,750	.....	.....	16,180	9,165	6,729	.....	.....	.....	21,335
49	Pump capacity, 1910 ... gallons per minute	23,942	.....	.....	3,350	.....	785	.....	.....	.....	.....
50	Average lift, 1920 ... feet	41	.....	.....	14	38	14	.....	.....	.....	16
	CAPITAL INVESTED.										
51	Capital invested to Jan. 1, 1920 ... dollars	154,334	254,148	2,900	729,436	836,723	1,176,492	50,385	3,545,069	344,544	188,822
52	Capital invested to July 1, 1910 ... dollars	2,819,774	139,766	.....	375,025	239,539	1,017,474	.....	.....	76,500	.....
53	Per cent of increase, 1910-1920	.....	.....	.....	.....	.....	15.6	.....	.....	350.4	.....
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	22.50	14.59	11.15	8.84	33.96	6.73	129.19	138.48	8.95	15.69
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	60.33	3.50	.....	4.44	12.03	7.32	.....	.....	2.70	.....
	ESTIMATED FINAL COST.										
56	Estimated final cost of existing enterprises in 1920 ... dollars	189,670	356,338	2,900	743,186	1,234,620	1,211,747	50,885	7,219,059	355,744	208,222
57	Estimated final cost of existing enterprises in 1910 ... dollars	2,138,950	139,766	.....	375,025	2,371,947	1,017,474	.....	.....	76,500	.....
58	Per cent of increase, 1910-1920	.....	.....	.....	.....	.....	19.1	.....	.....	365.0	.....
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	24.67	8.88	11.15	7.69	36.54	4.21	12.44	60.92	6.09	14.05
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	43.24	3.05	.....	3.74	27.49	5.99	.....	.....	2.26	.....

[1] Parts taken to form Richland and part of Wibaux in 1914, part of Prairie in 1915, and Garfield and part of McCone in 1919; part annexed to Wibaux in 1917.
[2] Parts taken to form Powell in 1901; part of Silver Bow annexed in 1903; and part annexed to Silver Bow in 1917.
[3] Organized from part of Custer in 1913; parts taken to form part of Wibaux in 1914, part of Prairie in 1915, and Carter in 1917.
[4] Part annexed to Meagher and part taken to form part of Musselshell in 1911.
[5] Part taken to form Lincoln in 1909; part annexed to Missoula in 1917.
[6] Organized from part of Dawson in 1919.
[7] Organized from part of Teton in 1919.
[8] Organized from part of Chouteau in 1912; parts taken to form part of Toole in 1914 and part of Liberty in 1919.

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910—Continued.

[A minus sign (—) denotes decrease.]

		Jefferson.	Lewis and Clark.	Lincoln.[1]	Madison.[2]	Meagher.[3]	Mineral.[4]	Missoula.[5]	Musselshell.[6]	Park.	Phillips.[7]
1	Number of all farms in 1920	555	855	341	901	447	95	1,323	1,604	756	1,914
2	Number of farms irrigated in 1919	227	109	81	614	122	28	854	49	402	137
3	Per cent of all farms	40.9	12.7	23.8	68.1	27.3	29.5	64.6	3.1	53.2	7.2
4	Number of farms irrigated in 1909	188	295	54	592	176		393		465	
5	Per cent of increase, 1909-1919	20.7	—63.1							—13.2	
	LAND AND FARM AREA.										
6	Approximate land area ... acres	1,044,480	2,206,080	2,319,360	2,318,080	1,516,160	787,200	2,080,720	1,857,920	1,703,040	3,313,920
7	All land in farms ... acres	281,494	754,135	63,050	564,516	391,803	29,269	388,408	989,369	613,397	1,084,725
8	Improved land in farms ... acres	80,933	132,576	16,894	168,635	136,839	5,180	173,051	382,139	168,679	227,811
9	Area irrigated in 1919 ... acres	24,946	33,226	5,923	115,398	25,075	967	50,237	4,138	32,854	28,047
10	Per cent of improved land in farms	30.8	25.1	35.1	68.5	18.3	18.7	29.0	1.1	31.3	12.3
11	Area irrigated in 1909 ... acres	23,314	38,391	2,105	102,179	102,080		42,669		78,722	
12	Per cent of increase, 1909-1919	7.0	—13.5	181.4						—32.9	
13	Area enterprises were capable of irrigating in 1920 ... acres	45,553	69,907	9,353	172,083	48,173	2,105	120,456	11,659	88,940	43,748
14	Area enterprises were capable of irrigating in 1910 ... acres	26,373	55,317	3,081	118,115	128,209		47,917		99,862	
15	Per cent of increase, 1910-1920	72.7	26.4	203.6						—10.9	
16	Area included in enterprises in 1920 ... acres	86,086	94,133	13,737	265,103	60,348	6,690	158,983	19,255	125,767	85,192
17	Area included in enterprises in 1910 ... acres	37,494	107,789	4,281	191,230	146,273		127,779		149,533	
18	Per cent of increase, 1910-1920	129.6	—12.7	220.9						—15.9	
19	Area of irrigated land reported as available for settlement ... acres	800			3,489		110		610		34,555
	IRRIGATION WORKS.										
	Independent enterprises:										
20	Number, 1920	175	311	64	517	137	57	253	47	314	26
21	Number, 1910	149	251	32	446	280		262		363	
	Main ditches:										
22	Number, 1920	226	423	56	627	376	55	257	73	382	47
23	Number, 1910	159	313	30	493	481		268		361	
24	Length 1920 ... miles	440	635	83	1,304	490	36	507	126	756	124
25	Length, 1910 ... miles	259	518	30	938	792		351		729	
26	Capacity, 1920 ... second-feet	9,547	2,356	577	6,290	1,546	239	2,494	673	3,180	852
27	Capacity, 1910 ... second-feet	1,267	2,394	187	7,855	4,464		2,316		3,665	
	Laterals:										
28	Number, 1920	123	268	35	349	577	69	437	227	315	176
29	Number, 1910	137	273	38	752	278		78		625	
30	Length, 1920 ... miles	52	107	22	257	127	7	682	78	122	120
31	Length, 1910 ... miles	67	180	20	487	170		45		435	
	Reservoirs:										
32	Number, 1920	11	31	10	37	7	6	8	2	7	8
33	Number, 1910	15	38	3	39	14		12		41	
34	Capacity, 1920 ... acre-feet	8,288	651,071	313	24,579	181	129	43,207	129	8,629	48,221
35	Capacity, 1910 ... acre-feet	587	1,482	1	5,927	3,907		1,752		5,747	
	Flowing wells:										
36	Number, 1920		4	2							
37	Number, 1910							1			
38	Capacity, 1920 ... gallons per minute		5	30							
39	Capacity, 1910 ... gallons per minute							5			
	Pumped wells:										
40	Number, 1920		7					2		1	
41	Number, 1910			1							
42	Capacity, 1920 ... gallons per minute		1,445							49	
43	Capacity, 1910 ... gallons per minute			30							
	Pumping plants:										
44	Number, 1920	1	14	1			3	5	5	1	6
45	Number, 1910	1		2				2		1	
46	Engine capacity, 1920 ... horsepower	10	3,884				48	32	85	15	154
47	Engine capacity, 1910 ... horsepower	5		4				45		1	
48	Pump capacity, 1920 ... gallons per minute	280	77,949	5			361	2,141	11,970		10,420
49	Pump capacity, 1910 ... gallons per minute	550		90				2,932		94	
50	Average lift, 1920 ... feet	33	45	10			28	22	20	18	18
	CAPITAL INVESTED.										
51	Capital invested to Jan. 1, 1920 ... dollars	685,014	784,413	195,752	2,566,017	346,257	41,481	3,973,469	156,239	672,677	1,417,559
52	Capital invested to July 1, 1910 ... dollars	148,684	711,000	21,526	1,101,329	490,092		332,442		470,173	
53	Per cent of increase, 1910-1920	360.7	10.3	809.4						43.1	
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	15.04	11.22	20.93	14.91	7.19	19.71	33.00	13.32	7.56	32.40
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	5.64	12.85	6.99	9.32	3.82		6.94		4.71	
	ESTIMATED FINAL COST.										
56	Estimated final cost of existing enterprises in 1920 ... dollars	699,764	819,113	197,902	2,587,647	363,507	47,646	5,909,975	160,200	691,027	1,430,709
57	Estimated final cost of existing enterprises in 1910 ... dollars	148,684	806,000	21,526	1,101,329	490,092		2,498,282		470,173	
58	Per cent of increase, 1910-1920	370.6	—8.6	819.4						47.0	
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	8.13	8.70	14.41	9.76	6.02	7.12	37.67	8.32	5.49	16.81
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	2.97	8.21	5.03	5.76	3.35		19.55		3.14	

[1] Organized from part of Flathead in 1909.
[2] Part annexed to Beaverhead in 1911.
[3] Part of Fergus annexed in 1911; parts taken to form part of Musselshell in 1911 and part of Wheatland in 1917.
[4] Organized from part of Missoula in 1914.
[5] Parts taken to form Sanders in 1906, and Mineral in 1914; part of Powell annexed in 1915. Parts of Flathead and Powell annexed in 1917.
[6] Organized from parts of Fergus, Meagher, and Yellowstone in 1911.
[7] Organized from parts of Blaine and Valley in 1915.

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910—Continued.

[A minus sign (—) denotes decrease. Per cent not shown when base is less than 100, or when per cent is more than 1,000.]

		Pondera.[1]	Powder River.[2]	Powell.[3]	Prairie.[4]	Ravalli.	Richland.[5]	Roosevelt.[6]	Rosebud.[7]	Sanders.[8]	Sheridan.[9]
1	Number of all farms in 1920	1,060	832	476	673	1,231	1,577	1,215	1,136	667	2,408
2	Number of farms irrigated in 1919	427	11	219	8	1,096	200	7	61	123	16
3	Per cent of all farms	40.3	1.3	46.0	1.2	89.0	12.7	0.6	5.4	18.4	0.7
4	Number of farms irrigated in 1909			278		975			179	62	
5	Per cent of increase, 1909–1919					12.4					
	LAND AND FARM AREA										
6	Approximate land area ... acres	1,001,120	2,135,680	1,490,560	1,114,880	1,530,240	1,345,920	1,505,920	3,195,520	1,831,040	1,719,040
7	All land in farms ... acres	629,995	397,625	520,965	548,969	245,965	812,194	673,936	1,608,235	175,088	1,155,859
8	Improved land in farms ... acres	206,150	75,240	125,924	126,134	114,473	311,006	302,519	226,113	42,425	570,955
9	Area irrigated in 1919 ... acres	55,734	800	61,045	446	107,028	15,450	1,190	20,814	6,373	3,879
10	Per cent of improved land in farms	20.9	1.1	50.9	0.4	93.5	5.0	0.4	9.2	15.0	0.7
11	Area irrigated in 1909 ... acres			51,373		93,441			33,271	3,101	
12	Per cent of increase, 1909–1919					14.5				105.5	
13	Area enterprises were capable of irrigating in 1920 ... acres	103,411	3,785	93,120	834	126,401	35,835	7,537	29,670	13,291	10,355
14	Area enterprises were capable of irrigating in 1910 ... acres			60,643		118,984			64,452	4,101	
15	Per cent of increase, 1910–1920					6.2				224.1	
16	Area included in enterprises in 1920 ... acres	212,743	3,785	134,742	834	143,892	41,385	115,955	36,733	26,537	16,499
17	Area included in enterprises in 1910 ... acres			81,360		202,296			92,217	9,812	
18	Per cent of increase, 1910–1920					−28.9					
19	Area of irrigated land reported as available for settlement ... acres	27,198		600			23,535		200		
	IRRIGATION WORKS.										
	Independent enterprises:										
20	Number, 1920	30	23	272	10	449	9	8	36	83	28
21	Number, 1910			302		350			90	61	
	Main ditches:										
22	Number, 1920	44	31	526	7	578	13	6	44	73	28
23	Number, 1910			368		364			102	62	
24	Length, 1920 ... miles	143	17	809	9	762	60	48	110	87	48
25	Length, 1910 ... miles			563		682			284	66	
26	Capacity, 1920 ... second-feet	3,184	89	3,233	55	3,430	672	287	1,540	1,343	419
27	Capacity, 1910 ... second-feet			2,563		4,235			1,921	184	
	Laterals:										
28	Number, 1920	232	17	260	3	428	57	68	95	91	21
29	Number, 1910			290		295			89	79	
30	Length, 1920 ... miles	499	3	62		130	78	63	28	71	12
31	Length, 1910 ... miles			137		264			71	24	
	Reservoirs:										
32	Number, 1920	6	8	8	3	10	4	6	1	1	5
33	Number, 1910			40		46			17		
34	Capacity, 1920 ... acre-feet	62,800	30	276	5	7,634	395	50,095	40	3,778	468
35	Capacity, 1910 ... acre-feet			5,502		57,450			778		
	Flowing wells:										
36	Number, 1920	3	12		5					1	
37	Number, 1910										
38	Capacity, 1920 ... gallons per minute	1,000	83		104						
39	Capacity, 1910 ... gallons per minute										
	Pumped wells:										
40	Number, 1920		1								
41	Number, 1910								1	2	
42	Capacity, 1920 ... gallons per minute		10								
43	Capacity, 1910 ... gallons per minute								176	177	
	Pumping plants:										
44	Number, 1920		4	1	3		3	1	10	1	14
45	Number, 1910								18	3	
46	Engine capacity, 1920 ... horsepower		56	16	462		125	50	269	7	183
47	Engine capacity, 1910 ... horsepower								566	5	
48	Pump capacity, 1920 ... gallons per minute		4,750	630	19,015		9,750	4,500	13,100		11,700
49	Pump capacity, 1910 ... gallons per minute								38,507	197	
50	Average lift, 1920 ... feet		12	12	24		20	22	16	10	12
	CAPITAL INVESTED.										
51	Capital invested to Jan. 1, 1920 ... dollars	4,919,899	20,435	877,108	66,866	994,246	2,442,376	713,197	1,024,981	595,212	91,808
52	Capital invested to July 1, 1910 ... dollars			306,173		960,144			1,007,778	27,869	
53	Per cent of increase, 1910–1920					3.6					
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	47.58	5.40	9.42	80.18	7.87	68.16	94.63	34.55	44.78	8.87
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars			5.05		8.07			15.64	6.80	
	ESTIMATED FINAL COST.										
56	Estimated final cost of existing enterprises in 1920 ... dollars	5,264,899	37,835	929,633	66,866	998,697	2,664,392	4,327,335	1,040,341	854,850	227,102
57	Estimated final cost of existing enterprises in 1910 ... dollars			306,173		1,185,094			1,286,565	27,869	
58	Per cent of increase, 1910–1920					−15.7					
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	24.75	10.00	6.90	80.18	6.94	64.38	37.32	28.32	32.21	13.76
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars			3.76		5.86			13.95	2.84	

[1] Organized from parts of Choteau and Teton in 1919.
[2] Organized from part of Custer in 1919.
[3] Organized from part of Deer Lodge in 1901; part annexed to Missoula in 1917.
[4] Organized from parts of Custer, Dawson, and Fallon in 1915.
[5] Organized from part of Dawson in 1914; parts taken to form part of Wibaux in 1914 and part of McCone in 1919.
[6] Organized from part of Sheridan in 1919.
[7] Organized from part of Custer County, including Northern Cheyenne Indian Reservation and part of Crow Indian Reservation in 1901; parts taken to form part of Big Horn in 1913 and Treasure in 1919.
[8] Organized from part of Missoula in 1906.
[9] Organized from part of Valley in 1913; part taken to form Roosevelt in 1919.

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910—Continued.

		Silver Bow [1]	Stillwater. [2]	Sweet Grass [3]	Teton. [4]	Toole. [5]	Treasure. [6]	Valley. [7]	Wheatland [8]	Wibaux. [9]	Yellowstone. [10]
1	Number of all farms in 1920	331	1,570	863	1,135	953	330	2,169	698	530	2,211
2	Number of farms irrigated in 1919	107	291	261	178	3	98	43	54	1	1,095
3	Per cent of all farms	32.3	21.2	30.2	15.7	0.3	29.7	2.0	7.8	0.2	49.5
4	Number of farms irrigated in 1909	84		332	179			179			800
5	Per cent of increase, 1909–1919										
	LAND AND FARM AREA.										
6	Approximate land area ... acres	464,640	1,137,280	1,260,160	1,308,160	1,253,120	614,400	3,486,080	903,040	565,120	1,671,040
7	All land in farms ... acres	109,170	660,996	645,120	613,506	370,163	237,133	1,126,872	589,827	326,167	1,067,425
8	Improved land in farms ... acres	28,238	278,040	138,530	234,833	153,852	44,933	344,335	205,076	140,299	333,174
9	Area irrigated in 1919 ... acres	11,519	33,039	47,306	55,433	839	7,788	20,800	14,478		101,378
10	Per cent of improved land in farms	40.8	11.9	34.1	23.6	0.5	17.3	6.0	7.1		30.4
11	Area irrigated in 1909 ... acres	7,385		58,963	99,711			52,320			97,420
12	Per cent of increase, 1909–1919										
13	Area enterprises were capable of irrigating in 1920 ... acres	15,521	44,926	79,069	119,323	976	21,017	36,336	26,946	100	123,506
14	Area enterprises were capable of irrigating in 1910 ... acres	8,646		82,979	140,444			64,261			182,888
15	Per cent of increase, 1910–1920										
16	Area included in enterprises in 1920 ... acres	20,386	49,432	146,265	222,521	1,291	21,462	93,308	48,091	100	135,190
17	Area included in enterprises in 1910 ... acres	10,059		142,178	262,186			203,256			220,206
18	Per cent of increase, 1910–1920										
19	Area of irrigated land reported as available for settlement ... acres			10,000	27,000			16,848			3,317
	IRRIGATION WORKS.										
	Independent enterprises:										
20	Number, 1920	144	128	164	62	10	15	30	61	1	48
21	Number, 1910	79		232	118			126			71
	Main ditches:										
22	Number, 1920	211	134	283	78	8	9	32	115	1	54
23	Number, 1910	97		249	135			123			102
24	Length, 1920 ... miles	220	300	547	328	11	30	96	283	2	417
25	Length, 1910 ... miles	109		644	468			203			516
26	Capacity, 1920 ... second-feet	720	1,600	3,173	2,239	46	397	4,324	1,179		2,545
27	Capacity, 1910 ... second-feet	436		3,795	3,693			5,081			4,671
	Laterals:										
28	Number, 1920	26	65	148	93	14	74	116	362		86
29	Number, 1910	73		766	406			83			205
30	Length, 1920 ... miles	36	64	159	199	6	44	79	198		341
31	Length, 1910 ... miles	37		384	848			53			333
	Reservoirs:										
32	Number, 1920	6	3	9	6	7		13	5	1	3
33	Number, 1910	19		12	25			63			17
34	Capacity, 1920 ... acre-feet	12	2	18,153	85,718	60		1,546	2,803	58	2,509
35	Capacity, 1910 ... acre-feet	162		17,767	174,261			46,823			174
	Flowing wells:										
36	Number, 1920	1									
37	Number, 1910				9						
38	Capacity, 1920 ... gallons per minute	2									
39	Capacity, 1910 ... gallons per minute				20,000						
	Pumped wells:										
40	Number, 1920	1				2					
41	Number, 1910										
42	Capacity, 1920 ... gallons per minute	80				5,000					
43	Capacity, 1910 ... gallons per minute										
	Pumping plants:										
44	Number, 1920	2	1			3	14	7	1		11
45	Number, 1910	1		1				24			6
46	Engine capacity, 1920 ... horsepower	10	45			258	434	137	20		767
47	Engine capacity, 1910 ... horsepower	6		10				514			342
48	Pump capacity, 1920 ... gallons per minute	130				12,100	71,870	9,020	1,000		5,102
49	Pump capacity, 1910 ... gallons per minute	200		1,350				52,320			30,898
50	Average lift, 1920 ... feet	58	63			16	18	14	30		26
	CAPITAL INVESTED.										
51	Capital invested to Jan. 1, 1920 ... dollars	292,302	402,941	1,022,451	2,698,814	26,231	483,790	1,006,823	234,750	3,000	3,303,880
52	Capital invested to July 1, 1910 ... dollars	80,435		834,057	1,221,220			508,449			3,094,560
53	Per cent of increase, 1910–1920										
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	18.83	8.97	13.06	22.62	26.88	23.02	27.71	6.35	30.00	26.75
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	9.30		10.05	8.70			7.91			16.92
	ESTIMATED FINAL COST.										
56	Estimated final cost of existing enterprises in 1920 ... dollars	296,827	407,541	1,032,951	4,731,005	26,731	485,340	2,097,253	246,350	3,000	3,491,298
57	Estimated final cost of existing enterprises in 1910 ... dollars	80,435		834,057	2,984,220			2,621,041			3,178,630
58	Per cent of increase, 1910–1920										
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	14.56	8.24	7.06	21.26	20.71	22.61	22.48	5.12	30.00	25.83
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	8.00		5.87	8.24			12.90			14.43

[1] Part annexed to Deer Lodge in 1903; part of Deer Lodge annexed in 1917.
[2] Organized from parts of Carbon, Sweet Grass, and Yellowstone in 1913. Part annexed to Sweet Grass in 1915.
[3] Parts taken to form part of Stillwater in 1913 and part of Wheatland in 1917. Part of Stillwater annexed in 1915.
[4] Part taken to form part of Toole in 1914; parts taken to form Glacier and part of Pondera in 1919.
[5] Organized from parts of Hill and Teton in 1914.
[6] Organized from part of Rosebud in 1919.
[7] Parts taken to form Sheridan in 1913 and part of Phillips in 1915.
[8] Organized from parts of Meagher and Sweet Grass in 1917.
[9] Organized from parts of Dawson, Fallon, and Richland in 1914; part of Dawson annexed in 1917.
[10] Parts taken to form part of Musselshell in 1911 and parts of Big Horn and Stillwater in 1913; part annexed to Carbon and part of Carbon annexed in 1919.

NEBRASKA.

INTRODUCTION.

The following pages present the statistics of irrigation for the state of Nebraska collected at the census of 1920. Statistics of acreage irrigated, of acreage, yield, and value of crops grown on irrigated land, and of cost of operation and maintenance relate to the year 1919; other items relate to the year 1920. Throughout the report figures for the census of 1910 are given for purposes of comparison; and, for the purpose of showing the historical development of irrigation, items which have been reported in censuses previous to 1910 are presented.

Statistics of number of farms irrigated and of acreage, yield, and value of crops grown on irrigated land were collected in the general census of agriculture. All other statistics were obtained in a special canvass of irrigation enterprises.

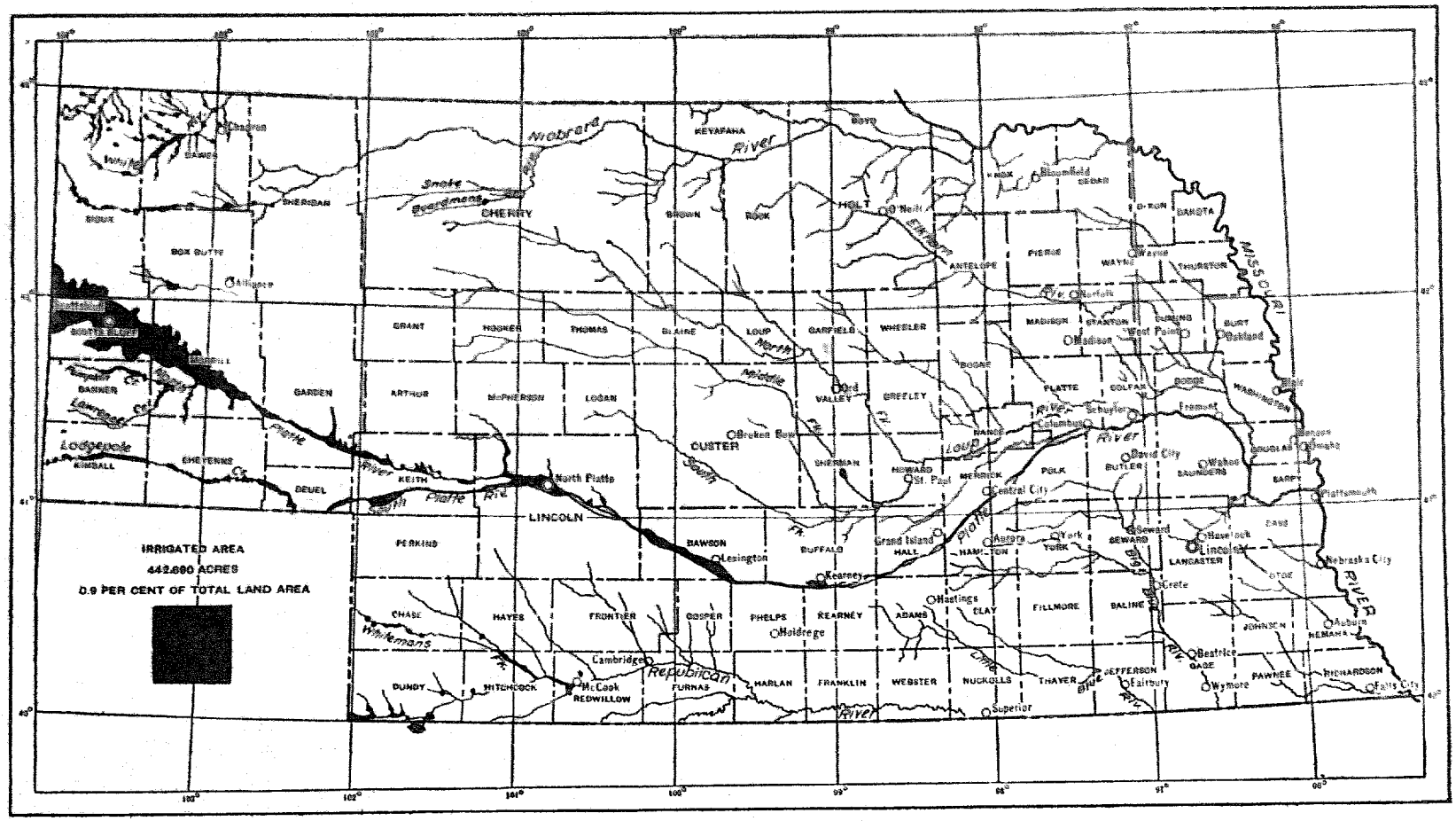
TABLE 1.—SUMMARY FOR THE STATE: 1920 AND 1910.

ITEM.	CENSUS OF—		INCREASE.[1]	
	1920	1910	Amount.	Per cent.
Number of all farms	124,417	129,678	−5,261	−4.1
Approximate land area of the state ... acres	49,157,120	49,157,120	.....	.....
All land in farms ... acres	42,225,475	38,622,021	3,603,454	9.3
Improved land in farms ... acres	23,109,624	24,382,577	−1,272,953	−5.2
Number of farms irrigated	3,021	1,852	1,169	63.1
Area irrigated ... acres	442,690	255,950	186,740	73.0
Area enterprises were capable of irrigating ... acres	562,468	429,225	133,243	31.0
Area included in enterprises ... acres	766,768	680,133	86,635	12.7
Per cent irrigated:				
Number of all farms	2.4	1.4	1.0	.....
Approximate land area of the state	0.9	0.5	0.4	.....
Land in farms	1.0	0.7	0.3	.....
Improved land in farms	1.9	1.0	0.9	.....
Excess of area enterprises were capable of irrigating over area irrigated ... acres	119,778	173,275	−53,497	−30.9
Excess of area included in enterprises over area irrigated ... acres	324,078	424,183	−100,105	−23.6
Capital invested	$13,909,185	$7,798,310	$6,110,875	78.4
Average per acre enterprises were capable of irrigating	$24.73	$18.17	$6.56	36.1
Estimated final cost of existing enterprises	$18,030,154	$9,485,231	$8,544,923	90.1
Average per acre included in enterprises	$23.51	$13.95	$9.56	68.5
Average cost of operation and maintenance per acre	$1.48	$1.09	$0.39	35.8
IRRIGATION WORKS.				
Number of enterprises	470	474	−4	−0.8
Number of main ditches	513	420	93	22.1
Length of main ditches ... miles	1,780	1,459	321	22.0
Capacity of main ditches ... second-feet	11,665	9,378	2,287	24.4
Number of lateral ditches	913	1,038	−125	−12.0
Length of lateral ditches ... miles	1,545	1,269	276	21.7
Number of reservoirs	59	44	15	.....
Capacity of reservoirs ... acre-feet	197,890	2,098	195,792	.....
Number of flowing wells	(2)	(3)	.....	.....
Capacity of flowing wells ... gallons per minute	(2)	(3)	.....	.....
Number of pumped wells	34	66	−32	.....
Capacity of pumped wells ... gallons per minute	24,701	3,363	21,338	634.5
Number of pumping plants	51	75	−24	.....
Engine capacity ... horsepower	959	140	819	585.0
Pump capacity ... gallons per minute	73,686	5,366	68,320	.....
Average lift ... feet	24	(3)	24	.....

[1] A minus sign (−) denotes decrease. Per cent not shown when base is less than 100 or when per cent is more than 1,000. [2] Not reported in 1920. [3] Not reported in 1910.

NEBRASKA

APPROXIMATE LOCATION AND EXTENT OF IRRIGATED LAND.



CLIMATIC CONDITIONS.

Nebraska lies in the semiarid region. The eastern part of the state receives sufficient rainfall for the growth of crops in most seasons; while the extreme western part receives so little rainfall that irrigation is generally practiced where water is available, although crops are grown without irrigation.

The normal annual precipitation is about 30 inches at the eastern line of the state, and decreases very regularly to the westward to about 15 inches at the Nebraska-Wyoming line. About three-fourths of the annual precipitation occurs within the growing season, the spring and early summer rains being general while the late summer precipitation occurs in local and irregular showers.

In the western part of the state in summer the relative humidity is low, and temperatures and wind velocities are high, and these conditions result in heavy demands for moisture to maintain plant growth.

The line of 20-inch normal annual precipitation follows approximately the one-hundredth meridian of longitude, and this marks approximately the eastern extension of the general practice of irrigation.

For the state as a whole the precipitation in 1919 was slightly above the normal but the excess occurred in the winter, and in the western part of the state there was a marked deficiency in May and August, with no excess in June and July.

WATER SUPPLY FOR IRRIGATION.

Western Nebraska consists of high, rolling prairies cut by the valleys of the North Platte, the South Platte, the Niobrara, and the Republican Rivers. The streams named, and their tributaries, and the main Platte River, below the junction of the north and south branches, supply water to almost all of the land irrigated.

The North Platte and its tributaries supplied water to nearly 85 per cent of the land irrigated in 1919. This river rises in the mountains of northern Colorado, flows through Wyoming and then into Nebraska, and is used for irrigation in all three states. The flow of the river in eastern Wyoming and in Nebraska is regulated by the Pathfinder Reservoir of the United States Reclamation Service, and stored water is furnished to lands along the main Platte as well as to those along the North Platte. The supply is usually ample for the lands under existing canals, and a large extension of the North Platte project of the United States Reclamation Service, covering land in both Wyoming and Nebraska, is under construction. Stored water from Pathfinder Reservoir also serves a large area under numerous private canals, mainly in Nebraska. Before the construction of the Pathfinder Reservoir the North Platte in Nebraska carried very heavy flood discharges in the spring and very little water in the late summer.

The South Platte also rises in the mountains in Colorado, and is used extensively for irrigation in that state, the area irrigated from the stream and its tributaries in Colorado in 1919 being more than 1,000,000 acres. The South Platte is a typical plains stream, having its source in the mountains, being subject to heavy floods in the early summer with the melting of the snows, and having a greatly reduced flow in the late summer, and the summer flow is largely lost in its sandy bed and by evaporation. This natural condition has been much changed by the storage of flood waters and the use of water in Colorado. The storage of flood waters has greatly reduced the flood flow in Nebraska, while return seepage from the irrigated lands in Colorado has tended to increase the regular flow of the stream in both summer and winter. No storage has been provided on this stream in Nebraska, although there is a large quantity of water available for storage.

The Platte River is formed by the uniting of the north and south forks, and is of the same character as its branches—it has a large flood flow in spring and early summer, and is very low in late summer, sometimes having no visible flow. The regulation of the North Platte and return seepage to that stream are increasing the summer flow, and stored water from the Pathfinder Reservoir is available for canals taking water from the main stream.

The Niobrara, which rises in Wyoming and flows along the northern border of Nebraska, is a plains stream but a considerable part of its drainage area is composed of sand hills which absorb the rains and snows. As a consequence the water drains into the stream gradually, and it has a remarkably uniform flow, giving rise to its original name, "The river which flows."

The Republican River rises on the plains in Colorado, enters Nebraska near the southwest corner of the state, flows eastward near the southern line of the state for about 275 miles, and crosses the line into Kansas. During the spring the river is subject to heavy floods and it is very low in summer. It is used to some extent for irrigation in both Colorado and Nebraska, although in both states crops are grown in its drainage basin without irrigation. Very little provision for storing flood water has been made.

In the stream valleys water for irrigation can be obtained from wells with low lifts but on the high plains the ground water is at such great depths that the cost of pumping is prohibitive.

FARMS AND ACREAGE IRRIGATED.

TABLE 2.—NUMBER OF FARMS AND ACREAGE IRRIGATED: 1890 TO 1920.

CENSUS YEAR.	FARMS IRRIGATED.			AREA IRRIGATED.				
	Number.	Per cent of increase.[1]	Per cent of all farms.	Acres.	Per cent of increase.	Per cent of total land area.	Per cent of land in farms.	Per cent of improved land in farms.
1920	3,621	63.1	2.4	442,690	73.0	0.9	1.0	1.5
1910	1,852	−4.1	1.4	255,950	72.3	0.5	0.7	1.0
1900	1,932	802.5	1.6	148,538	.....	0.3	0.5	0.8
1890	214	.....	0.2	11,744	.....	.....	0.1	0.1

[1] A minus sign (−) denotes decrease. Per cent not shown when more than 1,000.

TABLE 3.—ACREAGE, CLASSIFIED BY DATE OF BEGINNING OF ENTERPRISES SUPPLYING WATER FOR IRRIGATION.

DATE OF BEGINNING.	Number of enterprises.	Area included in enterprises, 1920 (acres).	AREA IRRIGATED IN 1919.		Area enterprises were capable of irrigating in 1920 (acres).
			Acres.	Per cent of acreage in enterprises.	
Total	470	796,768	442,690	57.7	562,468
Before 1880	1	30	30	100.0	30
1870–1879	4	1,615	1,090	71.9	1,115
1880–1889	61	117,177	104,100	88.8	105,817
1890–1899	391	379,191	191,229	51.0	258,341
1900–1904	58	33,808	21,380	63.8	40,979
1905–1909	26	192,285	98,704	51.2	124,540
1910–1914	62	27,184	19,738	72.8	23,241
1915–1919	36	6,103	2,746	45.0	3,734
Not reported	31	12,872	3,423	26.6	4,621

TABLE 4.—ACREAGE, CLASSIFIED BY SOURCE OF WATER SUPPLY: 1919 AND 1909.

CLASS.	AREA IRRIGATED (ACRES).				Area enterprises were capable of irrigating in 1920 (acres).	Area included in enterprises, 1920 (acres).
	1919	1909	Increase.			
			Amount.	Per cent.[1]		
Total	442,690	255,950	186,740	73.0	562,468	796,768
Streams, gravity	435,567	254,105	181,462	71.4	550,491	780,931
Streams, pumped	1,115	18	1,097	.....	2,668	2,735
Streams, pumped and gravity	850	(2)	850	.....	1,140	1,140
Wells, pumped	546	139	407	292.8	1,148	1,258
Lake, gravity	.....	.....	.....	.....	30	30
Springs	2,690	698	1,994	285.8	3,141	4,546
Stored storm water	1,200	1,002	198	19.8	1,870	1,900
City water	7	(2)	7	.....	7	7
Sewage	120	(2)	120	.....	120	120
Streams, gravity, and pumped wells	115	(2)	115	.....	230	230
Streams, gravity, and flowing wells	.....	(2)	.....	.....	160	160
Other mixed	1,120	(2)	1,120	.....	1,602	3,831

[1] Per cent not shown when base is less than 100.
[2] Not included in 1909 classification.

ACREAGE, BY CHARACTER OF ENTERPRISE.

The provisions of law relating to internal improvements were extended to irrigation canals by a law of 1877. This empowered canal companies to issue bonds and to condemn rights of way for canals.

Nebraska enacted an irrigation district law in 1895. This law has been amended from time to time, and is still in force. Very few districts have been organized to develop new enterprises, but many have been organized to take over works already built, many cooperative enterprises having been organized into districts. The land watered by such enterprises is reported under districts in Table 5.

Nebraska has not accepted the conditions of the Federal Carey Act (act of Aug. 18, 1894).

In addition to the area credited to the United States Reclamation Service in Table 5, that service supplies water to a large but varying area under the Warren Act and special contracts providing for supplying water to lands that receive their principal supply from other sources.

TABLE 5.—ACREAGE, CLASSIFIED BY CHARACTER OF ENTERPRISE: 1920 AND 1910.

ITEM AND CLASS.	CENSUS OF—		INCREASE.[1]	
	1920	1910	Acres.	Per cent.
ACREAGE IRRIGATED.				
Total	442,690	255,950	186,740	73.0
Individual and partnership	68,140	45,227	22,913	50.7
Cooperative	55,408	78,605	−23,197	−29.5
Irrigation district	206,206	76,448	129,758	169.7
Commercial	25,335	24,834	501	2.0
U. S. Reclamation Service	[2] 87,558	30,536	57,022	186.7
U. S. Indian Service	.....	300	−300	.....
Other	43	(3)	43	.....
ACREAGE ENTERPRISES WERE CAPABLE OF IRRIGATING.				
Total	562,468	429,225	133,243	31.0
Individual and partnership	96,465	64,472	31,993	49.6
Cooperative	102,242	168,260	−66,018	−39.2
Irrigation district	220,859	77,228	143,631	186.0
Commercial	27,332	52,724	−25,392	−48.2
U. S. Reclamation Service	[2] 115,487	66,241	49,246	74.3
U. S. Indian Service	.....	300	−300	.....
Other	83	(3)	83	.....
ACREAGE INCLUDED IN ENTERPRISES.				
Total	796,768	680,133	86,635	12.7
Individual and partnership	124,098	86,305	37,793	43.8
Cooperative	145,444	240,009	−94,565	−39.4
Irrigation district	244,383	91,076	153,307	168.3
Commercial	76,925	154,623	−77,698	−50.2
U. S. Reclamation Service	[2] 175,820	107,520	68,300	63.5
U. S. Indian Service	.....	600	−600	.....
Other	98	(3)	98	.....

[1] A minus sign (−) denotes decrease.
[2] Does not include land supplied with stored water under the Warren Act.
[3] Not included in 1910 classification.

ACREAGE, BY CHARACTER OF WATER RIGHTS.

The laws of Nebraska relating to water rights are summarized in the following paragraphs:

Upon its organization the territory of Nebraska adopted the common law of England, so far as it was applicable and not inconsistent with the Constitution of the United States, with the organic law of the territory, or with any law passed by the legislature. The supreme court of the state held that this included the common law rule as to riparian rights, and that this rule held until abrogated by statute.

In 1889 a law was enacted providing that rights to the use of water for beneficial or useful purpose might be acquired by appropriation, and the court has held that this law abrogated the common law of riparian rights (Crawford Company *v.* Hathaway, 93 N. W., 791). This law provided for the posting and filing of notices of intended diversions, but did not require the filing of claims for rights previously acquired.

In 1895 the state board of irrigation was created, and from that time parties wishing to acquire rights have been required to apply to the board for permits to appropriate water, and to submit proof of the completion of works in accordance with the permits. Certificates defining rights acquired are issued by the board.

The board was given the power to adjudicate rights to water, the procedure being left to the board.

In 1919 the functions of the board of irrigation were assigned to a new department of public works, but the general features of the system of water rights were not changed.

TABLE 6.—ACREAGE IRRIGATED, CLASSIFIED BY CHARACTER OF RIGHTS UNDER WHICH WATER IS RECEIVED: 1919 AND 1909.

CLASS.	1919		1909, per cent of total
	Acres.	Per cent of total.	
Total	442,690	100.0	100.0
Appropriation and use	42,141	9.5	8.8
Notice filed and posted	16,517	3.7	9.9
Adjudicated by court	9,290	2.1	18.8
Permit from state	234,808	53.0	59.6
Certificate or license from state	117,963	26.6	2.7
Riparian rights	618	0.1	.....
Underground	546	0.1	(1)
Other and mixed	13	(2)	(1)
Not reported	20,809	4.7	(1)

[1] All land for which the class of water rights was not reported was included in "Appropriation and use."
[2] Less than one-tenth of 1 per cent.

ACREAGE, BY DRAINAGE BASIN.

The report of a special census taken in 1902 presented all data by drainage basins rather than by counties. The results of the census of 1920 have been tabulated on the same basis, and the data for 1902 are presented for purposes of comparison. For no other census have the results been tabulated in this form.

TABLE 7.—ACREAGE IRRIGATED, CLASSIFIED BY DRAINAGE BASIN: 1919 AND 1902.

DRAINAGE BASIN.	AREA IRRIGATED (ACRES).			Area included in enterprises, 1920 (acres).	Area enterprises were capable of irrigating in 1920 (acres).
	1919	1902	Per cent of increase.[1]		
Total	442,690	245,910	80.0	766,768	562,468
Hat Creek	2,938	[2] 2,649	10.9	3,755	3,795
White River	8,098	[2] 9,706	−17.5	21,922	18,939
Niobrara River	5,693	[2] 7,210	−21.0	28,511	9,829
Platte River and tributaries	400,623	211,890	89.1	678,053	501,435
Platte River direct	37,532	30,887	21.5	151,377	65,732
North Platte River and tributaries	226,045	146,197	122.0	479,258	389,140
North Platte River direct	291,736	130,900	122.9	436,013	349,766
Blue River	7,376	4,929	49.6	7,391	7,391
Pumpkin Creek	7,273	2,314	214.3	10,554	9,155
Other tributaries of North Platte River	19,660	[2] 8,054	144.1	25,300	22,815
South Platte River and tributaries	35,290	19,473	81.2	42,262	40,542
South Platte River direct	17,661	10,861	57.1	18,623	18,500
Lodgepole Creek	18,229	8,612	111.7	23,639	21,952
Loup River	1,177	12,872	−90.9	4,512	2,377
Other tributaries of Platte River	579	[2] 2,461	−76.5	644	644
Kansas River and tributaries	25,428	14,455	75.9	34,527	30,569
Big Blue River	19	(3)	.....	44	44
Republican River	25,409	(3)	.....	34,483	30,525

[1] A minus sign (−) denotes decrease.
[2] Includes springs and wells.
[3] Main stream and tributaries shown as one item in 1902.

The acreage reported for each drainage basin in 1919 comprises all the irrigated land in that drainage basin, including that watered from springs and wells. In the 1902 results the acreages irrigated from springs and wells were not reported for the smaller tributary streams, but the acreages for the tributaries were included in those reported for the main streams. This area is so small, however, that the comparison of the areas reported for the tributary streams is not seriously affected.

CAPITAL INVESTED AND COST OF OPERATION AND MAINTENANCE.

TABLE 8.—CAPITAL INVESTED IN IRRIGATION ENTERPRISES: 1890 TO 1920.

CENSUS YEAR.	Amount.	Per cent of increase.[1]	AVERAGE PER ACRE.	
			Amount.	Per cent of increase
1920	$13,909,185	78.4	$24.73	39.1
1910	7,798,319	495.0	18.17	106.0
1900	1,319,698	.....	8.82	116.7
1890	[2] 47,798	.....	[3] 4.07	.....

[1] Per cent not shown when more than 1,000.
[2] Based on average for "subhumid" region. Average for Nebraska not shown separately in 1890.
[3] Average for "subhumid" region.

TABLE 9.—CAPITAL INVESTED, CLASSIFIED BY DATE OF BEGINNING.

DATE OF BEGINNING.	Amount.	Per cent of total.	Average per acre.
Total	$13,909,185	100.0	$24.73
Before 1860	300	(1)	16.67
1870–1879	21,563	0.2	19.36
1880–1889	1,659,694	11.9	15.68
1890–1899	2,075,677	14.9	8.66
1900–1904	321,927	2.3	7.86
1905–1909	8,685,843	62.4	60.74
1910–1914	444,144	3.2	19.11
1915–1919	180,314	1.3	47.65
Not reported	520,193	3.7	112.55

[1] Less than one-tenth of 1 per cent.

TABLE 10.—CAPITAL INVESTED, 1920, AND COST OF OPERATION AND MAINTENANCE, 1919, CLASSIFIED BY SOURCE OF WATER SUPPLY.

[When water is pumped, cost of operation and maintenance includes cost of fuel and attendance.]

CLASS.	CAPITAL INVESTED, 1920.			OPERATION AND MAINTENANCE, 1919.	
	Amount.	Per cent of total.	Average per acre.	Area for which cost is reported (acres).	Average cost per acre.[1]
Total	$13,909,185	100.0	$24.73	394,392	$1.48
Streams, gravity	13,619,775	97.9	24.74	389,690	1.48
Streams, pumped	39,591	0.3	15.04	372	2.85
Streams, pumped and gravity	18,700	0.1	16.40	850	1.04
Wells, pumped	23,259	0.2	29.25	436	5.16
Lake, gravity	[2] 100,300	0.7	[2] 10.00	.....	.....
Springs	24,497	0.2	7.85	1,700	1.14
Stored storm water	46,429	0.3	21.62	895	0.36
City water	1,000	(3)	142.86	.....	.....
Sewage	313	(3)	2.61	.....	.....
Streams, gravity, and pumped wells	5,695	(3)	21.89	16	3.00
Streams, gravity, and flowing wells	6,902	(3)	43.14	.....	.....
Other mixed	29,493	0.2	17.68	230	2.63

[1] Based on area irrigated in 1919.
[2] Capital invested includes $100,000 for which no acreage is reported and not included in computing average capital per acre.
[3] Less than one-tenth of 1 per cent.

TABLE 11.—CAPITAL INVESTED, CLASSIFIED BY DRAINAGE BASIN: 1920 AND 1902.

DRAINAGE BASIN.	1920	1902	INCREASE.[1] Amount.	INCREASE.[1] Per cent.
Total	$13,909,185	$2,463,748	$11,445,437	464.6
Hat Creek	85,243	[2] 19,090	66,153	346.5
White River	183,349	[2] 155,924	27,425	17.6
Niobrara River	349,874	[2] 72,900	276,974	379.9
Platte River and tributaries	12,894,685	1,982,149	10,911,939	550.5
Platte River direct	488,542	565,470	−76,928	−13.6
North Platte River and tributaries	11,934,733	967,110	10,967,623	.....
North Platte River direct	11,661,937	891,875	10,770,062	.....
Blue River	31,050	22,620	8,430	37.3
Pumpkin Creek	92,060	19,925	72,135	362.0
Other tributaries of North Platte River	149,686	[2] 32,690	116,996	357.9
South Platte River and tributaries	444,413	101,240	343,173	339.0
South Platte River direct	87,712	53,600	34,112	63.6
Lodgepole Creek	356,701	47,640	309,061	648.7
Lemp River	21,360	320,675	−299,315	−93.4
Other tributaries of Platte River	5,000	[2] 27,714	−22,714	−82.0
Kansas River and tributaries	396,631	233,685	162,946	69.7
Big Blue River	1,625	(3)	.....	.....
Republican River	395,006	(3)	.....	.....

[1] A minus sign (−) denotes decrease. [2] Per cent not shown when more than 1,000.
[2] Includes springs and wells.
[3] Main stream and tributaries shown as one item in 1902.

In classifying capital invested by type of enterprise (Table 12) the average capital invested per acre is not presented, for the reason that it is difficult to arrive at a correct figure.

TABLE 12.—CAPITAL INVESTED, 1920, AND COST OF OPERATION AND MAINTENANCE, 1919, CLASSIFIED BY CHARACTER OF ENTERPRISE.

[When water is pumped, cost of operation and maintenance includes cost of fuel and attendance.]

CLASS.	CAPITAL INVESTED, 1920. Amount.	CAPITAL INVESTED, 1920. Per cent of total.	OPERATION AND MAINTENANCE, 1919. Area for which cost is reported (acres).	OPERATION AND MAINTENANCE, 1919. Average cost per acre.[1]
Total	$13,909,185	100.0	394,392	$1.48
Individual and partnership	1,146,227	8.2	47,520	1.42
Cooperative	547,104	3.9	54,298	0.95
Irrigation district	2,811,474	20.2	187,186	1.24
Commercial	726,560	5.2	25,335	1.10
U. S. Reclamation Service	8,674,250	62.4	80,000	2.54
Other	3,570	(2)	43	11.86

[1] Based on area irrigated in 1919. [2] Less than one-tenth of 1 per cent.

The United States Reclamation Service supplies stored water to enterprises controlled by agencies of most of the other classes shown in the table and a part of its expenditure is properly chargeable to those lands; but it is not possible to tell how much should be so charged or how it should be distributed among the various classes since the area served varies from season to season.

DRAINAGE OF IRRIGATED LAND.

The acreages reported in Table 13 relate to lands within the boundaries of irrigation projects, and do not include lands within the vicinity of these projects. "Additional acreage needing drainage" includes all lands so reported by the owners of the enterprises, and includes lands producing partial crops as well as those wholly unproductive.

TABLE 13.—ACREAGE WITHIN IRRIGATION ENTERPRISES FOR WHICH DRAINS HAVE BEEN INSTALLED AND ADDITIONAL ACREAGE IN NEED OF DRAINAGE: 1920.

Number of enterprises reporting land drained or needing drainage	24
Acreage included in enterprises reporting land drained or needing drainage	376,518
Acreage for which drains have been installed	10,793
Additional acreage needing drainage	26,606
Per cent that acreage for which drains have been installed is of total acreage included in enterprises reporting drainage	2.9
Per cent that acreage for which drains have been installed is of total acreage included in irrigation enterprises in the state	1.4
Per cent that acreage for which drains have been installed plus that needing drainage is of total acreage included in irrigation enterprises in the state	4.9

QUANTITY OF WATER USED.

The quantity of water used in 1919 was reported on only part of the irrigation schedules, and the figures given vary greatly. In order that proper values may be assigned to the figures given, those representing measurements and those representing estimates are reported separately in Table 14. While the data are incomplete, the reports represent sufficient acreages to serve as bases for reliable averages.

TABLE 14.—QUANTITY OF WATER USED IN 1919.

ITEM.	Total.	Measured.	Not measured.
Average volume of water entering canals, second-feet	2,655	2,154	501
Area irrigated in 1919 ... acres	171,080	135,500	35,580
Average number of acres per second-foot	64	63	71
Total quantity of water entering canals ... acre-feet	975,071	894,316	80,755
Area irrigated in 1919 ... acres	232,620	199,650	32,970
Average quantity of water per acre ... acre-feet	4.2	4.5	2.4
Total quantity of water delivered ... acre-feet	445,585	188,089	257,496
Area irrigated in 1919 ... acres	185,795	76,987	108,808
Average quantity delivered per acre ... acre-feet	2.4	2.4	2.4

IRRIGATION WORKS.

TABLE 15.—IRRIGATION WORKS, CLASSIFIED BY DATE OF BEGINNING.

DATE OF BEGINNING.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES. Number.	MAIN DITCHES. Capacity (second-feet).	MAIN DITCHES. Length (miles).	LATERAL DITCHES. Number.	LATERAL DITCHES. Length (miles).	RESERVOIRS. Number.	RESERVOIRS. Capacity (acre-feet).	Pipe lines, length (miles).	PUMPED WELLS. Number.	PUMPED WELLS. Capacity (gallons per minute).	PUMPING PLANTS. Number.	PUMPING PLANTS. Engine capacity (horse-power).	PUMPING PLANTS. Pumps. Number.	PUMPING PLANTS. Pumps. Capacity (gallons per minute).
Total	260	73	513	11,665	1,780	913	1,545	59	197,890	3.8	34	24,701	51	959	54	73,686
Before 1860	5	2	12	39	4	3	3	1	3	.....	.....	.....	.....	.....	.....	.....
1870-1879	5	.....	6	12	10	9	7	.....	.....	.....	.....	.....	.....	.....	.....	.....
1880-1889	42	2	71	2,748	284	105	276	2	70	0.4	.....	.....	.....	.....	.....	.....
1890-1899	91	22	215	4,814	904	489	458	19	14,244	0.8	2	3,480	4	69	4	7,480
1900-1904	45	11	63	479	115	82	64	10	75,928	0.3	1	300	3	75	3	5,900
1905-1909	14	7	28	2,825	227	138	599	7	212	.....	1	2,100	4	28	4	3,097
1910-1914	26	15	56	488	126	37	41	9	6,764	2.0	18	11,950	19	495	21	35,199
1915-1919	15	8	38	152	48	22	13	3	100,300	0.3	12	6,871	20	290	21	21,210
Not reported	17	6	34	108	62	28	10	8	369	.....	.....	.....	1	7	1	900

TABLE 16.—IRRIGATION WORKS, CLASSIFIED BY CHARACTER OF ENTERPRISE: 1920.

CLASS.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES. Number.	MAIN DITCHES. Capacity (second-feet).	MAIN DITCHES. Length (miles).	LATERAL DITCHES. Number.	LATERAL DITCHES. Length (miles).	RESERVOIRS. Number.	RESERVOIRS. Capacity (acre-feet).	Pipe lines, length (miles).	PUMPED WELLS. Number.	PUMPED WELLS. Capacity (gallons per minute).	PUMPING PLANTS. Number.	PUMPING PLANTS. Engine capacity (horse-power).	PUMPING PLANTS. Pumps. Number.	PUMPING PLANTS. Pumps. Capacity (gallons per minute).
Total	260	73	513	11,665	1,780	913	1,545	59	197,890	3.8	34	24,701	51	959	54	73,686
Individual and partnership	223	61	434	1,892	697	470	268	46	3,467	3.3	33	23,601	47	926	50	72,271
Cooperative	11	4	32	1,276	222	52	79	1	13,000	.....	.....	.....	.....	.....	.....	.....
Irrigation district	11	3	28	4,878	551	251	569	1	6,000	0.4	.....	.....	.....	.....	.....	.....
Commercial	12	2	14	928	124	29	59	5	100,256	0.1	.....	.....	.....	.....	.....	.....
U. S. Reclamation Service	3	3	3	2,690	185	111	570	6	75,167	.....	.....	.....	.....	.....	.....	.....
Other	.....	.....	2	1	1	.....	.....	.....	.....	.....	1	1,100	4	33	4	1,415

TABLE 17.—IRRIGATION WORKS, CLASSIFIED BY DRAINAGE BASIN: 1920.

DRAINAGE BASIN.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES. Number.	MAIN DITCHES. Capacity (second-feet).	MAIN DITCHES. Length (miles).	LATERAL DITCHES. Number.	LATERAL DITCHES. Length (miles).	RESERVOIRS. Number.	RESERVOIRS. Capacity (acre-feet).	Pipe lines, length (miles).	PUMPED WELLS. Number.	PUMPED WELLS. Capacity (gallons per minute).	PUMPING PLANTS. Number.	PUMPING PLANTS. Engine capacity (horse-power).	PUMPING PLANTS. Pumps. Number.	PUMPING PLANTS. Pumps. Capacity (gallons per minute).	PUMPING PLANTS. Average lift (feet).
Total	260	73	513	11,665	1,780	913	1,545	59	197,890	3.8	34	24,701	51	959	54	73,686	24
Hat Creek	11	2	40	25	44	1	1	6	109	.....	.....	.....	.....	.....	.....	.....	.....
White River	63	23	81	237	131	104	66	17	1,302	0.4	2	2,200	3	53	3	4,000	35
Niobrara River	27	10	44	204	83	92	36	1	13,095	0.1	.....	.....	1	8	1	480	8
Platte River and tributaries	151	29	309	10,593	1,379	661	1,412	31	183,312	0.9	19	14,501	33	497	36	26,003	27
Platte River direct	4	1	26	1,776	297	36	137	1	1	.....	14	10,551	13	180	14	14,580	31
North Platte River and tributaries	66	17	178	7,769	678	418	1,169	13	175,215	0.5	.....	.....	5	81	6	7,000	15
North Platte River direct	25	5	71	7,052	782	315	1,087	9	175,169	0.5	.....	.....	4	71	5	6,400	8
Blue River	3	.....	5	139	27	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pumpkin Creek	13	7	43	209	71	44	23	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other tributaries of North Platte River	25	5	59	369	98	59	62	4	66	.....	.....	.....	1	10	1	600	35
South Platte River and tributaries	57	5	96	949	175	202	100	12	7,156	* 0.1	5	3,950	5	106	5	9,682	17
South Platte River direct	3	.....	6	598	39	95	18	.....	.....	0.1	4	1,850	2	26	2	1,850	25
Lodgepole Creek	54	5	90	351	136	107	82	12	7,156	.....	1	2,100	3	79	3	7,832	11
Loup River	3	5	7	91	16	5	6	3	60	.....	.....	.....	7	49	7	4,280	17
Other tributaries of Platte River	1	1	2	8	3	.....	.....	2	800	0.3	.....	.....	3	21	4	461	30
Kansas River and tributaries	28	9	39	606	138	55	30	4	162	2.4	13	8,000	14	461	14	33,203	26
Big Blue River	.....	.....	2	5	1	.....	.....	.....	.....	0.4	.....	.....	2	30	2	1,000	18
Republican River	28	9	37	601	137	55	30	4	162	2.0	13	8,000	12	431	12	32,203	27

CROPS.

TABLE 18.—ACREAGE, YIELD, AND VALUE OF PRINCIPAL CROPS GROWN ON IRRIGATED LAND, AND COMPARISONS WITH TOTALS FOR THE STATE: 1919 AND 1909.

[Totals for the state, used in making comparisons, are shown in state bulletin on agriculture.]

	Crop.	Area harvested					Quantity harvested.					
		1919		1909				1919		1909		
		Acres.	Per cent of total for state.	Acres.	Per cent of total for state.	Per cent of increase.[1]	Unit.	Amount.	Per cent of total for state.	Amount.	Per cent of total for state.	Per cent of increase.[1]
	Cereals:											
1	Corn	26,726	0.4	21,352	0.3	24.7	Bu.	626,064	0.4	563,857	0.3	11.0
2	Oats	12,875	0.6	18,794	0.8	−31.5	Bu.	364,085	0.6	555,048	1.0	−34.4
3	Winter wheat	15,321	0.4	9,615	0.3	178.1	Bu.	321,419	0.6	170,952	0.4	180.7
4	Spring wheat	9,748	1.8				Bu.	158,405	3.9			
5	Barley	3,619	1.7	3,496	3.1	3.3	Bu.	105,958	2.4	90,308	4.5	17.3
6	Rye	1,403	0.4	427	0.7	228.6	Bu.	17,630	0.5	7,475	1.1	135.9
	Hay and forage:											
7	Alfalfa	60,476	5.6	31,842	4.6	89.9	Tons	135,942	6.1	81,225	5.3	67.4
8	Other tame or cultivated grasses	1,295	0.8	(2)			Tons	1,506	0.7	(2)		
9	Wild, salt, or prairie grasses	14,906	0.5	37,019	1.2	−59.6	Tons	12,797	0.5	38,796	1.3	−67.0
10	Small grains cut for hay	942	1.2	(2)			Tons	867	1.1	(2)		
11	Corn cut for forage	1,439	0.5	(2)			Tons	2,923	0.7	(2)		
12	Kafir, sorghum, etc., for forage	1,392	0.5	(2)			Tons	3,385	0.6	(2)		
	Vegetables:											
13	Potatoes	6,671	7.1	6,077	5.5	9.8	Bu.	720,833	16.2	888,766	10.9	−18.9
	Miscellaneous:											
14	Sugar beets grown for sugar	42,959	78.6	3,114	74.5		Tons	445,521	80.3	36,849	92.7	

	Crop.	Average yield per acre, 1919.						Value.				
		Unit.	For state.	On non-irrigated land.	On irrigated land.			1919		1909		Per cent of increase.[1]
					Average.	Per cent of average for state.	Per cent of average on non-irrigated land.	Amount.	Per cent of total for state.	Amount.	Per cent of total for state.	
	Cereals:											
1	Corn	Bu.	23.9	23.9	23.4	97.9	97.9	$845,186	0.4	$290,241	0.3	191.2
2	Oats	Bu.	29.5	29.5	28.3	95.9	95.9	273,062	0.6	219,389	1.1	24.5
3	Winter wheat	Bu.	14.3	14.3	21.0	146.9	146.9	691,050	0.6	135,554	0.3	661.0
4	Spring wheat	Bu.	7.7	7.6	16.3	214.5	217.3	346,571	3.9			
5	Barley	Bu.	29.9	29.7	29.4	140.7	142.0	116,554	2.4	40,801	4.7	185.7
6	Rye	Bu.	9.1	9.9	12.6	138.5	140.0	24,682	0.5	4,624	1.2	433.8
	Hay and forage:											
7	Alfalfa	Tons	1.83	1.81	2.25	123.0	124.3	2,582,898	6.1	497,656	4.6	419.0
8	Other tame or cultivated grasses	Tons	1.38	1.39	1.25	90.6	89.9	18,825	0.7	(2)		
9	Wild, salt, or prairie grasses	Tons	0.80	0.80	0.86	107.5	107.5	172,760	0.5	254,216	1.8	−32.0
10	Small grains cut for hay	Tons	1.02	1.02	0.92	90.2	90.2	11,271	1.1	(2)		
11	Corn cut for forage	Tons	1.63	1.63	2.00	122.7	122.7	30,692	0.7	(2)		
12	Kafir, sorghum, etc., for forage	Tons	2.10	2.10	2.43	115.7	115.7	32,158	0.6	(2)		
	Vegetables:											
13	Potatoes	Bu.	47.2	42.6	108.1	229.0	253.8	1,729,999	16.2	274,910	7.3	529.3
	Miscellaneous:											
14	Sugar beets grown for sugar	Tons	10.18	9.47	10.37	101.9	109.5	4,677,971	80.3	152,310	84.8	

[1] A minus sign (−) denotes decrease. Per cent not shown when more than 1,000.

[2] Not reported separately in 1909.

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910.

[A minus sign (—) denotes decrease. Per cent not shown when base is less than 100, or when per cent is more than 1,000.]

		THE STATE.	Banner.	Box Butte.	Buffalo.	Chase.	Cherry.	Cheyenne.
1	Number of all farms in 1920	124,417	301	641	2,376	705	1,604	854
2	Number of farms irrigated in 1919	3,921	6	5	29	15	5	8
3	Per cent of all farms	2.4	2.0	0.8	1.2	2.1	0.3	0.9
4	Number of farms irrigated in 1909	1,952	10	7	1	14	13	33
5	Per cent of increase, 1909–1919	63.1						
	LAND AND FARM AREA.							
6	Approximate land area ... acres	49,157,120	474,960	668,640	694,400	575,360	3,826,560	764,160
7	All land in farms ... acres	42,225,475	447,629	646,509	579,881	571,627	2,981,635	513,414
8	Improved land in farms ... acres	23,106,624	136,669	129,438	433,371	173,346	391,281	262,395
9	Area irrigated in 1919 ... acres	442,690	2,703	2,162	3,019	2,392	301	5,247
10	Per cent of improved land in farms	1.9	2.0	1.7	0.7	1.3	0.1	2.0
11	Area irrigated in 1909 ... acres	255,950	1,915	1,171	2	3,226	346	3,635
12	Per cent of increase, 1909–1919	73.0	41.1	84.6		−29.0	−8.2	44.3
13	Area enterprises were capable of irrigating in 1920 ... acres	562,468	3,283	3,062	3,059	4,211	1,301	5,778
14	Area enterprises were capable of irrigating in 1910 ... acres	429,225	1,965	1,173	2	4,787	1,046	3,995
15	Per cent of increase, 1910–1920	31.0	67.1	161.0		−9.6	24.4	44.6
16	Area included in enterprises in 1920 ... acres	786,768	4,299	3,802	6,419	4,491	1,373	5,958
17	Area included in enterprises in 1910 ... acres	699,133	2,110	1,373	4	6,187	1,049	4,345
18	Per cent of increase, 1910–1920	12.7	103.7	176.9		−27.4	31.3	37.1
	IRRIGATION WORKS.							
	Independent enterprises:							
19	Number, 1920	470	15	5	4	13	5	39
20	Number, 1910	474	16	6	1	6	13	25
	Main ditches:							
21	Number, 1920	513	18	6	1	13	4	47
22	Number, 1910	420	16	6	1	6	3	37
23	Length, 1920 ... miles	1,780	31	19	16	26	7	46
24	Length, 1910 ... miles	1,459	18	13	1	24	9	33
25	Capacity, 1920 ... second-feet	11,665	76	86	160	107	15	78
26	Capacity, 1910 ... second-feet	9,378	39	24	1	86	30	95
	Laterals:							
27	Number, 1920	913	29	9		15		57
28	Number, 1910	1,038	2	3		9		41
29	Length, 1920 ... miles	1,545	13	6		4		48
30	Length, 1910 ... miles	1,269	1	2		3		15
	Reservoirs:							
31	Number, 1920	59	1		2	2		4
32	Number, 1910	44	1			1	1	8
33	Capacity, 1920 ... acre-feet	197,890	40		860	132		95
34	Capacity, 1910 ... acre-feet	2,098	240			1	23	40
	Flowing wells:							
35	Number, 1920							
36	Number, 1910							
37	Capacity, 1920 ... gallons per minute							
38	Capacity, 1910 ... gallons per minute							
	Pumped wells:							
39	Number, 1920	34			1	1		
40	Number, 1910	66	8	2			13	
41	Capacity, 1920 ... gallons per minute	24,791			450	300		
42	Capacity, 1910 ... gallons per minute	3,303	30	30			60	
	Pumping plants:							
43	Number, 1920	51			3	2	1	
44	Number, 1910	75	8	2	1		13	
45	Engine capacity, 1920 ... horsepower	959			18	40	8	
46	Engine capacity, 1910 ... horsepower	149	8	3	4		8	
47	Pump capacity, 1920 ... gallons per minute	73,696			836	6,300	450	
48	Pump capacity, 1910 ... gallons per minute	5,366	30	30	20		30	
49	Average lift, 1920 ... feet	24			23	19	8	
	CAPITAL INVESTED.							
50	Capital invested to Jan. 1, 1920 ... dollars	13,909,185	47,760	32,410	301,750	39,095	6,310	49,137
51	Capital invested to July 1, 1910 ... dollars	7,798,310	13,734	6,115	205	28,273	2,495	19,398
52	Per cent of increase, 1910–1920	78.4	247.2	430.0		38.3	153.1	153.4
53	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	24.73	14.55	10.58	98.64	9.07	4.85	8.50
54	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	18.17	7.00	5.21	102.50	5.93	2.38	4.85
	ESTIMATED FINAL COST.							
55	Estimated final cost of existing enterprises in 1920 ... dollars	18,690,154	49,360	32,410	301,750	41,095	6,310	49,137
56	Estimated final cost of existing enterprises in 1910 ... dollars	9,495,231	13,734	6,115	205	28,273	2,495	19,398
57	Per cent of increase, 1910–1920	96.1	258.2	430.0		45.4	153.1	155.0
58	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	23.51	11.46	8.52	47.01	9.15	4.60	8.30
59	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	13.95	6.52	4.45	51.25	4.57	2.38	4.46

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909, AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910—Continued.

[A minus sign (−) denotes decrease. Per cent not shown when base is less than 100.]

		Dawes.	Dawson.	Deuel.	Dundy.	Garden.[1]	Hitchcock.	Keith.
1	Number of all farms in 1920	728	1,934	384	661	714	776	673
2	Number of farms irrigated in 1919	58	330	40	27	97	96	111
3	Per cent of all farms	8.0	17.1	10.4	4.1	13.6	12.4	16.5
4	Number of farms irrigated in 1909	37	109	31	28	70	102	98
5	Per cent of increase, 1909-1919		202.8				−5.9	
	LAND AND FARM AREA.							
6	Approximate land area ... acres	857,280	630,400	280,960	593,280	1,079,680	463,360	683,520
7	All land in farms ... acres	822,158	579,874	202,689	474,055	884,328	413,283	614,842
8	Improved land in farms ... acres	135,939	377,185	98,194	179,082	226,316	202,767	218,703
9	Area irrigated in 1919 ... acres	9,005	33,700	10,317	9,045	20,488	9,786	25,832
10	Per cent of improved land in farms	6.6	8.9	10.5	5.1	9.1	4.8	11.8
11	Area irrigated in 1909 ... acres	7,929	12,742	4,745	3,069	16,164	12,210	13,140
12	Per cent of increase, 1909-1919	26.1	164.5	117.4	194.7		−19.9	96.6
13	Area enterprises were capable of irrigating in 1920 ... acres	19,052	64,725	11,755	10,918	25,554	10,226	31,466
14	Area enterprises were capable of irrigating in 1910 ... acres	12,389	30,993	4,669	6,006	21,604	12,850	19,581
15	Per cent of increase, 1910-1920	53.8	109.2	152.3	81.8		−20.4	60.7
16	Area included in enterprises in 1920 ... acres	24,326	141,610	13,155	14,118	26,714	10,576	33,974
17	Area included in enterprises in 1910 ... acres	12,896	126,809	9,568	6,121	47,429	21,250	36,160
18	Per cent of increase, 1910-1920	88.6	11.7	37.5	130.6		−50.2	−6.0
	IRRIGATION WORKS.							
	Independent enterprises:							
19	Number, 1920	88	13	21	12	31	3	35
20	Number, 1910	73	8	7	16	33	5	26
	Main ditches:							
21	Number, 1920	90	19	25	11	34	3	38
22	Number, 1910	75	3	5	12	34	5	24
23	Length, 1920 ... miles	149	152	39	46	128	33	111
24	Length, 1910 ... miles	113	67	16	45	119	56	93
25	Capacity, 1920 ... second-feet	282	1,145	296	203	480	160	722
26	Capacity, 1910 ... second-feet	252	600	72	161	816	217	410
	Laterals:							
27	Number, 1920	132	17	49	18	37	1	114
28	Number, 1910	99	8	6	8	38	1	13
29	Length, 1920 ... miles	82	39	35	16	37		40
30	Length, 1910 ... miles	32	71	8	5	17	2	20
	Reservoirs:							
31	Number, 1920	17		2		2		1
32	Number, 1910	7	1		2	1		2
33	Capacity, 1920 ... acre-feet	1,302		3		100,000		5
34	Capacity, 1910 ... acre-feet	220	1		12	2		2
	Flowing wells:							
35	Number, 1920							
36	Number, 1910							
37	Capacity, 1920 ... gallons per minute							
38	Capacity, 1910 ... gallons per minute							
	Pumped wells:							
39	Number, 1920	2	8	2				3
40	Number, 1910	1	5			4		2
41	Capacity, 1920 ... gallons per minute	2,200	3,901	2,430				1,500
42	Capacity, 1910 ... gallons per minute	10	80			100		5
	Pumping plants:							
43	Number, 1920	3	9	4		3	1	2
44	Number, 1910	1	5		5	4		2
45	Engine capacity, 1920 ... horsepower	53	97	78		64	25	35
46	Engine capacity, 1910 ... horsepower	1	8		5	10		2
47	Pump capacity, 1920 ... gallons per minute	4,000	5,430	8,182		5,500	2,500	2,400
48	Pump capacity, 1910 ... gallons per minute	10	80		54	100		5
49	Average lift, 1920 ... feet	25	26	16		9	10	13
	CAPITAL INVESTED.							
50	Capital invested to Jan. 1, 1920 ... dollars	211,145	170,435	59,613	111,800	229,001	162,500	205,734
51	Capital invested to July 1, 1910 ... dollars	70,479	230,259	44,967	41,479	89,323	216,350	84,200
52	Per cent of increase, 1910-1920	199.6	−26.0	32.6	169.5		−24.9	144.3
53	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	11.08	2.63	5.07	10.24	8.96	15.89	6.54
54	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	5.69	7.44	9.65	6.91	4.13	16.84	4.30
	ESTIMATED FINAL COST.							
55	Estimated final cost of existing enterprises in 1920 ... dollars	243,245	270,435	59,613	112,300	270,201	162,500	221,334
56	Estimated final cost of existing enterprises in 1910 ... dollars	70,479	230,259	44,967	41,479	89,323	216,350	84,200
57	Per cent of increase, 1910-1920	245.1	17.5	32.6	170.7		−24.9	162.9
58	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	10.00	1.91	4.53	7.95	10.11	15.36	6.51
59	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	5.47	1.82	4.70	6.78	1.88	10.18	2.33

[1] Part annexed to Grant County in 1919.

CLIMATIC CONDITIONS.

Except for small areas on the extreme western border, the surface of the state of Nevada consists of broken ranges of mountains, with broad, sage-covered valleys between. Along the western border the state extends into the Sierra Nevada Mountains.

Precipitation is heavy in the Sierra Nevadas, particularly snowfall in the winter, and, as is usually the case, immediately to the east of the mountains precipitation drops suddenly, then increases gradually to the east, the driest part of the state being in the lowest part, which lies near the western border. A very small area on the western border of the state receives more than 15 inches of precipitation annually, a narrow strip east of that receives from 12 to 15 inches, another narrow strip receives from 9 to 12 inches, followed by another that receives from 6 to 9 inches. East of this, and extending along the southwestern border of the state and taking in the whole southern end, is a wide zone that receives less than 6 inches of precipitation annually. East and north of this the amount increases, rising to 12 to 15 inches in a section lying just east of the center of the state. Taking the state as a whole the average annual precipitation is less than 10 inches. More than half of this occurs in the winter, the summers being extremely dry and hot. In the Sierra Nevada Mountains the snowfall in winter is very heavy and the snow lies well into the summer.

The year 1919 was one of the driest years on record, the average precipitation for the state being about 7 inches, while the normal is about 9.5 inches. April and May were warm months, and the snow melted earlier than usual, thus decreasing the supply of water later in the season. The drouth was detrimental to crops where stored water was not available, and to pastures and ranges generally.

The state has a wide range of temperature. The extreme southern point of the state is semitropical, the growing season extending seven or eight months, while in some of the higher valleys in the Sierras it is but two or three months. In most of the valleys of the state the growing season is about six months.

In only very small areas in the state can crops be grown without irrigation in normal years.

WATER SUPPLY FOR IRRIGATION.

Except for a small area in the extreme southern point of the state, which is in the Colorado River drainage, and a somewhat larger area along the northern border of the state, which is in the Snake River drainage, the state of Nevada lies within the Great Basin and has no outlet to the sea. The rivers rise in the mountains and lose their waters by evaporation and seepage along their channels or flow into lakes or sinks, where the water evaporates, leaving large deposits of salt and other alkalis.

The principal streams are Humboldt River, which rises in the northeastern part of the state and flows in a southwesterly direction to the sinks in the western part of the state, and Truckee, Carson, and Walker Rivers, which rise in the Sierra Nevada Mountains in California and flow in an easterly direction to the sinks in the same part of the state.

Humboldt River, rising in the extreme northeastern part of the state, flows in a westerly and southwesterly direction, breaking through successive ranges of mountains which have a general north and south direction, forming a succession of valleys along the river. Tributaries reach the river from both north and south, draining the valleys between the mountain ranges. The discharge of the Humboldt and its tributaries is typical of such streams, being high in spring, when the snow melts, and very low in the summer. Without storage, crops are limited to such as mature early; in fact, the larger part of the irrigation along the Humboldt consists of flooding wild-grass meadows when the stream is in flood. Schemes for storage have been discussed but never carried out.

Truckee River rises in Lake Tahoe, which lies on the boundary between Nevada and California, and after a northerly course in the mountains in California, turns eastward into Nevada, where it waters considerable land in Truckee Meadows, near Reno, and below is diverted into the drainage basin of Carson River, to supply a part of the land in the Newlands Project of the United States Reclamation Service. Plans for using Lake Tahoe for storing water for summer use are delayed by controversies between water users in Nevada and the owners of land around the lake in California. Storage for a part of Truckee River water is provided for in Lahontan Reservoir of the United States Reclamation Service.

Carson and Walker Rivers also rise in the Sierra Nevadas in California and flow in a northeasterly direction into Carson Lake and Walker Lake, respectively, after being used for irrigation in the valleys through which they pass. Complete use of these streams requires storage, which has not yet been provided, except that some of the water of Carson River is stored in Lahontan Reservoir.

In the extreme southern part of the state Virgin River and its tributary, Muddy River, supply small areas, and in the northern part of the state tributaries of Snake River water small areas.

In by far the larger part of the state there is little or no surface water available for irrigation, but some of the streams water small areas before losing their water in the deserts.

In several of the valleys of the state wells have been put down and water obtained for small areas. No doubt much more land can be watered from this source if the value of the crops justifies the expense.

NEVADA.

INTRODUCTION.

The following pages present the statistics of irrigation for the state of Nevada collected at the census of 1920. Statistics of acreage irrigated, of acreage, yield, and value of crops grown on irrigated land, and of cost of operation and maintenance relate to the year 1919; other items relate to the year 1920. Throughout the report figures for the census of 1910 are given for purposes of comparison; and, for the purpose of showing the historical development of irrigation, items which have been reported in censuses previous to 1910 are presented.

Statistics of number of farms irrigated and of acreage, yield, and value of crops grown on irrigated land were collected in the general census of agriculture. All other statistics were obtained in a special canvass of irrigation enterprises.

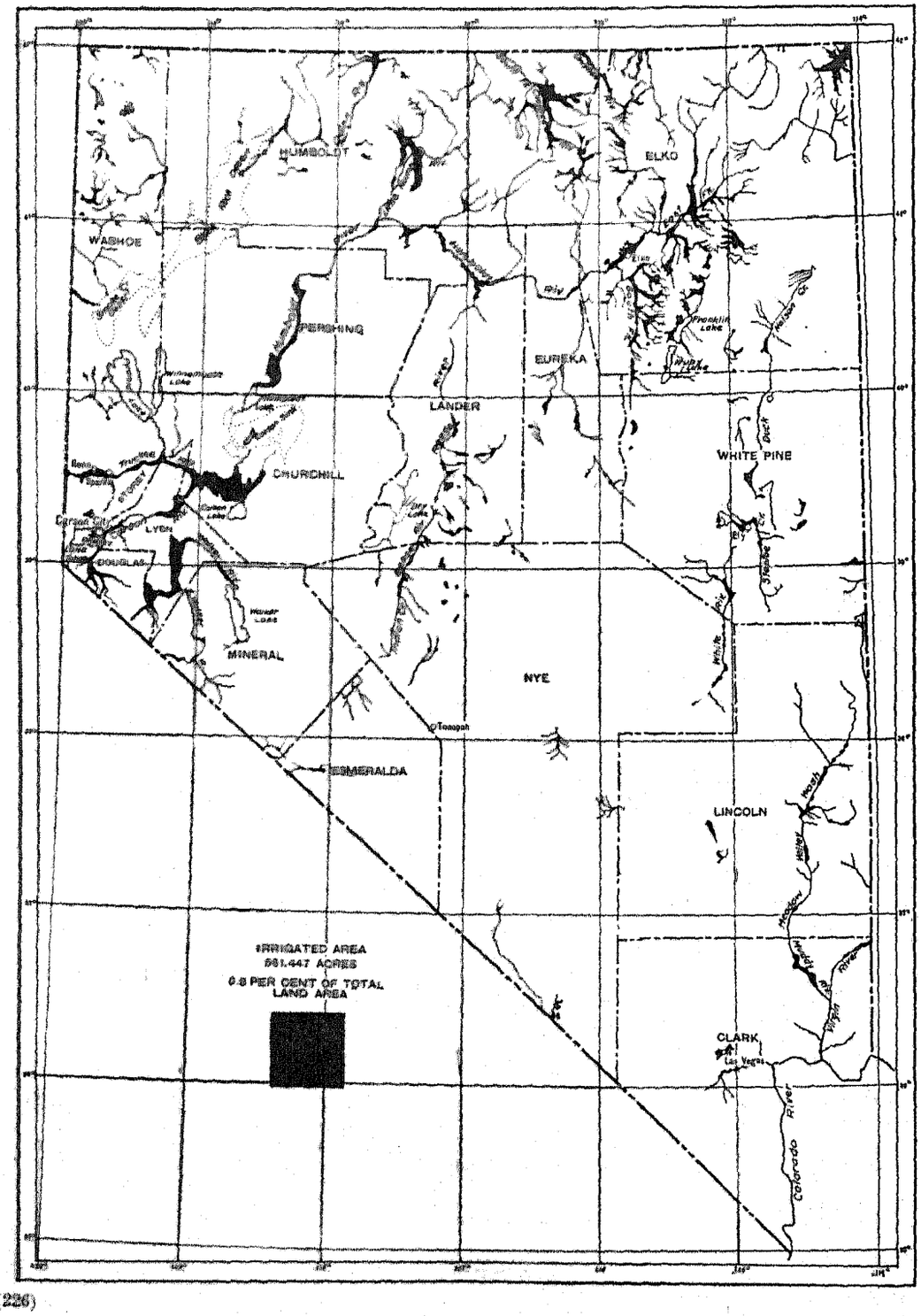
TABLE 1.—SUMMARY FOR THE STATE: 1920 AND 1910.

ITEM.	CENSUS OF—		INCREASE.[1]	
	1920	1910	Amount.	Per cent.
Number of all farms	3,163	2,689	474	17.6
Approximate land area of the state ... acres	70,285,440	70,285,440	.....	.....
All land in farms ... acres	2,357,163	2,714,757	−357,594	−13.2
Improved land in farms ... acres	594,741	752,117	−157,376	−20.9
Number of farms irrigated	2,718	2,406	312	13.0
Area irrigated ... acres	561,447	701,833	−140,386	−20.0
Area enterprises were capable of irrigating ... acres	704,708	840,962	−136,254	−16.2
Area included in enterprises ... acres	1,352,036	1,202,142	149,894	12.2
Per cent irrigated:				
Number of all farms	85.9	89.5	−3.6	.....
Approximate land area of the state	0.8	1.0	−0.2	.....
Land in farms	23.8	25.9	−2.1	.....
Improved land in farms	94.4	93.3	1.1	.....
Excess of area enterprises were capable of irrigating over area irrigated ... acres	122,161	139,129	−16,968	−12.2
Excess of area included in enterprises over area irrigated ... acres	801,589	530,309	271,280	51.2
Area of irrigated land reported as available for settlement ... acres	139,352	(2)	.....	.....
Capital invested	$14,754,280	$6,721,924	$8,032,356	119.5
Average per acre enterprises were capable of irrigating	$20.94	$7.99	$12.95	162.1
Estimated final cost of existing enterprises	$22,648,747	$12,188,756	$10,459,991	85.8
Average per acre included in enterprises	$16.39	$9.89	$6.50	65.7
Average cost of operation and maintenance per acre	$0.79	$0.97	−$0.18	−18.6
IRRIGATION WORKS.				
Number of enterprises	1,015	1,347	−332	−24.6
Number of main ditches	2,032	994	1,038	104.4
Length of main ditches ... miles	3,123	1,938	1,185	61.1
Capacity of main ditches ... second-feet	10,554	17,579	−7,025	−40.0
Number of lateral ditches	2,064	1,531	533	34.8
Length of lateral ditches ... miles	1,245	1,213	32	2.6
Number of reservoirs	134	109	25	22.9
Capacity of reservoirs ... acre-feet	504,428	325,953	178,475	54.8
Number of flowing wells	123	19	104	(3)
Capacity of flowing wells ... gallons per minute	21,942	1,302	20,640	(3)
Number of pumped wells	129	6	123	(3)
Capacity of pumped wells ... gallons per minute	6,798	1,349	5,449	403.9
Number of pumping plants	64	18	46	(3)
Engine capacity ... horsepower	409	693	−284	−41.0
Pump capacity ... gallons per minute	35,266	24,295	10,971	45.2
Average lift ... feet	22	(2)	22	.....

[1] A minus sign (−) denotes decrease.
[2] Not reported in 1910.
[3] Per cent not shown when base is less than 100 or when per cent is more than 1,000.

NEVADA

APPROXIMATE LOCATION AND EXTENT OF IRRIGATED LAND.



CLIMATIC CONDITIONS.

Except for small areas on the extreme western border, the surface of the state of Nevada consists of broken ranges of mountains, with broad, sage-covered valleys between. Along the western border the state extends into the Sierra Nevada Mountains.

Precipitation is heavy in the Sierra Nevadas, particularly snowfall in the winter, and, as is usually the case, immediately to the east of the mountains precipitation drops suddenly, then increases gradually to the east, the driest part of the state being in the lowest part, which lies near the western border. A very small area on the western border of the state receives more than 15 inches of precipitation annually, a narrow strip east of that receives from 12 to 15 inches, another narrow strip receives from 9 to 12 inches, followed by another that receives from 6 to 9 inches. East of this, and extending along the southwestern border of the state and taking in the whole southern end, is a wide zone that receives less than 6 inches of precipitation annually. East and north of this the amount increases, rising to 12 to 15 inches in a section lying just east of the center of the state. Taking the state as a whole the average annual precipitation is less than 10 inches. More than half of this occurs in the winter, the summers being extremely dry and hot. In the Sierra Nevada Mountains the snowfall in winter is very heavy and the snow lies well into the summer.

The year 1919 was one of the driest years on record, the average precipitation for the state being about 7 inches, while the normal is about 9.5 inches. April and May were warm months, and the snow melted earlier than usual, thus decreasing the supply of water later in the season. The drouth was detrimental to crops where stored water was not available, and to pastures and ranges generally.

The state has a wide range of temperature. The extreme southern point of the state is semitropical, the growing season extending seven or eight months, while in some of the higher valleys in the Sierras it is but two or three months. In most of the valleys of the state the growing season is about six months.

In only very small areas in the state can crops be grown without irrigation in normal years.

WATER SUPPLY FOR IRRIGATION.

Except for a small area in the extreme southern point of the state, which is in the Colorado River drainage, and a somewhat larger area along the northern border of the state, which is in the Snake River drainage, the state of Nevada lies within the Great Basin and has no outlet to the sea. The rivers rise in the mountains and lose their waters by evaporation and seepage along their channels or flow into lakes or sinks, where the water evaporates, leaving large deposits of salt and other alkalis.

The principal streams are Humboldt River, which rises in the northeastern part of the state and flows in a southwesterly direction to the sinks in the western part of the state, and Truckee, Carson, and Walker Rivers, which rise in the Sierra Nevada Mountains in California and flow in an easterly direction to the sinks in the same part of the state.

Humboldt River, rising in the extreme northeastern part of the state, flows in a westerly and southwesterly direction, breaking through successive ranges of mountains which have a general north and south direction, forming a succession of valleys along the river. Tributaries reach the river from both north and south, draining the valleys between the mountain ranges. The discharge of the Humboldt and its tributaries is typical of such streams, being high in spring, when the snow melts, and very low in the summer. Without storage, crops are limited to such as mature early; in fact, the larger part of the irrigation along the Humboldt consists of flooding wild-grass meadows when the stream is in flood. Schemes for storage have been discussed but never carried out.

Truckee River rises in Lake Tahoe, which lies on the boundary between Nevada and California, and after a northerly course in the mountains in California, turns eastward into Nevada, where it waters considerable land in Truckee Meadows, near Reno, and below is diverted into the drainage basin of Carson River, to supply a part of the land in the Newlands Project of the United States Reclamation Service. Plans for using Lake Tahoe for storing water for summer use are delayed by controversies between water users in Nevada and the owners of land around the lake in California. Storage for a part of Truckee River water is provided for in Lahontan Reservoir of the United States Reclamation Service.

Carson and Walker Rivers also rise in the Sierra Nevadas in California and flow in a northeasterly direction into Carson Lake and Walker Lake, respectively, after being used for irrigation in the valleys through which they pass. Complete use of these streams requires storage, which has not yet been provided, except that some of the water of Carson River is stored in Lahontan Reservoir.

In the extreme southern part of the state Virgin River and its tributary, Muddy River, supply small areas, and in the northern part of the state tributaries of Snake River water small areas.

In by far the larger part of the state there is little or no surface water available for irrigation, but some of the streams water small areas before losing their water in the deserts.

In several of the valleys of the state wells have been put down and water obtained for small areas. No doubt much more land can be watered from this source if the value of the crops justifies the expense.

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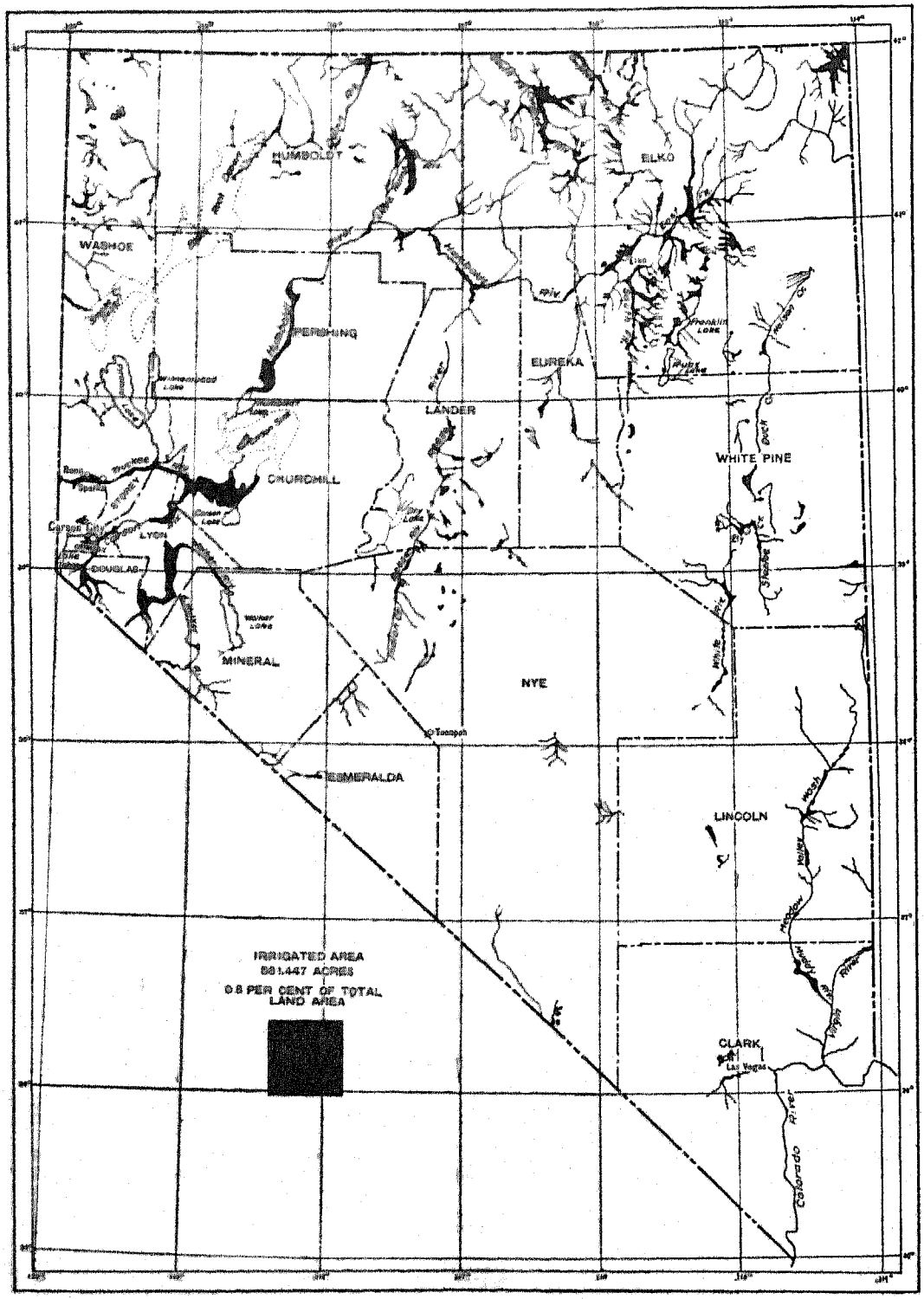

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FARMS AND ACREAGE IRRIGATED.

TABLE 2.—NUMBER OF FARMS AND ACREAGE IRRIGATED: 1890 TO 1920.

CENSUS YEAR.	FARMS IRRIGATED.			AREA IRRIGATED.				
	Number.	Per cent of increase.	Per cent of all farms.	Acres.	Per cent of increase.[1]	Per cent of total land area.	Per cent of all land in farms.	Per cent of improved land in farms.
1920	2,718	13.0	85.9	561,447	−20.0	0.8	23.8	94.4
1910	2,406	26.2	89.5	701,833	26.2	1.0	25.9	93.3
1900	1,906	65.3	87.5	556,168	124.7	0.7	19.7	88.0
1890	1,267	.....	91.4	224,403	.....	0.3	13.5	31.0

[1] A minus sign (−) denotes decrease.

TABLE 3.—ACREAGE, CLASSIFIED BY DATE OF BEGINNING OF ENTERPRISES SUPPLYING WATER FOR IRRIGATION.

DATE OF BEGINNING.	Number of enterprises.	Area included in enterprises, 1920 (acres).	AREA IRRIGATED IN 1919.		Area enterprises were capable of irrigating in 1920 (acres).
			Acres.	Per cent of acreage in enterprises.	
Total	1,015	1,382,036	561,447	40.6	704,708
Before 1860	23	3,993	4,782	79.8	5,872
1860–1869	131	456,730	171,317	37.5	183,064
1870–1879	147	228,749	124,723	54.5	142,042
1880–1889	114	178,791	83,362	46.9	124,227
1890–1899	52	27,452	9,081	42.3	11,708
1900–1904	58	238,961	60,897	25.5	89,520
1905–1909	29	23,253	18,770	80.7	19,465
1910–1914	139	56,456	24,833	44.0	35,094
1915–1919	132	53,214	15,237	28.6	36,045
Not reported	196	118,637	49,545	41.7	58,521

TABLE 4.—ACREAGE, CLASSIFIED BY SOURCE OF WATER SUPPLY: 1919 AND 1909.

CLASS.	AREA IRRIGATED (ACRES).				Area enterprises were capable of irrigating in 1920 (acres).	Area included in enterprises, 1920 (acres).
	1919	1909	Increase[1]			
			Amount.	Per cent.		
Total	561,447	701,833	−140,386	−20.0	704,708	1,382,036
Streams, gravity	466,812	661,299	−194,487	−29.4	585,105	1,130,770
Streams, pumped	2,647	463	2,184	471.7	2,675	4,330
Streams, pumped and gravity	720	(2)	720	.....	720	740
Wells, pumped	295	37	258	.....	324	1,546
Wells, flowing	811	150	661	440.7	1,216	5,577
Wells, flowing and pumped	65	(2)	65	.....	76	392
Lakes, gravity	445	500	−55	−11.0	1,419	4,516
Lakes, pumped	.....	406	−406	.....	.....	.....
Springs	21,987	38,840	−16,853	−43.4	25,659	72,179
Stored storm water	17,348	138	17,210	.....	17,508	29,648
City water	14	(2)	14	.....	20	20
Sewage	88	(2)	88	.....	88	708
Streams, gravity, and pumped wells	4,957	(2)	4,957	.....	8,024	22,784
Streams, gravity, and flowing wells	82	(2)	82	.....	82	592
Other mixed	45,176	(2)	45,176	.....	61,843	114,314

[1] A minus sign (−) denotes decrease. Per cent not shown when base is less than 100 or when per cent is more than 1,000.
[2] Not included in classification in 1910.

ACREAGE, BY CHARACTER OF ENTERPRISE.

In 1889 Nevada enacted a law dividing the state into internal improvement districts, and provided for the issuing of bonds by such districts. The next legislature, in 1891, enacted a district law similar to those enacted by other Western states, and this has been amended from time to time. But one district is reported in the state, and this was organized to take over works already built. This accounts, in part, for the decrease in the acreage reported for individual and cooperative enterprises in Table 5. The land in the Newlands Project of the United States Reclamation Service has been organized into an irrigation district, but this land is credited to the Reclamation Service in Table 5, because the Government built the works and still controls them to a large extent.

Nevada accepted the terms of the Federal Carey Act (act of Congress, Aug. 18, 1894) in 1895, but no land is reported as being supplied with water under this law.

TABLE 5.—ACREAGE, CLASSIFIED BY CHARACTER OF ENTERPRISE: 1920 AND 1910.

ITEM AND CLASS.	CENSUS OF—		INCREASE.[1]	
	1920	1910	Acres.	Per cent.
ACREAGE IRRIGATED.				
Total	561,447	701,833	−140,386	−20.0
Individual and partnership	355,901	581,406	−225,505	−38.8
Cooperative	69,877	78,966	−9,089	−11.5
Irrigation district	80,000	.....	80,000	.....
Commercial	5,990	8,864	−2,874	−32.4
U. S. Reclamation Service	44,324	30,000	14,324	47.7
U. S. Indian Service	5,321	2,597	2,724	104.9
State	12	(2)	12	.....
City	22	(2)	22	.....
ACREAGE ENTERPRISES WERE CAPABLE OF IRRIGATING.				
Total	704,708	840,962	−136,254	−16.2
Individual and partnership	453,900	649,841	−195,941	−30.2
Cooperative	85,483	88,255	−2,772	−3.1
Irrigation district	80,000	.....	80,000	.....
Commercial	7,240	9,300	−2,060	−22.2
U. S. Reclamation Service	69,850	90,185	−20,335	−22.5
U. S. Indian Service	8,195	3,381	4,814	142.4
State	12	(2)	12	.....
City	28	(2)	28	.....
ACREAGE INCLUDED IN ENTERPRISES.				
Total	1,382,036	1,232,142	149,894	12.2
Individual and partnership	807,045	844,128	−37,083	−4.4
Cooperative	93,253	129,269	−36,016	−27.9
Irrigation district	260,000	.....	260,000	.....
Commercial	14,240	24,500	−10,260	−41.9
U. S. Reclamation Service	192,000	216,185	−24,185	−11.2
U. S. Indian Service	15,390	18,060	−2,670	−14.8
State	80	(2)	80	.....
City	28	(2)	28	.....

[1] A minus sign (−) denotes decrease. [2] Not included in classification in 1910.

ACREAGE, BY CHARACTER OF WATER RIGHTS.

The laws of Nevada relating to water rights are summarized in the following paragraphs:

In 1866 the legislature enacted a law requiring any person desiring to construct or maintain any ditch or flume to make a certificate describing the ditch, before some officer competent to take acknowledgments of deeds. No provision for recording these certificates was made.

The state of Nevada enacted in 1889 a law which was intended to provide for a complete record of water rights and for their administration. All parties claiming any interest in irrigation works were required to file statements of their claims on or before September 1, 1890, and parties wishing to build ditches or to enlarge

or extend existing ditches were required to file statements with the proper county recorders. The state was divided into districts, exclusive jurisdiction of controversies over water rights was given to the district courts, and the courts were to issue certificates to holders of rights. The law provided also for the appointment of commissioners to distribute water from streams in accordance with the decrees of the courts. This law was repealed in 1893, but many filings were made after that date.

In 1899 a new law on the subject of water rights was enacted. This law declared that "All natural water courses and natural lakes, and the waters thereof, which are not held in private ownership, belong to the state, and are subject to regulation and control by the state." It provided that rights to water might be acquired in the manner provided by the act, and not otherwise. The county commissioners and the county surveyor of each county were made a board of water commissioners for their county. Applications to appropriate water were to be made to these boards "but in no case shall permission to appropriate water be granted, except there be a surplus of water remaining in the source of supply over and above their existing vested and accrued rights." It was left to the discretion of each county board to determine whether the county should avail itself of the provision of the act. The act was not generally put into effect.

Another new water law was enacted in 1903. This law declared that the waters of all watercourses and lakes belong to the "public," rather than to the "state," and were subject to appropriation for beneficial use, and the use of water is made a public use. This law created the office of state engineer, and made it the duty of the engineer to prepare for each stream in the state a list of the appropriations of water according to their priority. County recorders were required to supply to the engineer transcripts of all claims on record in their respective offices, and the engineer was to get copies of all decrees rendered by the courts. The state engineer was to examine the lands irrigated and irrigable on each stream, make his list of rights on the basis of the claims filed, court decrees, and his own surveys, and issue certificates to claimants defining their rights. Appeal to the courts was provided for. This law has been amended in such a way that the findings of the engineer are submitted to the court and the court issues a decree defining rights.

This law was amended in 1905, and sections were added requiring parties wishing to acquire rights to make application to the state engineer for permits. The law provided for the submitting of proof of completion of works in accordance with the permits and for the issuing and recording of certificates showing the rights acquired. This law was repealed and reenacted in substance by the act of February 26, 1907, and that law was superseded by the act of March 22, 1913, which was the same in its general effect. The law of 1913 has been amended in some particulars, but the general system provided in that and previous laws is still in force.

Riparian rights are not recognized in Nevada.

TABLE 6.—ACREAGE IRRIGATED, CLASSIFIED BY CHARACTER OF RIGHTS UNDER WHICH WATER IS RECEIVED: 1919 AND 1909.

CLASS.	1919		1909, per cent of total.
	Acres.	Per cent of total.	
Total	561,447	100.0	100.0
Appropriation and use	200,556	35.7	86.9
Notice filed and posted	52,027	9.3	5.5
Adjudicated by court	161,175	28.7	1.4
Permit from state	106,837	19.0	1.4
Certificate or license from state	6,666	1.2	4.5
Underground	1,244	0.2	(1)
Other and mixed	1,705	0.3	(1)
Not reported	31,217	5.6	(1)

[1] All land for which the class of water rights was not reported was included in "Appropriation and use."

ACREAGE, BY DRAINAGE BASIN.

The report of a special census taken in 1902 presented all data by drainage basins rather than by counties. The results of the census of 1920 have been tabulated on the same basis, and the data for 1902 are presented for purposes of comparison. For no other census have the results been tabulated in this form. The acreage reported for each drainage basin in 1919 comprises all the irrigated land in that drainage basin, including that watered from springs and wells. In the 1902 results the acreages irrigated from springs and wells were not reported for the smaller tributary streams, but the acreages for the tributaries were included in those reported for the main streams. This area is so small, however, that the comparison of the areas reported for the tributary streams is not seriously affected.

TABLE 7.—ACREAGE IRRIGATED, CLASSIFIED BY DRAINAGE BASIN: 1919 AND 1902.

DRAINAGE BASIN.	AREA IRRIGATED (ACRES).			Area included in enterprises, 1920 (acres).	Area enterprises were capable of irrigating in 1920 (acres).
	1919	1902	Per cent of increase.[1]		
Total	561,447	570,001	—1.5	1,382,636	704,708
Quinn River	9,935	38,150	—74.0	19,635	13,452
Owyhee River	57,632	8,625	568.2	142,699	62,385
Bruneau River	1,297	1,065	21.8	2,708	2,125
Salmon River	.....	12,160	.....	.....	.....
Goose Creek	25,000	2,000	.....	50,000	50,000
Humboldt River and tributaries	197,778	219,767	—10.0	348,573	291,251
Humboldt River direct	69,186	97,742	—29.2	84,049	77,726
East Fork of Humboldt River	33,473	11,680	186.6	74,204	43,649
Lamoille Creek	22,278	7,765	186.9	40,610	26,065
North Fork of Humboldt River	7,949	3,900	100.5	28,697	10,470
South Fork of Humboldt River	33,052	26,733	23.6	48,338	41,201
Pine Creek	3,250	1,010	221.8	3,530	3,250
Reese River	11,178	14,906	—25.0	49,709	10,898
Little Humboldt River	6,359	31,362	—79.9	6,790	6,350
Other tributaries of Humboldt River	11,071	[2] 24,409	—54.6	21,526	11,582
Truckee River and tributaries	20,002	40,541	—50.7	34,650	20,920
Truckee River direct	14,606	32,748	—55.4	28,949	15,436
Steamboat Creek	3,152	7,000	—55.0	3,298	3,218
Other tributaries of Truckee River	2,244	[2] 793	183.0	3,321	2,266
Carson River and tributaries	70,980	70,267	1.0	226,041	99,645
Carson River direct	4,860	48,155	—89.9	9,567	7,200
West Fork of Carson River	7,463	8,476	—12.0	7,661	7,523
East Fork of Carson River	11,028	9,524	15.8	11,128	11,128
Other tributaries of Carson River	47,629	[2] 4,112	.....	198,255	73,794
Walker River and tributaries	113,364	54,665	109.7	357,937	139,207
Walker River direct	94,249	28,262	233.2	294,990	98,500
East Walker River	5,574	13,335	—58.3	8,637	6,787
West Walker River	12,980	12,948	5.1	51,850	32,500
Other tributaries of Walker River	570	[2] 70	.....	2,460	1,350
Colorado River and tributaries	8,546	11,481	—25.6	21,342	16,338
Colorado River direct	.....	890	.....	.....	.....
Virgin River	7,965	4,090	92.3	17,259	8,450
Other tributaries of Colorado River	581	[2] 5,501	—89.5	4,083	878
Independent streams	56,913	111,890	—49.1	170,851	75,385
Duck Creek	6,252	4,100	52.2	13,854	7,872
Steptoe Creek	3,703	6,705	—44.7	12,069	3,628
Other independent streams	46,953	[2] 101,075	—53.5	150,927	63,885

[1] A minus sign (—) denotes decrease. Per cent not shown when base is less than 100 or when per cent is more than 1,000.
[2] Includes springs and wells.

CAPITAL INVESTED AND COST OF OPERATION AND MAINTENANCE.

TABLE 8.—CAPITAL INVESTED IN IRRIGATION ENTERPRISES: 1890 TO 1920.

CENSUS YEAR.	Amount.	Per cent of increase.[1]	AVERAGE PER ACRE. Amount.	AVERAGE PER ACRE. Per cent of increase.[1]
1920	$14,754,280	119.5	$20.94	182.1
1910	6,721,924	337.2	7.99	162.6
1900	1,537,559	—9.6	3.05	—59.8
1890	1,700,975	.....	7.58	.....

[1] A minus sign (—) denotes decrease.

TABLE 9.—CAPITAL INVESTED, CLASSIFIED BY DRAINAGE BASIN: 1920 AND 1902.

DRAINAGE BASIN.	1920	1902	INCREASE.[1] Amount.	INCREASE.[1] Per cent.
Total	$14,754,280	$1,706,212	$13,048,068	764.7
Quinn River	50,548	61,100	—10,552	—17.3
Owyhee River	192,772	15,145	177,627	.....
Bruneau River	42,216	3,996	38,220	956.1
Salmon River	.....	14,840	—14,840	.....
Goose Creek	326,755	3,000	323,755	.....
Humboldt River and tributaries	1,751,586	762,110	988,476	129.5
Humboldt River direct	739,995	486,730	253,265	52.0
East Fork of Humboldt River	202,571	7,610	194,961	.....
Lamoille Creek	91,289	14,849	76,440	515.1
North Fork of Humboldt River	57,423	10,045	47,378	471.5
South Fork of Humboldt River	288,182	53,970	234,212	434.9
Pine Creek	2,809	2,450	359	14.7
Reese River	78,120	36,815	42,305	114.9
Little Humboldt River	2,544	53,580	—51,036	—95.3
Other tributaries of Humboldt River	388,182	[2] 97,170	191,012	196.6
Truckee River and tributaries	594,187	296,455	297,732	100.4
Truckee River direct	485,900	253,470	232,430	91.7
Steamboat Creek	42,979	36,979	2,499	6.9
Other tributaries of Truckee River	66,217	[2] 3,295	62,922	.....
Carson River and tributaries	8,024,309	142,703	7,881,597	.....
Carson River direct	61,055	95,913	—34,858	—36.3
West Fork of Carson River	14,269	14,610	—441	—3.0
East Fork of Carson River	48,786	13,695	35,091	256.2
Other tributaries of Carson River	7,900,299	[2] 18,485	7,881,814	.....
Walker River and tributaries	1,661,484	179,995	1,481,489	823.1
Walker River direct	1,466,889	71,425	1,395,464	.....
East Walker River	80,365	68,860	9,705	16.5
West Walker River	107,622	49,060	58,562	119.4
Other tributaries of Walker River	18,408	[2] 650	17,758	.....
Colorado River and tributaries	413,952	33,290	380,662	.....
Colorado River direct	.....	3,000	—3,000	.....
Virgin River	357,542	12,415	345,127	.....
Other tributaries of Colorado River	56,411	[2] 19,875	36,536	183.9
Independent streams	1,627,365	190,704	1,436,661	753.4
Duck Creek	252,851	10,700	242,151	.....
Steptoe Creek	189,386	19,940	169,446	852.8
Other independent streams	1,184,968	[2] 160,064	1,024,904	640.1

[1] A minus sign (—) denotes decrease. Per cent not shown when more than 1,000.
[2] Includes springs and wells.

TABLE 10.—CAPITAL INVESTED, CLASSIFIED BY DATE OF BEGINNING.

DATE OF BEGINNING.	Amount.	Per cent of total.	Average per acre.
Total	$14,754,280	100.0	$20.94
Before 1860	55,645	0.4	10.97
1860-1869	2,400,682	16.3	13.11
1870-1879	1,593,890	10.8	11.26
1880-1889	1,026,933	7.0	8.27
1890-1899	134,494	0.9	11.49
1900-1904	8,149,026	55.2	91.02
1905-1909	244,493	1.7	12.56
1910-1914	576,638	3.9	16.46
1915-1919	234,932	1.6	6.52
Not reported	331,547	2.2	5.67

TABLE 11.—CAPITAL INVESTED, 1920, AND COST OF OPERATION AND MAINTENANCE, 1919, CLASSIFIED BY SOURCE OF WATER SUPPLY.

[When water is pumped, cost of operation and maintenance includes cost of fuel and attendance.]

CLASS.	CAPITAL INVESTED, 1920. Amount.	CAPITAL INVESTED, 1920. Per cent of total.	CAPITAL INVESTED, 1920. Average per acre.	OPERATION AND MAINTENANCE, 1919. Area for which cost is reported (acres).	OPERATION AND MAINTENANCE, 1919. Average cost per acre.[1]
Total	$14,754,280	100.0	$21.58	460,317	$0.79
Streams, gravity	12,493,231	84.7	22.28	384,358	0.65
Streams, pumped	119,900	0.8	44.82	897	1.76
Streams, pumped and gravity	8,000	0.1	11.11	720	0.76
Wells, pumped	19,900	0.1	37.98	236	12.10
Wells, flowing	50,575	0.4	41.80	157	6.56
Wells, flowing and pumped	5,500	(2)	78.57	65	61.77
Lakes, gravity	234,851	1.6	48.93	130	19.63
Springs	568,000	3.9	22.14	17,840	1.74
Stored storm water	164,350	1.1	9.39	15,548	0.37
City water	300	(2)	15.00	.....	.....
Sewage	620	(2)	7.05	80	0.44
Streams, gravity, and pumped wells	181,887	1.2	22.67	1,246	1.57
Streams, gravity, and flowing wells	3,400	(2)	41.46	82	1.46
Other mixed	903,766	6.1	14.67	38,958	1.54

[1] Based on area irrigated in 1919. [2] Less than one-tenth of 1 per cent.

TABLE 12.—CAPITAL INVESTED, 1920, AND COST OF OPERATION AND MAINTENANCE, 1919, CLASSIFIED BY CHARACTER OF ENTERPRISE.

[When water is pumped, cost of operation and maintenance includes cost of fuel and attendance.]

CLASS.	CAPITAL INVESTED, 1920. Amount.	CAPITAL INVESTED, 1920. Per cent of total.	OPERATION AND MAINTENANCE, 1919. Area for which cost is reported (acres).	OPERATION AND MAINTENANCE, 1919. Average cost per acre.[1]
Total	$14,754,280	100.0	460,317	$0.79
Individual and partnership	4,014,570	27.2	265,626	0.80
Cooperative	1,019,047	6.9	62,664	0.75
Irrigation district	1,246,611	8.5	80,000	0.95
Commercial	340,559	2.3	4,240	2.86
U. S. Reclamation Service	7,953,537	53.9	44,324	1.94
U. S. Indian Service	178,536	1.2	3,451	0.30
State	1,000	(2)	12	12.50
City	420	(2)	.....	.....

[1] Based on area irrigated in 1919. [2] Less than one-tenth of 1 per cent.

DRAINAGE OF IRRIGATED LAND.

The acreages reported in Table 13 relate to lands within the boundaries of irrigation projects, and do not include lands within the vicinity of these projects. "Additional acreage needing drainage" includes all lands so reported by the owners of the enterprises, and includes lands producing partial crops as well as those wholly unproductive.

TABLE 13.—ACREAGE WITHIN IRRIGATION ENTERPRISES FOR WHICH DRAINS HAVE BEEN INSTALLED AND ADDITIONAL ACREAGE IN NEED OF DRAINAGE: 1920.

Number of enterprises reporting land drained or needing drainage	58
Acreage included in enterprises reporting land drained or needing drainage	537,417
Acreage for which drains have been installed	34,175
Additional acreage needing drainage	98,249
Per cent that acreage for which drains have been installed is of total acreage included in enterprises reporting drainage	6.4
Per cent that acreage for which drains have been installed is of total acreage included in irrigation enterprises in the state	2.5
Per cent that acreage for which drains have been installed plus that needing drainage is of total acreage included in irrigation enterprises in the state	9.6

QUANTITY OF WATER USED.

The quantity of water used in 1919 was reported on only part of the irrigation schedules, and the figures given vary greatly. In order that proper values may be assigned to the figures given, those representing measurements and those representing estimates are reported separately in Table 14. While the data are incomplete, the reports represent sufficient acreages to serve as bases for reliable averages.

TABLE 14.—QUANTITY OF WATER USED IN 1919.

ITEM.	Total.	Measured.	Not measured.
Average volume of water entering canals.....second-feet	2,328	1,623	705
Area irrigated in 1919.....acres	204,520	111,017	93,503
Average number of acres per second-foot	88	68	133
Total quantity of water entering canals.....acre-feet	926,308	727,037	199,271
Area irrigated in 1919.....acres	212,323	122,627	89,696
Average quantity of water per acre.....acre-feet	4.4	5.9	2.2
Total quantity of water delivered.....acre-feet	170,911	157,638	13,273
Area irrigated in 1919.....acres	60,044	49,494	10,550
Average quantity delivered per acre.....acre-feet	2.8	3.2	1.3

IRRIGATION WORKS.

TABLE 15.—IRRIGATION WORKS, CLASSIFIED BY DATE OF BEGINNING.

DATE OF BEGINNING.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.	
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).
Total	1,523	82	2,032	10,554	3,123	2,064	1,245	124	504,428
Before 1860	55		18	141	21	8	4		
1860-1869	340	3	439	1,474	838	521	309	2	1
1870-1879	437	6	485	3,232	681	521	143	9	4,387
1880-1889	233	9	335	890	627	397	174	14	35,606
1890-1899	50	7	87	229	98	55	12	9	646
1900-1904	58	7	79	3,480	195	195	330	8	350,825
1905-1909	37	2	40	42	29	56	13	13	33,438
1910-1914	77	26	167	402	178	228	107	41	9,935
1915-1919	93	16	156	429	215	167	106	32	12,298
Not reported	143	6	176	253	241	116	47	6	51,302

DATE OF BEGINNING.	Pipe lines, length (miles).	FLOWING WELLS.		PUMPED WELLS.		PUMPING PLANTS.			
		Number.	Capacity (gallons per minute).	Number.	Capacity (gallons per minute).	Number.	Engine capacity (horse-power).	Pumps.	
								Number.	Capacity (gallons per minute).
Total	33.0	123	21,942	129	6,798	64	409	72	35,266
Before 1860									
1860-1869	2.0	2	110	50		2		2	
1870-1879	2.1	3	6	12	3	6	4	11	29,083
1880-1889	6.1	17	152	22	105	5	7	5	160
1890-1899	0.6								
1900-1904	1.8			3	100	3	11	4	850
1905-1909	0.6	2	663	1	442	2	75	2	2,000
1910-1914	16.5	49	14,776	18	1,690	16	122	16	3,625
1915-1919	5.5	44	6,127	29	4,418	25	168	28	6,308
Not reported	3.8	6	114	3	100	5	22	6	1,780

TABLE 16.—IRRIGATION WORKS, CLASSIFIED BY CHARACTER OF ENTERPRISE: 1920.

CLASS.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES. Number.	Capacity (second-feet).	Length (miles).	LATERAL DITCHES. Number.	Length (miles).	RESERVOIRS. Number.	Capacity (acre-feet).
Total	1,523	82	2,032	10,554	3,123	2,064	1,245	134	504,428
Individual and partnership	1,451	71	1,928	4,694	2,489	1,686	641	120	120,295
Cooperative	22	9	47	2,758	165	196	174	12	34,133
Irrigation district	40		40		220	50	100		
Commercial	4		4	318	63				
U. S. Indian Service	4		7	184	35	15	18		
U. S. Reclamation Service	2	2	5	3,259	51	125	312	2	350,000
State			2						
City			2			2			

CLASS.	Pipe lines, length (miles).	FLOWING WELLS. Number.	Capacity (gallons per minute).	PUMPED WELLS. Number.	Capacity (gallons per minute).	PUMPING PLANTS. Number.	Engine capacity (horse-power).	Pumps. Number.	Capacity (gallons per minute).
Total	33.0	123	21,942	129	6,798	64	409	72	35,266
Individual and partnership	27.0	108	21,812	48	6,573	59	403	61	35,046
Cooperative	4.1	15	130	29	5	4	6	9	
Commercial	0.1								
U. S. Indian Service	1.8			50					
State				2	220	1		2	220

TABLE 17.—IRRIGATION WORKS, CLASSIFIED BY DRAINAGE BASIN: 1920.

DRAINAGE BASIN.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES. Number.	Capacity (second-feet).	Length (miles).	LATERAL DITCHES. Number.	Length (miles).	RESERVOIRS. Number.	Capacity (acre-feet).
Total	1,523	82	2,032	10,554	3,123	2,064	1,245	134	504,428
Quinn River	5	1	14	98	22	20	16	2	
Owyhee River	181	2	202	325	245	170	90	1	1,000
Bruneau River	31	1	39	55	32	7	2	1	50
Goose Creek	35		3	100	100	35	70	3	30,000
Humboldt River and tributaries	715	12	1,040	1,204	1,292	965	281	27	42,791
Humboldt River direct	85	3	51	384	147	303	119	5	32,025
East Fork of Humboldt River	156	2	226	75	188	241	44	4	688
Lamoille Creek	173		196	90	103	128	41		
North Fork of Humboldt River	67		62	48	109	86	22		
South Fork of Humboldt River	161		281	297	354	96	29	4	7,974
Pine Creek			1			2	1		
Reese River	47		170	155	237	13	4		
Little Humboldt River	6		4		4				
Other tributaries of Humboldt River	31	7	49	155	60	96	21	14	2,104
Truckee River and tributaries	54	3	40	2,465	158	21	14	8	201
Truckee River direct	23	2	26	426	134	17	11	1	2
Steamboat Creek	6	1	8	2,001	14	4	3	1	
Other tributaries of Truckee River	25	2	6	38	10			6	199
Carson River and tributaries	126	12	95	3,853	170	179	340	14	400,060
Carson River direct	12	8	13	227	27	36	15	7	
West Fork of Carson River	19		27	85	17				
East Fork of Carson River	34		39	324	50				
Other tributaries of Carson River	63	4	16	3,217	76	143	325	7	400,060
Walker River and tributaries	70	14	120	1,267	498	96	157	4	1,503
Walker River direct	44		47	545	368	60	127		
East Walker River	5		43	136	65	1	3	1	3
West Walker River	11	1	10	551	51	11	25	1	1,500
Other tributaries of Walker River	10	13	20	15	14	24	2	2	
Colorado River and tributaries	35	5	83	141	94	182	102	16	558
Virgin River	35	5	59	119	86	126	101	5	354
Other tributaries of Colorado River			24	22	8	56	1	11	204
Independent streams	209	20	396	846	512	389	173	58	28,265
Duck Creek	14		21	65	36	17	12	1	50
Steptoe Creek	14	1	17	47	48	20	13	3	4,000
Other independent streams	241	20	358	754	428	352	148	54	24,215

TABLE 17.—IRRIGATION WORKS, CLASSIFIED BY DRAINAGE BASIN: 1920—Continued.

DRAINAGE BASIN.	Pipe lines, length (miles).	FLOWING WELLS.		PUMPED WELLS.		PUMPING PLANTS.				
		Number.	Capacity (gallons per minute).	Number.	Capacity (gallons per minute).	Number.	Engine capacity (horse-power).	Pumps.		Average lift (feet).
								Number.	Capacity (gallons per minute).	
Total	33.0	123	21,942	129	6,798	64	409	72	35,266	22
Quinn River				1	50	3	4	5		25
Owyhee River	0.1			1	25	1	6	1	350	30
Bruneau River	0.6									
Humboldt River and tributaries	15.7	12	805	18	2,540	18	71	19	22,495	20
Humboldt River direct	2.6	2		8	1,405	8	34	8	2,345	22
East Fork of Humboldt River				1	25	1		1	25	12
North Fork of Humboldt River	0.4			1		1	8	1		30
South Fork of Humboldt River				1	100	1	5	1	100	12
Pine Creek				1	10	1	10	1	10	
Reese River		4	190	3		3		3		
Other tributaries of Humboldt River	13.3	6	615	2	910	3	14	4	20,015	30
Truckee River and tributaries	0.9			1	250	1	6	1	250	8
Truckee River direct	0.7									
Other tributaries of Truckee River	0.2			1	250	1	6	1	250	8
Carson River and tributaries	4.1	3	22	1	50	12	134	13	1,650	12
Carson River direct	0.6			1	50	3	53	3	50	17
East Fork of Carson River						1		1		
Other tributaries of Carson River	3.5	3	22			8	81	9	1,600	11
Walker River and tributaries		26	242	71	5	2	2	2		10
Walker River direct				50						
West Walker River		17	240	20	5	2	2	2		10
Other tributaries of Walker River		9	2	1						
Colorado River and tributaries	7.2	53	18,872	7	705	8	72	9	4,878	21
Virgin River	4.4			5	230	6	43	7	2,235	15
Other tributaries of Colorado River	2.8	53	18,872	2	475	2	29	2	2,643	35
Independent streams	4.4	20	2,901	20	5,173	19	114	22	5,643	20
Duck Creek	0.1	2	704	6	2,285	5	56	8	2,425	20
Steptoe Creek				4	563	4	17	4	1,293	23
Other independent streams	4.3	27	1,207	10	385	10	41	10	1,975	17

CROPS.

TABLE 18.—ACREAGE, YIELD, AND VALUE OF PRINCIPAL CROPS GROWN ON IRRIGATED LAND, AND COMPARISONS WITH TOTALS FOR THE STATE: 1919 and 1909.

[Totals for the state, used in making comparisons, are shown in state bulletin on agriculture.]

	Crop.	Area harvested.					Quantity harvested.					
		1919		1909				1919		1909		
		Acres.	Per cent of total for state.	Acres.	Per cent of total for state.	Per cent of increase.[1]	Unit.	Amount.	Per cent of total for state.	Amount.	Per cent of total for state.	Per cent of increase.[1]
	Cereals:											
1	Winter wheat	2,921	83.9	14,010	98.2	42.6	Bu.	60,220	87.7	392,472	99.1	11.5
2	Spring wheat	17,062	92.2				Bu.	377,248	95.4			
3	Oats	2,561	84.1	7,285	92.8	−65.7	Bu.	64,873	86.5	307,618	91.8	−78.9
4	Barley	5,136	92.1	11,852	97.1	−56.5	Bu.	128,793	93.6	401,450	97.4	−65.4
	Hay and forage:											
5	Alfalfa	112,146	95.7	89,904	99.7	24.8	Tons	318,906	96.3	237,536	99.6	34.3
6	Timothy alone	4,229	94.8	10,437	69.8	−59.5	Tons	4,855	95.6	16,217	75.8	−70.1
7	Timothy and clover mixed	14,059	95.8	9,442	55.1	48.9	Tons	19,351	96.5	15,607	59.7	24.0
8	Clover alone	487	62.7				Tons	768	64.4			
9	Other tame grasses	20,114	95.3	7,259	27.7	381.1	Tons	31,306	96.6	11,107	27.5	181.9
10	Annual legumes cut for hay	706	91.2	1,775	42.4	253.2	Tons	545	92.2	2,362	43.5	188.6
11	Small grains cut for hay	5,564	79.0				Tons	6,272	84.1			
12	Wild, salt, or prairie grasses	124,989	75.8	195,381	98.8	−31.2	Tons	122,146	82.6	188,582	99.6	−35.2
	Vegetables:											
13	Potatoes	2,823	77.6	4,711	96.9	−40.1	Bu.	410,001	83.5	728,227	95.0	−43.7

	Crop.	Average yield per acre, 1919.						Value.				
		Unit.	For state.	On non-irrigated land.	On irrigated land.			1919		1909		Per cent of increase.[1]
					Average.	Per cent of average for state.	Per cent of average on non-irrigated land.	Amount.	Per cent of total for state.	Amount.	Per cent of total for state.	
	Cereals:											
1	Winter wheat	Bu.	19.7	15.1	20.6	104.6	136.4	$138,506	87.7	$393,144	99.2	155.9
2	Spring wheat	Bu.	21.4	12.7	22.1	103.3	174.0	867,670	95.4			
3	Oats	Bu.	25.2	21.5	25.9	102.8	120.5	74,604	86.5	175,987	91.7	−57.6
4	Barley	Bu.	26.5	21.3	26.9	101.5	126.3	242,888	93.6	302,229	97.4	−19.6
	Hay and forage:											
5	Alfalfa	Tons	2.83	2.42	2.84	100.4	117.4	6,537,573	96.3	1,951,223	99.8	235.0
6	Timothy alone	Tons	1.14	0.97	1.15	100.9	118.6	111,665	95.6	127,553	77.8	−12.5
7	Timothy and clover mixed	Tons	1.37	1.12	1.38	100.7	123.2	445,073	96.5	133,871	59.2	232.5
8	Clover alone	Tons	1.54	1.47	1.58	102.6	107.5	16,896	64.4			
9	Other tame grasses	Tons	1.06	0.76	1.08	101.9	142.1	641,773	96.6	91,240	27.6	603.4
10	Annual legumes cut for hay	Tons	0.76	0.68	0.77	101.3	113.2	9,810	92.2	28,059	33.5	348.5
11	Small grains cut for hay	Tons	1.06	0.80	1.13	106.6	141.2	116,032	84.1			
12	Wild, salt, or prairie grasses	Tons	0.82	0.60	0.91	109.6	151.7	2,259,701	82.6	1,407,590	99.1	60.5
	Vegetables:											
13	Potatoes	Bu.	134.9	98.9	145.2	107.6	146.8	918,402	83.5	394,651	99.5	132.7

[1] A minus sign (−) denotes decrease.

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910

[A minus sign (—) denotes decrease. Per cent not shown when base is less than 100.]

		The State.	Churchill.	Clark.	Douglas.	Elko.	Esmeralda.[1]	Eureka.	Humboldt.[2]	Lander.
1	Number of all farms in 1920	3,163	498	102	125	543	19	60	132	64
2	Number of farms irrigated in 1919	2,718	448	169	134	459	10	52	93	54
3	Per cent of all farms	85.9	90.0	92.0	96.1	84.5	52.6	86.7	70.5	84.4
4	Number of farms irrigated in 1909	2,406	326	165	132	359	99	59	279	54
5	Per cent of increase, 1909–1919	13.0	37.4	2.8	—6.1	27.9				
	LAND AND FARM AREA.									
6	Approximate land area ... acres	70,285,440	3,232,000	5,148,800	469,120	10,917,760	2,184,320	2,660,480	6,274,560	3,661,440
7	All land in farms ... acres	2,357,163	108,307	18,544	119,211	718,102	13,977	86,187	393,865	123,566
8	Improved land in farms ... acres	594,741	35,870	5,646	27,277	183,721	3,457	25,121	76,788	16,342
9	Area irrigated in 1919 ... acres	561,447	41,739	5,299	23,412	202,724	1,085	5,986	27,884	10,498
10	Per cent of improved land in farms	94.4	116.4	92.2	85.8	110.3	48.7	23.7	36.3	63.6
11	Area irrigated in 1909 ... acres	701,833	35,114	8,116	32,181	183,552	14,011	18,715	207,753	23,342
12	Per cent of increase, 1909–1919	—20.0	18.9	—35.9	—27.2	10.4		—72.8		—55.4
13	Area enterprises were capable of irrigating in 1920 ... acres	704,709	65,661	6,282	14,472	263,493	2,290	5,134	31,695	10,245
14	Area enterprises were capable of irrigating in 1910 ... acres	840,962	42,622	16,844	35,548	186,253	14,196	21,973	238,845	24,085
15	Per cent of increase, 1910–1920	—16.2	54.1	—62.7	—31.2	39.2		—76.6		—57.5
16	Area included in enterprises in 1920 ... acres	1,382,036	171,681	10,512	43,191	434,582	9,316	5,404	43,331	28,637
17	Area included in enterprises in 1910 ... acres	1,232,142	52,030	22,016	37,849	262,315	26,538	23,608	304,152	54,285
18	Per cent of increase, 1910–1920	12.2	230.0	—52.3	14.7	65.7		—77.1		—47.2
19	Area of irrigated land reported as available for settlement ... acres	139,352	87,451	1,230	19,220		350		1,764	
	IRRIGATION WORKS.									
	Independent enterprises:									
20	Number, 1920	1,015	14	37	78	367	7	24	63	41
21	Number, 1910	1,347	22	28	128	341	34	57	205	60
	Main ditches:									
22	Number, 1920	2,032	8	42	77	1,194	5	1	50	140
23	Number, 1910	994	17	32	142	172	39	36	199	70
24	Length, 1920 ... miles	3,123	79	47	88	1,428	5	3	69	194
25	Length, 1910 ... miles	1,938	78	65	213	211	85	55	379	118
26	Capacity, 1920 ... second-feet	10,554	3,141	116	460	1,297	31	18	307	39
27	Capacity, 1910 ... second-feet	17,579	1,656	203	1,688	1,529	230	289	3,398	2,654
	Laterals:									
28	Number, 1920	2,664	127	116	2	1,053			75	10
29	Number, 1910	1,531	78	30	24	803	8	23	66	29
30	Length, 1920 ... miles	1,245	302	79	5	370			29	4
31	Length, 1910 ... miles	1,213	191	12	17	200	25	15	102	13
	Reservoirs:									
32	Number, 1920	134	8	13	7	21			16	
33	Number, 1910	109	2	5	4	9		21	15	8
34	Capacity, 1920 ... acre-feet	504,428	350,009	214		40,068			7,452	
35	Capacity, 1910 ... acre-feet	325,953	300,010	7	5,043	3,097		1,014	5,293	1
	Flowing wells:									
36	Number, 1920	123	6	53	2	2			29	1
37	Number, 1910	19	2	6						11
38	Capacity, 1920 ... gallons per minute	21,942	615	18,872	22				400	25
39	Capacity, 1910 ... gallons per minute	1,302	54	1,210						38
	Pumped wells:									
40	Number, 1920	129		2		9			13	5
41	Number, 1910	6					1		3	
42	Capacity, 1920 ... gallons per minute	6,798		475		645			1,050	10
43	Capacity, 1910 ... gallons per minute	1,349					5		1,076	
	Pumping plants:									
44	Number, 1920	64	1	3	7	9			7	4
45	Number, 1910	18	1	4	2		1		3	
46	Engine capacity, 1920 ... horsepower	409	6	41	108	32			22	16
47	Engine capacity, 1910 ... horsepower	693	8	72	100		2		303	
48	Pump capacity, 1920 ... gallons per minute	35,266		4,083		1,720			20,200	10
49	Pump capacity, 1910 ... gallons per minute	24,205	490	6,750	4,000		5		1,070	
50	Average lift, 1920 ... feet	22	6	28	16	23			26	
	CAPITAL INVESTED.									
51	Capital invested to Jan. 1, 1920 ... dollars	14,754,280	7,774,129	352,332	94,311	1,447,201	26,849	25,211	271,719	79,332
52	Capital invested to July 1, 1910 ... dollars	6,721,924	1,621,996	61,069	64,696	384,096	137,092	25,296	536,998	188,431
53	Per cent of increase, 1910–1920	119.5	379.3	477.5	45.8	276.8		—0.7		—57.9
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	20.94	118.40	56.09	3.85	5.49	11.72	4.93	8.57	7.74
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	7.99	38.06	3.62	1.82	2.03	9.72	3.16	2.43	7.82
	ESTIMATED FINAL COST.									
56	Estimated final cost of existing enterprises in 1920 ... dollars	22,648,747	13,809,936	515,332	109,311	1,475,376	26,849	25,211	314,719	79,332
57	Estimated final cost of existing enterprises in 1910 ... dollars	12,188,756	7,016,828	67,069	64,696	795,096	156,092	25,296	608,998	188,431
58	Per cent of increase, 1910–1920	85.8	96.8	668.0	69.0	283.1		—0.7		—57.9
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	16.39	80.44	49.02	2.53	3.39	2.88	4.67	6.94	2.77
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	9.89	134.86	3.04	1.72	1.47	5.66	1.08	2.00	3.47

[1] Part taken to form Mineral County in 1911.

[2] Part taken to form Pershing County in 1919.

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909, AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910—Continued.

[A minus sign (−) denotes decrease. Per cent not shown when base is less than 100.]

		Lincoln.	Lyon.	Mineral.[1]	Nye.	Ormsby.	Pershing.[2]	Storey.	Washoe.	White Pine.
1	Number of all farms in 1920	145	207	92	152	49	115	14	481	211
2	Number of farms irrigated in 1919	131	275	89	110	37	109	12	381	185
3	Per cent of all farms	90.3	92.6	96.7	72.4	75.5	94.8	85.7	79.2	87.7
4	Number of farms irrigated in 1909	113	196		106	39		19	326	164
5	Per cent of increase, 1909–1919	13.9	40.3		3.8				16.9	12.8
	LAND AND FARM AREA.									
6	Approximate land area ... acres	6,727,040	965,760	2,572,160	11,798,160	99,840	3,873,920	160,640	4,600,640	5,628,800
7	All land in farms ... acres	31,105	145,371	27,621	95,902	9,972	140,968	1,833	230,052	98,470
8	Improved land in farms ... acres	9,264	52,290	9,056	19,759	3,027	50,141	699	45,036	31,257
9	Area irrigated in 1919 ... acres	5,826	110,602	5,212	11,354	3,146	53,628	172	28,801	24,270
10	Per cent of improved land in farms	62.9	212.1	57.5	57.5	103.9	107.0	24.6	64.0	77.6
11	Area irrigated in 1909 ... acres	9,907	62,148		19,978	2,426		891	50,904	32,765
12	Per cent of increase, 1909–1919	−41.2	78.4		−43.2	29.7		−80.7	−43.4	−26.0
13	Area enterprises were capable of irrigating in 1920 ... acres	10,752	136,475	7,662	14,169	4,718	61,940	268	31,610	27,932
14	Area enterprises were capable of irrigating in 1910 ... acres	15,391	116,222		26,962	2,466		925	54,551	49,229
15	Per cent of increase, 1910–1920	−30.1	17.4		−51.0	91.3		−71.0	−42.1	−43.3
16	Area included in enterprises in 1920 ... acres	20,366	332,816	12,937	70,601	7,410	62,795	348	78,274	47,841
17	Area included in enterprises in 1910 ... acres	16,124	260,354		34,962	2,466		1,025	82,600	52,918
18	Per cent of increase, 1910–1920	26.3	27.8		107.3	200.5		−66.0	−5.2	−9.6
19	Area of irrigated land reported as available for settlement ... acres	2,300	16,537		1,620	1,380			7,000	300
	IRRIGATION WORKS.									
	Independent enterprises:									
20	Number, 1920	49	40	23	95	20	16	4	87	50
21	Number, 1910	51	59		101	39		17	99	106
	Main ditches:									
22	Number, 1920	54	79	49	159	3	12	4	84	71
23	Number, 1910	26	56		65	11		6	43	99
24	Length, 1920 ... miles	82	421	77	156	5	60	1	255	153
25	Length, 1910 ... miles	37	289		83	7		10	208	100
26	Capacity, 1920 ... second-feet	47	1,097	249	423	133	266	2	2,612	282
27	Capacity, 1910 ... second-feet	78	4,914		147	28		51	1,104	543
	Laterals:									
28	Number, 1920	78	74	24	77	51	190	3	136	48
29	Number, 1910	16	269		91	12		1	17	64
30	Length, 1920 ... miles	38	151	14	13	25	96	1	61	57
31	Length, 1910 ... miles	10	520		34	4		1	29	40
	Reservoirs:									
32	Number, 1920	6	3	2	13	5	3	1	29	7
33	Number, 1910	2	4		13	6			8	12
34	Capacity, 1920 ... acre-feet	354	1,500	5	1,354	50,060	32,003		16,626	4,783
35	Capacity, 1910 ... acre-feet	3	2		1,085	203			10,277	20
	Flowing wells:									
36	Number, 1920		26		9	1				3
37	Number, 1910									
38	Capacity, 1920 ... gallons per minute		242		410					1,356
39	Capacity, 1910 ... gallons per minute									
	Pumped wells:									
40	Number, 1920	5	21	33	7	1	2		1	10
41	Number, 1910	1								1
42	Capacity, 1920 ... gallons per minute	230	5	25	360	50	910		250	2,788
43	Capacity, 1910 ... gallons per minute	196								72
	Pumping plants:									
44	Number, 1920	5	3	1	8	3	2		2	9
45	Number, 1910	2			1				3	1
46	Engine capacity, 1920 ... horsepower	31	2		35	20	17		12	73
47	Engine capacity, 1910 ... horsepower	10			1				193	4
48	Pump capacity, 1920 ... gallons per minute	245		25	350	1,650	915		1,850	3,668
49	Pump capacity, 1910 ... gallons per minute	588			10				11,304	72
50	Average lift, 1920 ... feet	16	10	17	19	10	78		11	21
	CAPITAL INVESTED.									
51	Capital invested to Jan. 1, 1920 ... dollars	124,536	1,749,387	208,132	260,220	54,777	550,952	6,229	658,775	1,079,188
52	Capital invested to July 1, 1910 ... dollars	39,262	2,761,261		56,871	11,620		16,270	678,284	118,642
53	Per cent of increase, 1910–1920	217.2	−37.0		357.6	371.4		−61.7	−2.9	809.6
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	11.58	12.78	27.16	18.37	11.61	8.89	23.24	20.84	38.64
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	2.55	23.76		1.97	4.71		17.59	12.43	2.41
	ESTIMATED FINAL COST.									
56	Estimated final cost of existing enterprises in 1920 ... dollars	141,936	2,934,967	213,132	303,445	55,777	554,952	9,819	832,725	1,245,988
57	Estimated final cost of existing enterprises in 1910 ... dollars	39,262	2,761,261		56,871	11,620		16,270	678,284	118,642
58	Per cent of increase, 1910–1920	261.5	6.3		433.6	380.0		−39.6	22.8	950.2
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	6.97	8.82	16.47	4.30	7.53	8.84	28.22	10.64	26.04
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	2.44	10.61		1.67	4.71		15.87	8.21	2.24

[1] Formed from part of Esmeralda County in 1911.

[2] Formed from part of Humboldt County in 1919.

NEW MEXICO.

INTRODUCTION.

The following pages present the statistics of irrigation for the state of New Mexico collected at the census of 1920. Statistics of acreage irrigated, of acreage, yield, and value of crops grown on irrigated land, and of cost of operation and maintenance relate to the year 1919; other items relate to the year 1920. Throughout the report figures for the census of 1910 are given for purposes of comparison; and, for the purpose of showing the historical development of irrigation, items which have been reported in censuses previous to 1910 are presented.

Statistics of number of farms irrigated and of acreage, yield, and value of crops grown on irrigated land were collected in the general census of agriculture. All other statistics were obtained in a special canvass of irrigation enterprises.

TABLE 1.—SUMMARY FOR THE STATE: 1920 AND 1910.

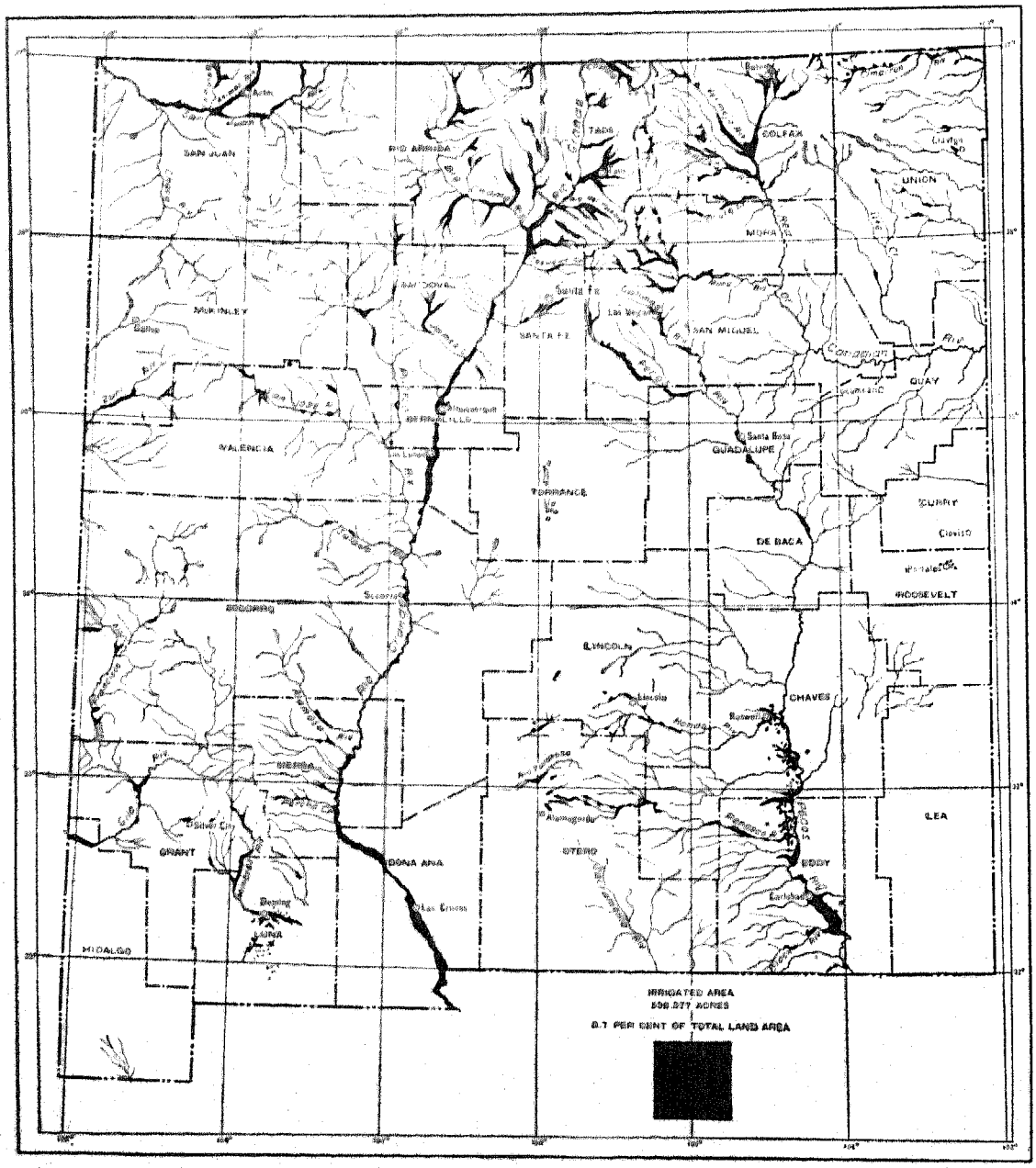
ITEM.	CENSUS OF—		INCREASE.[1]	
	1920	1910	Amount.	Per cent.
Number of all farms	29,544	35,676	−5,832	−16.3
Approximate land area of the state ... acres	78,401,920	78,401,920	.....	.....
All land in farms ... acres	24,409,633	11,270,021	13,139,612	116.6
Improved land in farms ... acres	1,717,224	1,467,191	250,033	17.0
Number of farms irrigated	11,390	12,795	−1,405	−11.0
Area irrigated ... acres	538,377	461,718	76,659	16.6
Area enterprises were capable of irrigating ... acres	696,119	644,970	51,149	7.9
Area included in enterprises ... acres	961,879	1,102,297	−140,418	−12.7
Per cent irrigated:				
Number of all farms	38.2	35.9	2.3	.....
Approximate land area of the state	0.7	0.6	0.1	.....
Land in farms	2.2	4.1	−1.9	.....
Improved land in farms	31.4	31.5	−0.1	.....
Excess of area enterprises were capable of irrigating over area irrigated ... acres	157,742	183,252	−25,510	−13.9
Excess of area included in enterprises over area irrigated ... acres	423,502	640,579	−217,077	−33.9
Area of irrigated land reported as available for settlement ... acres	66,479	(2)	.....	.....
Capital invested	$18,210,412	$9,154,897	$9,055,515	98.9
Average per acre enterprises were capable of irrigating	$26.16	$14.19	$11.97	84.4
Estimated final cost of existing enterprises	$20,440,646	$11,640,091	$8,800,555	75.6
Average per acre included in enterprises	$21.25	$10.56	$10.69	101.2
Average cost of operation and maintenance per acre	$2.41	$1.36	$1.05	77.2
IRRIGATION WORKS.				
Number of enterprises	2,391	2,786	−395	−14.2
Number of main ditches	2,228	2,101	127	6.0
Length of main ditches ... miles	4,469	4,664	−195	−4.2
Capacity of main ditches ... second-feet	23,432	29,646	−6,214	−21.0
Number of lateral ditches	2,158	1,280	878	68.6
Length of lateral ditches ... miles	1,463	1,190	273	22.9
Number of reservoirs	328	522	−194	−37.2
Capacity of reservoirs ... acre-feet	2,960,718	454,162	2,506,556	552.1
Number of flowing wells	556	673	−117	−17.4
Capacity of flowing wells ... gallons per minute	376,222	669,268	−293,046	−43.8
Number of pumped wells	461	466	−5	−1.1
Capacity of pumped wells ... gallons per minute	265,618	190,690	74,928	39.3
Number of pumping plants	472	413	59	14.3
Engine capacity ... horsepower	8,488	14,226	−5,738	−40.3
Pump capacity ... gallons per minute	304,789	216,355	88,434	40.9
Average lift ... feet	40	(2)	40	.....

[1] A minus sign (−) denotes decrease.

[2] Not reported in 1910.

NEW MEXICO

APPROXIMATE LOCATION AND EXTENT OF IRRIGATED LAND.



CLIMATIC CONDITIONS.

The climatic conditions having the greatest influence in determining the necessity for irrigation are the amount and seasonal distribution of precipitation, especially rainfall, although temperature, relative humidity, and wind movement have an influence.

The surface of New Mexico is very much broken, and the state does not lie in the path of the large storm movements of the country; consequently there is a great variety of both temperature and moisture conditions, depending on local influences.

The San Juan Valley, in the northwestern corner of the state, has the lowest precipitation in the state, the annual total falling below 6 inches in the lower valley. The precipitation increases with elevation to the north, east, and south of this valley, reaching about 15 inches where San Juan River crosses the Colorado-New Mexico boundary, and 20 inches in the mountains between the San Juan and the Rio Grande and on the high lands in the west-central part of the state.

The northeastern part of the state has the heaviest precipitation in the state. The precipitation of this section is mostly received in the form of showers during the months from April to September, inclusive, July and August being the months of greatest rainfall. The smallest precipitation in this section occurs in a strip passing along the eastern side of Colfax County, through central Mora and San Miguel Counties and eastern Guadalupe County. In this strip the annual precipitation falls below 14 inches in southern Colfax County, and averages 15 to 16 inches over the rest of the strip. To the east the annual precipitation increases to 16 or 18 inches in Union and Quay Counties. To the west of this strip of low precipitation the annual average increases to 18 inches in the western parts of Colfax, Mora, and San Miguel Counties, and exceeds 20 inches on the mountain slopes at an altitude of 8,000 feet.

The Rio Grande flows through the central part of the state from north to south. Over the greater part of the Rio Grande Valley the average annual precipitation is less than 10 inches; in the Pecos Valley it rises to about 15 inches; over the great plains east of the Pecos it ranges from 15 to 20 inches, while on the mountains between the two river valleys it ranges from 15 to more than 25 inches.

Over the high plateaus and mountains west of the Rio Grande the annual precipitation ranges from about 20 inches in the northern and higher elevations to less than 10 inches on the lower plains near the Mexican boundary.

In the eastern part of the state fully 75 per cent of the annual precipitation occurs during the months from May to October, making it possible to grow cereals and forage crops without irrigation. In the state generally, the larger part of the precipitation occurs in the summer.

In 1919 the precipitation was far above the normal, the average for the state being nearly 21 inches, while the normal is between 15 and 16 inches.

WATER SUPPLY FOR IRRIGATION.

The Rio Grande flows through the state of New Mexico from north to south, slightly west of the center of the state. The river rises in the mountains of southern Colorado. In New Mexico it flows in a narrow valley, but at places the hills recede, forming a succession of valleys containing considerable areas of arable land. In its natural condition the river is subject to heavy floods when the snows in the mountains melt in spring and during heavy rains at other times, and at times between floods is dry, or nearly so. In 1907 the construction of the Elephant Butte Dam to store the flood water was begun, and the dam was completed in 1916. This reservoir supplies water in New Mexico only to the lower part of the valley, leaving the valleys above to use the stream in its natural condition. Water from the reservoir at Elephant Butte is used for lands in Texas, as well as New Mexico, and under treaty with Mexico a fixed quantity of water is to be supplied for land in that country.

The northeastern part of the state is drained by the Canadian River and its tributaries. This stream rises in the mountains and flows out onto the plains and, like other such streams, loses in the sands and by evaporation most of the water entering it in the mountains. Without storage it is not a reliable source of water for irrigation, except in flood seasons.

The southeastern part of the state is drained by the Pecos and its tributaries. Like the Rio Grande and the Canadian, the Pecos at times carries large floods and at other times carries very little water. Storage of water for use along the lower part of the stream in New Mexico has been provided by the United States Reclamation Service.

There has been a large development of both flowing and pumped wells in the Pecos Valley in the vicinity of Roswell, in Chaves County.

In the southwestern part of the state, near Deming, there has been a large development of underground water from pumped wells. Farther west the Gila and San Francisco Rivers supply water for land in their valleys. These rivers within New Mexico are perennial streams, furnishing a reliable supply of water.

San Juan River and its tributaries rise in high mountains in Colorado and New Mexico, and furnish an abundant supply of water for the San Juan Valley.

In the west-central part of the state there is a high plateau region that has many small streams rising in the hills and losing their waters in the valleys. There is so little water in this section that there is no large opportunity for irrigation.

Throughout the state there are many valleys containing large areas of fine land which have no surface supply of water. In many of these it is possible to obtain water from wells, and this may be done where the value of crops will justify the expense.

FARMS AND ACREAGE IRRIGATED.

TABLE 2.—NUMBER OF FARMS AND ACREAGE IRRIGATED: 1890 TO 1920.

CENSUS YEAR.	FARMS IRRIGATED.			AREA IRRIGATED.				
	Number.	Per cent of increase.[1]	Per cent of all farms.	Acres.	Per cent of increase.	Per cent of total land area.	Per cent of land in farms.	Per cent of improved land in farms.
1920	11,390	−11.0	38.2	538,377	16.6	0.7	2.2	31.4
1910	12,795	40.2	35.9	461,718	126.5	0.6	4.1	31.5
1900	9,128	195.9	74.1	203,893	122.2	0.3	4.0	62.4
1890	3,085	.....	69.2	91,745	.....	0.1	11.6	34.9

[1] A minus sign (−) denotes decrease.

TABLE 3.—ACREAGE, CLASSIFIED BY DATE OF BEGINNING OF ENTERPRISES SUPPLYING WATER FOR IRRIGATION.

DATE OF BEGINNING.	Number of enterprises.	Area included in enterprises, 1920 (acres).	AREA IRRIGATED IN 1919.		Area enterprises were capable of irrigating in 1920 (acres).
			Acres.	Per cent of acreage in enterprises.	
Total	2,391	961,879	538,377	56.0	696,119
Before 1860	116	46,962	28,062	59.8	41,873
1860–1869	103	34,775	26,397	76.5	28,828
1870–1879	176	51,249	33,720	65.8	37,601
1880–1889	278	98,832	71,909	72.8	78,785
1890–1899	221	82,523	55,223	66.9	60,947
1900–1904	156	49,681	27,312	55.0	35,997
1905–1909	325	145,964	71,848	49.5	117,623
1910–1914	380	195,842	89,720	45.8	128,866
1915–1919	336	153,489	60,919	39.7	78,982
Not reported	301	103,462	73,667	70.6	87,617

TABLE 4.—ACREAGE, CLASSIFIED BY SOURCE OF WATER SUPPLY: 1919 AND 1909.

CLASS.	AREA IRRIGATED (ACRES).				Area enterprises were capable of irrigating in 1920 (acres).	Area included in enterprises, 1920 (acres).
	1919	1909	Increase.[1]			
			Amount.	Per cent.		
Total	538,377	461,718	76,659	16.6	696,119	961,879
Streams, gravity	432,478	397,059	35,419	8.9	558,292	748,646
Streams, pumped	1,890	1,533	357	23.3	2,930	3,320
Wells, pumped	15,709	5,952	9,757	163.9	23,141	42,563
Wells, flowing	30,030	48,877	−18,847	−38.6	33,394	50,968
Wells, flowing and pumped	6,556	(2)	6,556	.....	7,452	9,084
Lakes, gravity	1,945	862	1,083	125.6	12,245	23,150
Springs	10,791	6,163	4,628	75.1	11,127	19,332
Stored storm water	6,448	1,272	5,176	406.9	6,774	15,689
City water	40	(2)	40	.....	150	350
Streams, gravity, and pumped wells	1,341	(2)	1,341	.....	1,584	1,792
Streams, gravity, and flowing wells	685	(2)	685	.....	685	740
Other mixed	29,787	(2)	29,787	.....	37,368	45,367
Other ~~and not reported~~	677	(2)	677	.....	977	878

[1] A minus sign (−) denotes decrease.
[2] Not included in classification in 1910.

ACREAGE, BY CHARACTER OF ENTERPRISE.

Irrigation was practiced in parts of what is now New Mexico for hundreds of years before this territory became a part of the United States, and water for irrigation was supplied by "community ditches" or "public acequias," owned and controlled by the water users in accordance with old Spanish customs. New Mexico was organized as a territory in 1850, and in 1852 the territorial legislature enacted a law declaring "All rivers and streams of water in this territory, formerly known as public ditches (acequias), are hereby established and declared to be public ditches (acequias)." This law provided for annual elections of officers, under the supervision of justices of the peace, and contained regulations requiring each party receiving water to furnish labor for repairs and cleaning, and fixed fines for refusal or failure to furnish labor. Similar laws are still in force in New Mexico, and a large part of the irrigated land in the state is watered by such ditches. They are classed as cooperative in Table 5.

A law enacted in 1887 provided for the organization of corporations for constructing irrigation and other canals and the colonization and improvement of lands. Such companies were authorized to issue bonds and to collect rates for water, but were not empowered to levy and collect taxes, as are the irrigation districts provided for by the later laws. Such companies are classed as commercial in Table 5.

An irrigation district law containing the bonding and taxing powers was enacted in 1909. It has been amended from time to time, and revised in 1919.

The conditions of the Federal Carey Act (act of Congress, Aug. 18, 1894) were accepted in 1909.

The small area credited to the state belongs to a state institution and does not represent a scheme of state construction of irrigation works.

TABLE 5.—ACREAGE, CLASSIFIED BY CHARACTER OF ENTERPRISE: 1920 AND 1910.

ITEM AND CLASS.	CENSUS OF—		INCREASE [1]	
	1920	1910	Acres.	Per cent.
ACREAGE IRRIGATED.				
Total	538,377	461,718	76,659	16.6
Individual and partnership	151,351	144,212	7,139	5.0
Cooperative	264,610	251,911	12,699	5.0
Irrigation district	15,008	.....	15,008	.....
Carey Act	.....	.....	.....	.....
Commercial	19,871	28,190	−8,319	−29.5
U. S. Reclamation Service	77,878	13,398	64,280	479.8
U. S. Indian Service	9,072	24,037	−14,965	−62.2
State	77	(2)	77	.....
City	600	(2)	600	.....
Other	110	(2)	110	.....
ACREAGE ENTERPRISES WERE CAPABLE OF IRRIGATING.				
Total	696,119	644,970	51,149	7.9
Individual and partnership	215,918	185,283	30,635	16.4
Cooperative	305,540	355,327	−49,787	−14.0
Irrigation district	24,808	.....	24,808	.....
Carey Act	7,500	.....	7,500	.....
Commercial	33,743	58,150	−24,407	−42.0
U. S. Reclamation Service	96,751	21,467	75,284	350.7
U. S. Indian Service	11,372	24,743	−13,371	−54.0
State	77	(2)	77	.....
City	600	(2)	600	.....
Other	110	(2)	110	.....
ACREAGE INCLUDED IN ENTERPRISES.				
Total	961,879	1,102,297	−140,418	−12.7
Individual and partnership	313,170	295,171	17,999	6.1
Cooperative	404,028	482,054	−78,026	−16.2
Irrigation district	28,520	16,400	12,120	73.9
Carey Act	7,500	16,000	−8,500	−53.1
Commercial	67,050	224,950	−157,900	−70.2
U. S. Reclamation Service	127,226	30,267	96,959	320.3
U. S. Indian Service	13,570	37,455	−23,885	−63.8
State	77	(2)	77	.....
City	600	(2)	600	.....
Other	138	(2)	138	.....

[1] A minus sign (−) denotes decrease.
[2] Not included in classification in 1910.

ACREAGE, BY CHARACTER OF WATER RIGHTS.

The laws of New Mexico relating to water rights are summarized in the following paragraphs:

The territory of New Mexico was organized under the act of Congress approved September 9, 1850, and the first territorial legislature passed an act declaring "All the inhabitants of the territory of New Mexico shall have the right to construct either private or common acequias, and to take water for said acequias from wherever they can."

A law enacted in 1891 required the filing of descriptions of all works built after the enactment of the law within 90 days after the beginning of construction, and provided that no right should accrue because of such construction until the filing was made.

In 1905 a law requiring filing in advance of construction was enacted.

In the same year a comprehensive water law was passed. It declared that "All natural waters within the limits of New Mexico are hereby declared to belong to the public, and no person shall be denied the right to appropriate said waters for beneficial use." It created the office of territorial engineer, and gave to this officer supervision of the administration of the public waters of the territory. It created also a board of control, consisting of the engineer and six water commissioners, and gave to this board authority to adjudicate and define all existing rights to water. However, no funds for the enforcement of this law were appropriated, and it was inoperative.

In 1907 the act of 1905 was repealed and a new law differing in many respects was enacted. This law placed the adjudication of rights in the courts, but provided for the collection of information for such adjudication by the territorial engineer, and for the initiation of actions by the attorney general of the territory. Any party wishing to acquire rights was required to apply to the territorial engineer for a permit to appropriate water and to submit proof of the completion of works and of the use of water in accordance with the terms of the permit. When satisfactory proof of completion of works is made, a certificate of completion is issued by the engineer, and when satisfactory proof of use of water is submitted a license setting forth the rights acquired is issued by the engineer. This law is still in force.

New Mexico was admitted as a state in 1911. The state constitution adopted at that time contained the following sections relating to water rights (Art. XVI):

Sec. 1. "All existing rights to the use of any waters in this state for any useful or beneficial purpose are hereby recognized and confirmed."

Sec. 2. "The unappropriated water of every natural stream, perennial or torrential, within the state of New Mexico, is hereby declared to belong to the public and to be subject to appropriation for beneficial use, in accordance with the laws of the state. Priority of appropriation shall give the better right."

Sec. 3. "Beneficial use shall be the basis, the measure and the limit of the right to the use of water."

TABLE 6.—ACREAGE IRRIGATED, CLASSIFIED BY CHARACTER OF RIGHTS UNDER WHICH WATER IS RECEIVED: 1919 AND 1909.

CLASS.	1919		1909, per cent of total.
	Acres.	Per cent of total.	
Total	538,377	100.0	100.0
Appropriation and use	152,746	28.4	83.9
Notice filed and posted	54,356	10.1	2.2
Adjudicated by court	91,807	17.1	5.6
Permit from state	103,459	19.2	8.0
Certificate or license from state	20,096	3.7	0.1
Riparian rights	400	0.1	0.1
Underground	52,325	9.7	(1)
Other and mixed	8	(2)	(1)
Not reported	63,180	11.7	(1)

[1] All land for which the class of water rights was not reported was included in "Appropriation and use."
[2] Less than one-tenth of 1 per cent.

ACREAGE, BY DRAINAGE BASIN.

The report of a special census taken in 1902 presented all data by drainage basins rather than by counties. The results of the census of 1920 have been tabulated on the same basis, and the data for 1902 are presented for purposes of comparison. For no other census have the results been tabulated in this form. The acreage reported for each drainage basin in 1919 comprises all the irrigated land in that drainage basin, including that watered from springs and wells. In the 1902 results the acreages irrigated from springs and wells were not reported for the smaller tributary streams, but the acreages for the tributaries were included in those reported for the main streams.

This area is so small, however, that the comparison of the areas reported for the tributary streams is not seriously affected.

TABLE 7.—ACREAGE IRRIGATED, CLASSIFIED BY DRAINAGE BASIN: 1919 AND 1902.

DRAINAGE BASIN.	AREA IRRIGATED (ACRES).			Area included in enterprises, 1920 (acres).	Area enterprises were capable of irrigating in 1920 (acres).
	1919	1902	Per cent of increase.[1]		
Total	538,377	254,945	111.2	961,879	696,119
Canadian River and tributaries	90,185	56,203	60.5	179,462	136,947
Canadian River direct	1,630	1,156	45.3	1,630	1,630
Cimarron River	31,967	8,122	293.8	70,318	45,628
Vermejo River	23,678	4,116	475.1	23,978	23,878
Ocate Creek	4,981	1,385	252.2	13,903	13,095
Mora River	17,657	32,796	−46.0	36,679	29,528
Ute Creek	77	4,061	−98.1	709	515
Other tributaries of Canadian River	10,365	[2] 4,578	137.3	32,199	22,619
Cimarron River	5,757	[2] 6,554	−12.2	14,173	12,383
Trinchera River	389	691	−43.7	911	468
Pecos River and tributaries	119,940	56,497	110.7	225,490	160,658
Pecos River direct	62,430	12,353	405.2	102,200	77,794
Gallinas River	4,097	6,281	−34.8	41,810	24,201
Hondo River	26,561	24,608	−18.4	33,118	23,525
Penasco River	13,375	5,102	162.2	19,889	13,733
Other tributaries of Pecos River	18,377	[2] 8,173	127.3	28,383	21,405
Rio Grande and tributaries	250,206	96,836	158.4	421,363	298,063
Rio Grande direct	103,344	49,520	109.7	172,747	123,464
Rio Costilla	4,417	2,115	108.8	7,365	4,803
Pueblo River	11,780	7,075	66.5	12,443	11,791
Rio Chama	26,166	8,549	206.1	42,235	30,237
Rio Santa Cruz	9,171	3,036	197.2	9,993	9,221
Tesuque Creek	3,012	4,744	−36.5	3,411	3,183
Rio Puerco	14,249	2,927	386.9	42,377	25,991
Other tributaries of Rio Grande	77,907	[2] 18,820	311.8	130,492	89,973
Rio Mimbres	12,557	[2] 6,546	91.8	24,243	19,554
Gila River and tributaries	9,993	9,342	6.9	14,936	10,493
Gila River direct	6,424	4,647	38.2	7,027	6,587
San Francisco River	3,162	4,695	−32.3	6,986	3,383
Other tributaries of Gila River	397	[2] 27	.....	923	523
San Juan River and tributaries	43,925	20,467	114.1	71,808	49,655
San Juan River direct	12,026	6,285	91.3	21,386	12,651
Los Pinos River	1,260	463	172.1	2,640	1,260
Animas River	23,355	10,502	122.4	35,370	23,455
La Plata River	5,830	3,065	94.0	9,445	5,830
Other tributaries of San Juan River	1,354	[2] 212	538.7	2,767	1,459
Independent streams	6,435	1,809	255.7	9,783	7,298
Fresno River	1,798	200	799.0	3,598	2,331
Rio Tularosa	4,547	1,568	190.0	6,095	4,877
Other independent streams	90	[2] 41	.....	90	90

[1] A minus sign (−) denotes decrease. Per cent not shown when base is less than 100.
[2] Includes springs and wells.

CAPITAL INVESTED AND COST OF OPERATION AND MAINTENANCE.

TABLE 8.—CAPITAL INVESTED IN IRRIGATION ENTERPRISES: 1890 TO 1920.

CENSUS YEAR.	Amount.	Per cent of increase.	AVERAGE PER ACRE.	
			Amount.	Per cent of increase.[1]
1920	$18,210,412	98.9	$26.16	84.4
1910	9,154,897	119.8	14.19	−30.5
1900	4,165,312	713.6	20.43	266.1
1890	511,957	.....	5.58	.....

[1] A minus sign (−) denotes decrease.

TABLE 9.—CAPITAL INVESTED, CLASSIFIED BY DATE OF BEGINNING.

DATE OF BEGINNING.	Amount.	Per cent of total.	Average per acre.
Total	$18,210,412	100.0	$26.16
Before 1860	268,876	1.5	6.55
1860-1869	384,754	2.1	13.44
1870-1879	482,843	2.6	12.84
1880-1889	2,568,298	14.1	32.60
1890-1899	1,252,916	6.9	20.72
1900-1904	1,122,232	6.2	31.18
1905-1909	4,692,515	25.8	39.89
1910-1914	4,594,735	25.2	35.66
1915-1919	2,021,448	11.1	25.59
Not reported	811,795	4.5	9.27

TABLE 10.—CAPITAL INVESTED, 1920, AND COST OF OPERATION AND MAINTENANCE, 1919, CLASSIFIED BY SOURCE OF WATER SUPPLY.

[When water is pumped, cost of operation and maintenance includes cost of fuel and attendance.]

CLASS.	CAPITAL INVESTED, 1920.			OPERATION AND MAINTENANCE, 1919.	
	Amount.	Per cent of total.	Average per acre.	Area for which cost is reported (acres).	Average cost per acre.[1]
Total	$18,210,412	100.0	$26.16	336,387	$2.41
Streams, gravity	13,524,889	74.2	24.23	257,818	1.65
Streams, pumped	36,520	0.2	12.46	1,132	1.30
Wells, pumped	925,003	5.1	30.97	12,388	7.51
Wells, flowing	1,220,519	6.7	36.55	14,394	2.15
Wells, flowing and pumped	388,165	2.1	52.09	4,601	8.99
Lakes, gravity	18,750	0.1	1.53	1,945	1.41
Springs	257,179	1.4	23.11	7,452	1.92
Stored storm water	686,047	3.8	101.28	6,207	1.67
City water	1,000	(2)	6.67	40	1.25
Streams, gravity, and pumped wells	175,000	1.0	110.48	1,319	39.77
Streams, gravity, and flowing wells	14,000	0.1	20.44	500	1.00
Other mixed	958,740	5.3	25.66	28,534	4.84
Other and not reported	4,600	(2)	4.71	57	4.91

[1] Based on area irrigated in 1919.
[2] Less than one-tenth of 1 per cent.

TABLE 11.—CAPITAL INVESTED, CLASSIFIED BY DRAINAGE BASIN: 1920 AND 1902.

DRAINAGE BASIN.	1920	1902	INCREASE.	
			Amount.	Per cent.
Total	$18,210,412	$4,301,915	$13,908,497	323.3
Canadian River and tributaries	5,039,780	424,442	4,615,338	.....
Canadian River direct	32,625	10,690	21,935	205.2
Cimarron River	2,188,908	130,580	2,058,328	.....
Vermejo River	1,248,537	131,020	1,117,517	852.9
Ocate Creek	319,529	9,400	310,129	.....
Mora River	262,575	99,475	163,100	164.0
Ute Creek	7,000	10,000	−3,000	−30.0
Other tributaries of Canadian River	980,606	[2] 33,277	947,329	.....
Cimarron River	308,147	[2] 46,200	261,947	567.0
Trinchera River	3,513	1,010	2,503	247.8
Pecos River and tributaries	5,263,454	2,734,810	2,528,644	92.5
Pecos River direct	3,294,504	2,284,176	1,010,328	44.2
Gallinas River	519,566	30,931	488,635	.....
Hondo River	578,094	261,863	316,231	120.8
Penasco River	222,693	50,363	172,330	342.2
Other tributaries of Pecos River	648,597	[2] 107,477	541,120	503.5
Rio Grande and tributaries	5,158,057	599,836	4,558,221	759.9
Rio Grande direct	3,605,725	295,898	3,309,827	.....
Rio Costilla	11,471	4,697	6,774	144.2
Pueblo River	19,982	11,560	8,422	72.9
Rio Chama	141,891	29,849	112,042	375.4
Rio Santa Cruz	18,281	12,862	5,419	42.1
Tesuque Creek	16,864	22,680	−5,816	−25.6
Rio Puerco	88,109	53,523	34,586	64.6
Other tributaries of Rio Grande	1,255,734	[2] 168,767	1,086,967	644.1
Rio Mimbres	318,062	[2] 112,192	205,870	183.5
Gila River and tributaries	70,423	73,769	−3,346	−4.5
Gila River direct	47,182	46,014	1,168	2.5
San Francisco River	9,809	21,455	−11,646	−54.3
Other tributaries of Gila River	13,432	[2] 6,300	7,132	113.2
San Juan River and tributaries	1,715,867	295,298	1,420,569	481.1
San Juan River direct	807,700	164,994	642,706	389.5
Los Pinos River	3,000	4,550	−1,550	−34.1
Animas River	824,450	101,535	722,915	712.0
La Plata River	47,975	23,144	24,831	107.3
Other tributaries of San Juan River	32,742	[2] 1,075	31,667	.....
Independent streams	333,109	14,358	318,751	.....
Fresno River	297,724	2,440	295,284	.....
Rio Tularosa	33,900	5,868	28,032	477.7
Other independent streams	1,485	[2] 6,050	−4,565	−75.5

[1] A minus sign (−) denotes decrease. Per cent not shown when more than 1,000.
[2] Includes springs and wells.

In classifying capital invested by type of enterprise the average capital invested per acre is not presented, for the reason that it is not possible to compute this correctly. The United States Reclamation Service supplies stored water to enterprises controlled by agencies of some of the other classes shown in the table, and a part of its expenditure is properly chargeable to those lands; but it is not possible to tell how much should be so charged or how it should be distributed among the various classes. The Reclamation Service also supplies water to land in Mexico, under treaty with that country.

TABLE 12.—CAPITAL INVESTED, 1920, AND COST OF OPERATION AND MAINTENANCE, 1919, CLASSIFIED BY CHARACTER OF ENTERPRISE.

[When water is pumped, cost of operation and maintenance includes cost of fuel and attendance.]

CLASS.	CAPITAL INVESTED, 1920.		OPERATION AND MAINTENANCE, 1919.	
	Amount.	Per cent of total.	Area for which cost is reported (acres).	Average cost per acre.[1]
Total	$18,210,412	100.0	336,387	$2.41
Individual and partnership	5,589,372	30.7	97,987	4.43
Cooperative	3,578,863	19.6	176,394	1.29
Irrigation district	914,479	5.0	15,000	3.30
Commercial	1,877,942	10.3	17,071	1.64
Carey Act	262,713	1.4	.....	.....
U. S. Reclamation Service	5,020,236	27.6	22,233	2.76
U. S. Indian Service	691,194	3.8	6,922	6.97
State	18,544	0.1	.....	.....
City	276,299	1.5	600	4.17
Other	870	.....	.....	.....

[1] Based on area irrigated in 1919.

DRAINAGE OF IRRIGATED LAND.

The acreages reported in Table 13 relate to lands within the boundaries of irrigation projects, and do not include lands within the vicinity of these projects. "Additional acreage needing drainage" includes all lands so reported by the owners of the enterprises, and includes lands producing partial crops as well as those wholly unproductive.

TABLE 13.—ACREAGE WITHIN IRRIGATION ENTERPRISES FOR WHICH DRAINS HAVE BEEN INSTALLED AND ADDITIONAL ACREAGE IN NEED OF DRAINAGE: 1920.

Number of enterprises reporting land drained or needing drainage	203
Acreage included in enterprises reporting land drained or needing drainage	212,353
Acreage for which drains have been installed	74,763
Additional acreage needing drainage	60,277
Per cent that acreage for which drains have been installed is of total acreage included in enterprises reporting drainage	35.2
Per cent that acreage for which drains have been installed is of total acreage included in irrigation enterprises in the state	7.8
Per cent that acreage for which drains have been installed plus that needing drainage is of total acreage included in irrigation enterprises in the state	14.0

QUANTITY OF WATER USED.

The quantity of water used in 1919 was reported on only part of the irrigation schedules, and the figures given vary greatly. In order that proper values may be assigned to the figures given, those representing measurements and those representing estimates are reported separately in Table 14. While the data are incomplete, the reports represent sufficient acreages to serve as bases for reliable averages.

TABLE 14.—QUANTITY OF WATER USED IN 1919.

ITEM.	Total.	Measured.	Not measured.
Average volume of water entering canals, second-feet	4,041	1,306	2,735
Area irrigated in 1919 ... acres	184,253	105,922	78,331
Average number of acres per second-foot	46	81	29
Total quantity of water entering canals, acre-feet	1,007,575	688,428	319,147
Area irrigated in 1919 ... acres	199,959	126,090	73,769
Average quantity per acre ... acre-feet	5.0	5.5	4.3
Total quantity of water delivered ... acre-feet	274,746	212,359	62,387
Area irrigated in 1919 ... acres	160,996	119,013	41,983
Average quantity per acre ... acre-feet	1.7	1.8	1.5

IRRIGATION WORKS.

TABLE 15.—IRRIGATION WORKS, CLASSIFIED BY DATE OF BEGINNING.

DATE OF BEGINNING.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.	
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).
Total	1,423	153	2,228	23,432	4,469	2,158	1,463	328	2,960,718
Before 1860	90	9	118	1,376	316	92	142	10	12
1860-1869	152	10	122	626	289	513	178	3	27
1870-1879	147	6	193	1,957	388	156	64	12	98
1880-1889	229	27	293	4,042	546	290	307	28	146,847
1890-1899	182	11	240	1,524	494	173	120	14	922
1900-1904	99	12	150	922	315	113	100	37	11,270
1905-1909	135	13	296	3,584	443	259	325	80	95,697
1910-1914	199	27	285	3,655	363	205	72	83	2,681,759
1915-1919	152	24	286	3,053	735	188	76	42	22,126
Not reported	146	14	245	1,593	360	169	79	19	1,710

DATE OF BEGINNING.	Pipe lines, length (miles).	FLOWING WELLS.		PUMPED WELLS.		PUMPING PLANTS.			
		Number.	Capacity (gallons per minute).	Number.	Capacity (gallons per minute).	Number.	Engine capacity (horse-power).	Pumps.	
								Number.	Capacity (gallons per minute).
Total	60.8	546	376,222	461	265,618	472	8,488	491	304,789
Before 1860									
1860-1869	0.6			3	3,300	3	55	4	10
1870-1879	4.8	3	1,500	6	3,000	2	115	7	6,000
1880-1889	10.5	2	2,850	6	880	5	32	7	3,710
1890-1899	7.5	24	16,179	7	2,900	7	63	7	3,100
1900-1904	3.8	54	54,000	35	15,388	37	406	40	21,588
1905-1909	13.2	222	150,443	95	54,743	102	1,595	104	65,782
1910-1914	14.3	145	101,372	177	116,362	173	4,004	176	132,893
1915-1919	2.7	16	18,190	92	47,789	100	1,647	100	49,579
Not reported	3.3	60	31,508	40	21,256	43	571	46	22,127

TABLE 16.—IRRIGATION WORKS, CLASSIFIED BY CHARACTER OF ENTERPRISE: 1920.

CLASS.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.	
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).
Total	1,423	153	2,228	23,432	4,469	2,158	1,463	328	2,960,718
Individual and partnership	948	102	1,656	5,992	2,055	1,085	506	270	186,740
Cooperative	454	36	535	13,647	2,064	962	639	39	41,199
Irrigation district	6	2	4	388	72	8	57	2	12,000
Carey Act	2		2	1,050	30			3	19,390
Commercial	5	8	7	538	68	24	66	6	4,925
U. S. Reclamation Service	4	3	9	2,192	116	53	160	3	2,690,860
U. S. Indian Service	1	2	12	219	54	26	35	2	5,600
State								1	1
City	1		1	6	7			2	3
Other	2		2	10	3				

CLASS.	Pipe lines, length (miles).	FLOWING WELLS.		PUMPED WELLS.		PUMPING PLANTS.			
		Number.	Capacity (gallons per minute).	Number.	Capacity (gallons per minute).	Number.	Engine capacity (horse-power).	Pumps.	
								Number.	Capacity (gallons per minute).
Total	60.8	546	376,222	461	265,618	472	8,488	491	304,789
Individual and partnership	39.2	546	369,580	457	261,343	464	8,373	483	301,572
Cooperative	3.0			1	3,300	3	25	3	2,040
Irrigation district	3.3								
Commercial	7.0	8	5,842						
U. S. Reclamation Service									
U. S. Indian Service	6.2	2	800			1		1	
State	2.1					1	5	1	230
City	6.0			3	975	3	85	3	977

TABLE 17.—IRRIGATION WORKS, CLASSIFIED BY DRAINAGE BASIN: 1920.

DRAINAGE BASIN.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.	
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).
Total	1,423	153	2,228	23,432	4,469	2,158	1,463	328	2,960,718
Canadian River and tributaries	264	61	395	8,111	671	491	303	61	79,160
Canadian River direct	1		2	47	7				
Cimarron River	60	9	63	2,055	178	87	154	7	21,285
Vermejo River	23	16	42	2,357	98	15	52	10	18,111
Ocate Creek	27	3	29	1,217	74	61	19	14	20,739
Mora River	108	12	113	1,675	231	262	41	6	277
Ute Creek	3	2	4	6	4	6	1	1	1
Other tributaries of Canadian River	42	25	32	1,374	79	59	36	23	18,777
Cimarron River	45	8	62	352	109	167	53	6	56
Trinchera River	9	2	9	9	8	14	4	1	
Pecos River and tributaries	368	16	713	2,894	911	701	601	132	107,798
Pecos River direct	169	2	262	1,418	320	196	204	83	82,131
Gallinas River	38	5	42	276	83	60	9	8	25,619
Hondo River	99	2	196	547	222	196	161	13	18
Penasco River	16		96	245	102	152	168		
Other tributaries of Pecos River	46	7	117	408	184	97	59	28	30
Rio Grande and tributaries	577	45	842	6,633	2,177	510	314	94	2,772,882
Rio Grande direct	48	5	122	3,607	765	130	83	11	2,639,866
Rio Costilla	48		52	139	43				
Pueblo River	40		42	434	86	7	3		
Rio Chama	187	2	183	832	208	167	80	2	130
Rio Santa Cruz	11		32	134	52	10	3		
Tesuque Creek	18		39	72	50	7	6	1	
Rio Puerco	30	9	50	215	237	41	20	11	44,008
Other tributaries of Rio Grande	195	29	322	1,800	652	148	119	69	88,798
Rio Mimbres	45	5	77	3,168	78	60	13	11	40
Gila River and tributaries	32	2	81	417	130	30	11	5	26
Gila River direct	4		21	299	69	11	8		
San Francisco River	26		52	88	54	11	2	1	
Other tributaries of Gila River	2	2	8	30	7	8	1	4	26
San Juan River and tributaries	44	11	66	1,403	273	121	87	11	651
San Juan River direct	11	1	12	240	69	14	40	2	1
Los Pinos River	4		4	32	8				
Animas River	14		23	923	154	90	43		
La Plata River	11	1	14	186	47	2	2	1	110
Other tributaries of San Juan River	4	9	13	22	15	15	2	8	500
Independent streams	39	3	73	445	112	74	77	7	105
Fresno River	33		53	205	66	17	7	5	5
Rio Tularosa	6	3	20	240	46	57	70	2	100
Other independent streams									

TABLE 17.—IRRIGATION WORKS, CLASSIFIED BY DRAINAGE BASIN: 1920—Continued.

DRAINAGE BASIN.	Pipe lines, length (miles).	FLOWING WELLS.		PUMPED WELLS.		PUMPING PLANTS.				
		Number.	Capacity (gallons per minute).	Number.	Capacity (gallons per minute).	Number.	Engine capacity (horse-power).	Pumps.		Average lift (feet).
								Number.	Capacity (gallons per minute).	
Total	60.8	536	376,222	461	265,818	472	8,488	491	304,789	40
Canadian River and tributaries	14.8			5	3,311	6	66	7	1,522	60
Cimarron River	4.8					1	10	1	1,500	22
Vermejo River	1.1			2		1	50	2		100
Ocate Creek	1.5									
Mora River				1	3,300	2	5	2	10	35
Other tributaries of Canadian River	7.4			2	11	2	1	2	12	72
Cimarron River	0.2			2	36	3	32	4	532	36
Pecos River and tributaries	18.2	549	375,275	245	153,429	243	4,455	256	193,036	28
Pecos River direct	5.5	286	198,415	96	70,598	105	2,379	106	96,448	28
Gallinas River	0.5			1	3	1		1	3	75
Hondo River	11.0	176	125,686	79	46,585	74	1,041	79	57,275	21
Penasco River	0.5	51	30,132	10	7,210	11	216	11	9,000	29
Other tributaries of Pecos River	0.7	36	21,122	59	29,033	52	819	59	30,310	36
Rio Grande and tributaries	16.3	2	27	121	61,898	127	1,852	128	62,245	49
Rio Grande direct	2.3			26	11,356	29	336	30	14,828	33
Rio Santa Cruz	0.1									
Rio Puerco						1		1		96
Other tributaries of Rio Grande	13.9	2	27	95	50,542	97	1,516	97	47,417	53
Rio Mimbres	1.1	1	75	85	46,825	86	2,065	90	46,660	57
Gila River and tributaries	2.5					2	4	2	675	17
Gila River direct	0.3									
San Francisco River						1		1	275	20
Other tributaries of Gila River	2.2					1	4	1	400	14
San Juan River and tributaries		4	845	1		2	5	2		170
Other tributaries of San Juan River		4	845	1		2	5	2		170
Independent streams	7.7			2	119	3	9	2	119	68
Fresno River	7.7									
Rio Tularosa				2	119	3	9	2	119	68

CROPS.

TABLE 18.—ACREAGE, YIELD, AND VALUE OF PRINCIPAL CROPS GROWN ON IRRIGATED LAND, AND COMPARISONS WITH TOTALS FOR THE STATE: 1919 AND 1909.

[Totals for the state, used in making comparisons, are shown in state bulletin on agriculture.]

	Crop.	Area harvested.					Quantity harvested.					
		1919		1909				1919		1909		
		Acres.	Per cent of total for state.	Acres.	Per cent of total for state.	Per cent of increase.[1]	Unit.	Amount.	Per cent of total for state.	Amount.	Per cent of total for state.	Per cent of increase.[1]
	Cereals:											
1	Corn	38,954	17.1	34,430	40.0	13.1	Bu.	948,594	20.0	714,710	61.4	32.7
2	Oats	8,880	22.2	18,221	54.1	−51.3	Bu.	250,102	23.0	440,360	61.1	−43.2
3	Winter wheat	9,059	9.8	25,757	79.6	21.6	Bu.	185,479	10.6	456,531	91.3	27.3
4	Spring wheat	22,251	51.5				Bu.	396,679	57.6			
5	Barley	2,880	32.2	1,469	68.9	96.7	Bu.	82,070	32.0	33,391	81.4	75.4
	Hay and forage:											
6	Timothy alone	1,766	38.0	894	37.7	97.5	Tons	2,658	34.7	1,505	46.6	76.6
7	Timothy and clover mixed	1,538	55.3	115	8.1		Tons	2,074	39.6	189	7.1	997.4
8	Clover alone	821	55.9	25	12.7		Tons	1,581	69.2	47	11.5	
9	Alfalfa	87,105	74.5	98,963	90.4	−12.0	Tons	217,351	73.9	261,989	98.6	−19.3
10	Other tame or cultivated grasses	4,015	17.1	2,276	7.8	76.4	Tons	5,356	20.2	2,652	13.0	102.0
11	Annual legumes cut for hay	701	20.5	3,358	25.5	113.5	Tons	1,911	27.9	4,419	25.5	155.7
12	Small grains cut for hay	6,459	24.1				Tons	19,287	26.6			
13	Wild, salt, or prairie grasses	8,513	19.9	13,024	46.5	−34.6	Tons	6,337	16.9	14,512	65.8	−56.3
14	Silage crops	1,188	33.5	(2)			Tons	8,409	50.6	(2)		
15	Corn cut for forage	3,456	10.7	(2)			Tons	5,805	17.6	(2)		
16	Kafir, sorghum, etc., for forage	5,748	3.3	(2)			Tons	10,548	4.4	(2)		
	Vegetables:											
17	Potatoes	504	16.4	1,119	18.6	−55.0	Bu.	19,650	17.7	82,234	28.2	−76.4
18	Green peppers	400	72.6	(2)						(2)		
19	Cantaloupes and muskmelons	421	41.2	(2)						(2)		
	Fruits:											
20	Grapes	[3] 176,520	62.9	(2)			Lbs.	630,440	62.8	(2)		
21	Apples	[4] 321,233	46.7	(2)			Bu.	487,878	52.0	(2)		
22	Peaches	[4] 56,464	36.4	(2)			Bu.	92,149	47.0	(2)		
23	Pears	[4] 21,681	44.0	(2)			Bu.	26,067	39.7	(2)		
24	Plums and prunes	[4] 9,351	21.4	(2)			Bu.	11,123	37.0	(2)		
25	Cherries	[4] 8,264	29.1	(2)			Bu.	5,875	49.0	(2)		
	Miscellaneous:											
26	Clover and alfalfa seed [5]	2,583	49.3	(2)			Bu.	6,354	41.2	(2)		
27	Kafir, milo, etc	2,205	1.5	(2)			Bu.	66,683	1.8	(2)		
28	Dry beans, navy, etc	8,630	5.6	2,741	13.2	165.4	Bu.	63,299	7.4	26,298	30.6	140.7
29	Dry peas, Canada	3,606	62.7	1,541	62.6	134.0	Bu.	51,262	73.1	21,329	70.8	134.5
30	Cotton	7,527	70.6	(2)			Bales	4,077	75.5	(2)		

	Crop.	Average yield per acre, 1919.					Value.				
					On irrigated land.		1919		1909		
		Unit.	For state.	On non-irrigated land.	Average.	Per cent of average for state.	Per cent of average on non-irrigated land.	Amount.	Per cent of total for state.	Amount.	Per cent of total for state.	Per cent of increase.[1]
	Cereals:											
1	Corn	Bu.	20.9	20.1	24.4	116.7	121.4	$1,422,891	20.0	$636,131	64.6	123.7
2	Oats	Bu.	27.1	26.8	28.2	104.1	105.2	262,607	23.0	309,911	67.5	−15.3
3	Winter wheat	Bu.	19.0	18.9	20.5	107.9	108.5	370,958	10.6	447,704	88.0	139.6
4	Spring wheat	Bu.	15.9	13.9	17.8	111.9	128.1	791,358	57.6			
5	Barley	Bu.	21.6	21.7	21.5	99.5	99.1	80,601	22.0	27,960	78.5	188.6
	Hay and forage:											
6	Timothy alone	Tons	1.22	1.10	1.51	123.8	137.3	53,160	34.7	17,673	46.1	211.4
7	Timothy and clover mixed	Tons	1.44	1.30	1.55	107.6	109.2	37,332	39.6	2,214	7.9	
8	Clover alone	Tons	1.56	1.09	1.93	123.7	177.1	25,296	69.2	488	13.6	
9	Alfalfa	Tons	2.38	2.25	2.43	102.1	108.0	4,861,073	73.9	2,795,987	98.2	73.9
10	Other tame or cultivated grasses	Tons	1.13	1.09	1.33	117.7	122.0	112,476	20.2	27,433	11.7	310.0
11	Annual legumes cut for hay	Tons	1.06	0.96	1.44	135.8	150.0	15,165	27.9	46,696	24.0	362.2
12	Small grains cut for hay	Tons	1.28	1.18	1.59	124.2	134.7	300,597	20.6			
13	Wild, salt, or prairie grasses	Tons	0.87	0.91	0.74	85.1	81.3	101,392	16.9	149,675	62.3	−32.0
14	Silage crops	Tons	4.69	3.48	7.08	151.0	203.4	79,886	50.6	(2)		
15	Corn cut for forage	Tons	1.62	0.94	1.68	104.7	178.7	69,660	17.6	(2)		
16	Kafir, sorghum, etc., for forage	Tons	1.41	1.39	1.89	134.0	136.0	162,729	4.4	(2)		
	Vegetables:											
17	Potatoes	Bu.	36.1	35.5	39.0	108.0	109.9	49,178	17.7	65,625	28.0	−29.6
18	Green peppers							58,200	72.3	(2)		
19	Cantaloupes and muskmelons							54,590	38.3	(2)		
	Fruits:											
20	Grapes	Lbs.	[6] 3.6	[6] 3.6	[6] 3.6	100.0	100.0	50,435	62.3	(2)		
21	Apples	Bu.	[7] 1.4	[7] 1.2	[7] 1.5	107.1	125.0	780,605	52.0	(2)		
22	Peaches	Bu.	[7] 1.3	[7] 1.1	[7] 1.6	123.1	145.5	200,251	47.0	(2)		
23	Pears	Bu.	[7] 1.3	[7] 1.4	[7] 1.2	92.3	85.7	45,512	39.7	(2)		
24	Plums and prunes	Bu.	[7] 0.7	[7] 0.5	[7] 1.2	171.4	240.0	23,914	37.0	(2)		
25	Cherries	Bu.	[7] 0.4	[7] 0.3	[7] 0.7	175.0	233.3	19,978	49.0	(2)		
	Miscellaneous:											
26	Clover and alfalfa seed [5]	Bu.	2.9	3.4	2.5	86.2	73.5	127,080	41.2	(2)		
27	Kafir, milo, etc	Bu.	24.9	24.9	30.2	121.3	121.3	82,354	1.8	(2)		
28	Dry beans, navy, etc	Bu.	7.6	7.4	11.2	147.4	151.4	221,442	7.4	74,551	32.1	197.0
29	Dry peas, Canada	Bu.	12.2	8.8	14.2	116.4	161.4	128,005	73.1	20,606	67.3	442.3
30	Cotton	Bales	0.51	0.42	0.54	105.9	128.6	913,248	75.5	(2)		

[1] A minus sign (−) denotes decrease. Per cent not shown when more than 1,000.
[2] Not reported separately in 1910.
[3] Number of vines of bearing age.
[4] Number of trees of bearing age.
[5] Not including red clover seed.
[6] Yield per vine.
[7] Yield per tree.

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910.

[A minus sign (−) denotes decrease. Per cent not shown when more than 1,000.]

		THE STATE	Bernalillo	Chaves[1]	Colfax	De Baca[2]	Doña Ana	Eddy.[3]	Grant.[4]	Guadalupe.[5]
1	Number of all farms in 1920	29,844	1,200	744	1,052	477	1,054	785	545	982
2	Number of farms irrigated in 1919	11,390	504	319	305	51	975	555	166	275
3	Per cent of all farms	38.2	42.0	42.9	28.9	10.7	92.5	70.7	30.5	28.0
4	Number of farms irrigated in 1909	12,795	700	733	270	.....	778	605	256	305
5	Per cent of increase, 1909–1919	−11.0	−28.0	.....	13.0	.....	25.3	.....	.....	.....
	LAND AND FARM AREA.									
6	Approximate land area ... acres	78,401,920	776,960	3,866,880	2,490,720	1,526,000	2,445,440	2,716,800	2,547,840	1,939,840
7	All land in farms ... acres	24,489,633	220,708	1,924,179	1,952,700	1,233,305	195,315	794,543	474,169	986,406
8	Improved land in farms ... acres	1,717,224	29,144	50,450	111,263	22,041	42,164	52,311	31,230	31,441
9	Area irrigated in 1919 ... acres	538,377	14,536	42,250	66,187	3,035	52,265	51,353	6,987	3,206
10	Per cent of improved land in farms	31.4	49.9	83.8	59.5	13.8	124.0	98.2	22.4	10.2
11	Area irrigated in 1909 ... acres	461,718	14,832	50,064	30,756	.....	32,232	47,141	14,534	4,395
12	Per cent of increase, 1909–1919	16.6	−2.0	.....	115.2	.....	62.2	.....	.....	.....
13	Area enterprises were capable of irrigating in 1920 ... acres	606,119	15,218	47,453	90,881	6,928	65,057	59,784	7,243	4,800
14	Area enterprises were capable of irrigating in 1910 ... acres	644,970	20,375	64,385	52,391	.....	48,744	74,004	16,668	13,952
15	Per cent of increase, 1910–1920	7.2	−25.3	.....	73.5	.....	33.5	.....	.....	.....
16	Area included in enterprises in 1920 ... acres	961,879	19,056	57,785	117,715	9,128	88,023	87,661	7,781	5,102
17	Area included in enterprises in 1910 ... acres	1,102,297	25,510	106,948	156,503	.....	77,530	94,680	18,821	26,212
18	Per cent of increase, 1910–1920	−12.7	−25.3	.....	−24.8	.....	13.5	.....	.....	.....
19	Area of irrigated land reported as available for settlement ... acres	68,479	630	.....	27,729	.....	.....	2,550	.....	.....
	IRRIGATION WORKS.									
	Independent enterprises:									
20	Number, 1920	2,391	44	339	86	3	12	240	70	16
21	Number, 1910	2,798	34	471	115	.....	37	270	102	18
	Main ditches:									
22	Number, 1920	2,226	35	191	139	3	7	258	61	16
23	Number, 1910	2,191	22	49	166	.....	29	51	75	14
24	Length, 1920 ... miles	4,469	172	217	374	18	53	266	100	66
25	Length, 1910 ... miles	4,664	120	174	398	.....	139	136	154	60
26	Capacity, 1920 ... second-feet	22,432	137	896	5,889	153	1,231	1,215	331	82
27	Capacity, 1910 ... second-feet	29,648	710	801	5,448	.....	2,020	1,203	241	676
	Laterals:									
28	Number, 1920	2,138	61	184	161	8	11	235	39	75
29	Number, 1910	1,280	108	68	82	.....	10	54	11	11
30	Length, 1920 ... miles	1,463	56	93	238	13	.....	323	8	22
31	Length, 1910 ... miles	1,190	112	80	286	.....	31	39	7	17
	Reservoirs:									
32	Number, 1920	328	10	74	38	.....	6	27	10	.....
33	Number, 1910	522	19	54	51	.....	4	65	23	7
34	Capacity, 1920 ... acre-feet	2,960,718	1,001	313	65,668	.....	6	81,855	55	.....
35	Capacity, 1910 ... acre-feet	454,182	5	40,560	181,320	.....	2	52,008	9	162
	Flowing wells:									
36	Number, 1920	356	.....	318	.....	.....	.....	230	.....	.....
37	Number, 1910	673	.....	494	.....	.....	.....	267	.....	.....
38	Capacity, 1920 ... gallons per minute	376,222	.....	228,885	.....	.....	.....	146,330	.....	.....
39	Capacity, 1910 ... gallons per minute	669,268	.....	428,640	.....	.....	.....	240,549	.....	.....
	Pumped wells:									
40	Number, 1920	461	13	143	2	1	8	48	4	1
41	Number, 1910	466	12	130	.....	.....	19	25	30	5
42	Capacity, 1920 ... gallons per minute	265,618	6,261	99,328	.....	1,500	1,575	27,118	400	800
43	Capacity, 1910 ... gallons per minute	190,690	3,980	50,315	.....	.....	7,938	8,450	10,652	89
	Pumping plants:									
44	Number, 1920	472	12	146	2	1	8	52	8	1
45	Number, 1910	413	12	131	4	.....	22	27	31	6
46	Engine capacity, 1920 ... horsepower	8,488	126	2,810	60	15	109	843	32	60
47	Engine capacity, 1910 ... horsepower	14,226	105	10,445	50	.....	304	219	110	71
48	Pump capacity, 1920 ... gallons per minute	304,789	6,261	135,605	1,500	1,800	2,277	30,633	800	800
49	Pump capacity, 1910 ... gallons per minute	216,355	3,980	58,648	1,890	.....	13,638	9,144	11,002	4,289
50	Average lift, 1920 ... feet	40	37	26	61	10	42	28	35	20
	CAPITAL INVESTED.									
51	Capital invested to Jan. 1, 1920 ... dollars	18,210,412	165,784	1,223,948	4,326,888	66,512	2,485,908	2,952,707	54,162	87,195
52	Capital invested to July 1, 1910 ... dollars	[6]9,154,897	130,430	1,757,561	1,683,408	.....	165,505	1,607,244	72,242	191,287
53	Per cent of increase, 1910–1920	98.9	27.1	.....	168.9	.....	.....	.....	.....	.....
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	26.16	10.89	27.91	40.81	9.60	38.21	49.39	7.48	18.17
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	14.19	6.40	27.30	32.13	.....	3.40	21.72	4.33	13.71
	ESTIMATED FINAL COST.									
56	Estimated final cost of existing enterprises in 1920 ... dollars	20,440,646	165,784	1,254,688	4,626,388	92,112	2,488,908	3,503,207	56,967	93,195
57	Estimated final cost of existing enterprises in 1910 ... dollars	11,640,691	130,430	1,823,424	2,512,336	.....	165,505	1,685,990	72,242	226,787
58	Per cent of increase, 1910–1920	75.9	27.1	.....	84.1	.....	.....	.....	.....	.....
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	21.25	8.70	23.10	39.30	10.09	28.28	39.96	7.32	18.27
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	10.56	5.11	18.27	16.05	.....	2.13	17.81	3.84	8.65

[1] Parts taken to form parts of De Baca and Lea Counties, and part annexed to Roosevelt County in 1917.
[2] Organized from parts of Chaves, Guadalupe, and Roosevelt Counties in 1917.
[3] Part taken to form part of Lea County in 1917.
[4] Part taken to form Hidalgo County in 1919.
[5] Part taken to form part of De Baca County in 1917.
[6] Includes $41,241 for Indian reservations, which was not reported by counties.

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910—Continued.

[A minus sign (—) denotes decrease.]

		Hidalgo.[1]	Lincoln.	Luna.	McKinley.	Mora.	Otero.	Rio Arriba.	Sandoval.	San Juan.
1	Number of all farms in 1920	238	840	287	668	1,911	459	2,063	1,110	874
2	Number of farms irrigated in 1919	64	194	168	263	437	220	1,478	957	584
3	Per cent of all farms	26.9	30.3	58.5	39.4	22.9	47.9	71.6	86.2	66.8
4	Number of farms irrigated in 1909		239	116	172	620	241	1,487	1,038	706
5	Per cent of increase, 1909–1919		—18.8	44.8	52.9	—29.5	—8.7	—0.6	—7.8	—17.3
	LAND AND FARM AREA.									
6	Approximate land area ... acres	2,206,080	3,058,560	1,904,640	3,523,840	1,584,000	4,280,960	3,757,440	2,477,440	3,504,640
7	All land in farms ... acres	242,479	495,543	1,032,927	177,952	1,013,981	251,736	364,881	135,595	78,877
8	Improved land in farms ... acres	22,644	29,425	19,533	18,538	196,996	15,969	41,625	24,258	30,231
9	Area irrigated in 1919 ... acres	2,840	6,128	11,323	6,919	17,833	7,556	46,036	23,214	42,470
10	Per cent of improved land in farms	12.5	30.0	58.0	44.5	15.7	47.6	110.6	95.7	140.5
11	Area irrigated in 1909 ... acres		7,255	5,347	2,564	19,083	6,378	45,673	18,259	29,520
12	Per cent of increase, 1909–1919		—15.7	111.8	169.9	—6.6	18.5	0.8	27.1	43.9
13	Area enterprises were capable of irrigating in 1920 ... acres	2,940	6,341	21,143	7,229	29,749	8,565	50,247	26,659	48,195
14	Area enterprises were capable of irrigating in 1910 ... acres		7,907	9,763	4,200	28,137	6,359	51,635	21,791	52,656
15	Per cent of increase, 1910–1920		—19.8	116.6	72.1	5.7	2.5	—2.7	22.3	—8.5
16	Area included in enterprises in 1920 ... acres	2,340	11,809	34,786	9,057	37,673	12,117	68,691	32,968	68,515
17	Area included in enterprises in 1910 ... acres		9,678	15,291	10,200	32,668	12,175	67,384	37,136	77,169
18	Per cent of increase, 1910–1920		22.9	127.5	—11.2	15.3	—0.5	1.9	—11.2	—11.2
19	Area of irrigated land reported as available for settlement ... acres	500			300					3,219
	IRRIGATION WORKS.									
	Independent enterprises:									
20	Number, 1920	5	102	153	15	102	96	274	82	54
21	Number, 1910		121	101	3	116	99	338	92	91
	Main ditches:									
22	Number, 1920	4	102	51	19	110	115	273	86	52
23	Number, 1910		117	38	4	117	89	342	100	88
24	Length, 1920 ... miles	20	142	41	35	231	155	454	337	255
25	Length, 1910 ... miles		161	43	22	254	145	374	299	389
26	Capacity, 1920 ... second-feet	47	193	3,171	126	1,081	576	1,526	363	1,371
27	Capacity, 1910 ... second-feet		440	2,141	135	1,344	454	2,195	842	2,543
	Laterals:									
28	Number, 1920	11	94	37	41	277	75	192	22	106
29	Number, 1910		11	16	11	39	56	83	59	22
30	Length, 1920 ... miles	8	124	7	39	45	77	87	9	85
31	Length, 1910 ... miles		3	9	10	25	25	64	20	45
	Reservoirs:									
32	Number, 1920		3	16	11	18	13	10	5	2
33	Number, 1910		21	34	10	12	30	12	22	6
34	Capacity, 1920 ... acre-feet		12	37	6,685	672	110	753	44,049	160
35	Capacity, 1910 ... acre-feet		21	158	20,547	3,166	88	1,444	241	4,820
	Flowing wells:									
36	Number, 1920			1	4					
37	Number, 1910			1						
38	Capacity, 1920 ... gallons per minute			75	845					
39	Capacity, 1910 ... gallons per minute			75						
	Pumped wells:									
40	Number, 1920		2	156	1	1	4			
41	Number, 1910		14	94		5	18			
42	Capacity, 1920 ... gallons per minute		18	95,300		3,300	419			
43	Capacity, 1910 ... gallons per minute		240	32,078		28	3,805			
	Pumping plants:									
44	Number, 1920		4	153	2	2	4			
45	Number, 1910		14	94		3	15	2		2
46	Engine capacity, 1920 ... horsepower		8	3,471	5	5	9			
47	Engine capacity, 1910 ... horsepower		27	1,034		3	102	41		10
48	Pump capacity, 1920 ... gallons per minute		118	91,010		10	419			
49	Pump capacity, 1910 ... gallons per minute		240	32,078		28	3,805	3,069		655
50	Average lift, 1920 ... feet		82	57	170	35	44			
	CAPITAL INVESTED.									
51	Capital invested to Jan. 1, 1920 ... dollars	31,935	51,939	422,450	697,280	318,097	361,294	245,425	198,419	1,666,875
52	Capital invested to July 1, 1910 ... dollars		39,645	110,284	364,256	133,604	182,211	244,156	138,871	789,927
53	Per cent of increase, 1910–1920		31.0	283.1	91.4	138.6	98.3	0.5	—21.6	111.0
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	10.86	8.19	19.98	96.46	10.63	42.18	4.88	4.07	34.59
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars		5.01	11.29	86.73	4.75	21.80	4.73	6.35	15.09
	ESTIMATED FINAL COST.									
56	Estimated final cost of existing enterprises in 1920 ... dollars	46,935	52,914	420,950	702,280	327,796	364,489	259,670	124,939	2,716,875
57	Estimated final cost of existing enterprises in 1910 ... dollars		39,945	110,284	515,256	133,604	182,211	244,156	138,871	800,147
58	Per cent of increase, 1910–1920		31.2	289.3	36.3	145.3	100.0	6.4	—9.7	239.5
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	14.06	4.37	12.37	77.54	8.70	30.08	3.78	3.79	39.65
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars		4.10	7.21	50.32	4.09	14.97	3.62	3.73	10.37

[1] Organized from part of Grant County in 1919.

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910—Continued.

[A minus sign (—) denotes decrease. Per cent not shown when base is less than 100 or when per cent is more than 1,000.]

		San Miguel	Santa Fe.	Sierra.	Socorro.	Taos.	Torrance.[1]	Union.	Valencia.	All other counties.[2]
1	Number of all farms in 1920	1,643	896	5[illegible]	1,191	1,119	1,365	2,652	1,097	4,400
2	Number of farms irrigated in 1919	479	529	240	567	1,022	41	47	839	120
3	Per cent of all farms	29.1	59.0	40.8	47.6	91.3	3.0	1.8	76.5	2.7
4	Number of farms irrigated in 1909	594	844	209	710	949	.....	94	1,093	36
5	Per cent of increase, 1909–1919	—20.9	—37.3	14.8	—20.1	7.7	.....	.....	—23.2	.....
	LAND AND FARM AREA.									
6	Approximate land area ... acres	3,132,160	1,202,720	1,065,[illegible]	9,044,800	1,441,280	2,156,160	3,436,800	3,621,760	7,132,640
7	All land in farms ... acres	1,452,373	325,788	330,8[illegible]	1,189,546	84,873	776,789	2,515,522	1,009,985	4,969,562
8	Improved land in farms ... acres	58,534	49,639	7,[illegible]	32,770	23,497	88,526	273,748	28,818	486,988
9	Area irrigated in 1919 ... acres	16,565	19,582	8,491	11,119	59,607	1,085	6,774	19,241	775
10	Per cent of improved land in farms	28.3	21.4	119.1	33.9	253.7	1.2	2.5	66.8	0.2
11	Area irrigated in 1909 ... acres	14,[illegible]	16,130	3,537	14,289	41,486	653	6,315	30,302	105
12	Per cent of increase, 1909–1919	13.7	—54.6	133.[illegible]	—22.2	43.7	66.2	7.3	—36.5	.....
13	Area enterprises were capable of irrigating in 1920 ... acres	43,277	10,858	9,533	13,356	67,061	1,165	17,986	32,666	1,805
14	Area enterprises were capable of irrigating in 1910 ... acres	16,902	16,707	5,569	22,532	44,395	653	8,766	51,948	2,141
15	Per cent of increase, 1910–1920	156.0	—35.0	69.0	—40.7	51.1	78.4	105.2	—37.1	.....
16	Area included in enterprises in 1920 ... acres	68,806	12,244	18,432	29,780	88,205	1,550	20,056	48,780	2,649
17	Area included in enterprises in 1910 ... acres	52,417	51,758	10,426	41,760	60,426	1,103	30,107	74,814	11,583
18	Per cent of increase, 1910–1920	31.3	—76.3	76.8	—28.7	46.1	40.5	—33.4	—34.8	.....
19	Area of irrigated land reported as available for settlement ... acres	940	.....	.....	4,640	4,400	.....	1,500	20,000	.....
	IRRIGATION WORKS.									
	Independent enterprises:									
20	Number, 1920	101	102	66	95	168	7	70	46	43
21	Number, 1910	152	122	62	99	205	.....	43	62	32
	Main ditches:									
22	Number, 1920	115	103	64	88	163	8	84	49	21
23	Number, 1910	153	141	57	89	238	3	48	64	7
24	Length, 1920 ... miles	213	142	119	289	326	30	132	278	4
25	Length, 1910 ... miles	264	229	84	242	343	4	95	334	7
26	Capacity, 1920 ... second-feet	1,499	226	523	814	1,268	2	407	360	45
27	Capacity, 1910 ... second-feet	2,378	853	149	991	1,513	10	452	2,105	2
	Laterals:									
28	Number, 1920	104	17	35	48	57	22	178	40	28
29	Number, 1910	43	42	6	69	100	.....	114	265	.....
30	Length, 1920 ... miles	33	11	15	18	50	10	58	30	4
31	Length, 1910 ... miles	64	28	6	63	105	.....	31	111	.....
	Reservoirs:									
32	Number, 1920	21	8	14	11	3	1	11	6	12
33	Number, 1910	32	41	9	12	11	2	25	8	12
34	Capacity, 1920 ... acre-feet	38,419	160	2,638,862	80,003	1,735	75	76	14	8
35	Capacity, 1910 ... acre-feet	72,335	75,451	194	24	327	26	1,324	14	6
	Flowing wells:									
36	Number, 1920	.....	.....	1	1	.....	.....	.....	.....	1
37	Number, 1910	.....	.....	.....	.....	.....	.....	1	.....	.....
38	Capacity, 1920 ... gallons per minute	.....	.....	20	7	.....	.....	.....	.....	60
39	Capacity, 1910 ... gallons per minute	.....	.....	.....	.....	.....	.....	4	.....	.....
	Pumped wells:									
40	Number, 1920	2	2	11	8	.....	.....	4	.....	50
41	Number, 1910	2	8	4	3	.....	1	2	2	94
42	Capacity, 1920 ... gallons per minute	3	.....	1,269	3,800	.....	.....	47	.....	24,680
43	Capacity, 1910 ... gallons per minute	515	1,026	140	208	.....	6	609	50	70,558
	Pumping plants:									
44	Number, 1920	2	1	15	11	.....	.....	5	2	41
45	Number, 1910	2	10	4	4	.....	1	2	1	20
46	Engine capacity, 1920 ... horsepower	.....	2	59	94	.....	.....	33	20	727
47	Engine capacity, 1910 ... horsepower	25	107	10	10	.....	1	8	2	1,542
48	Pump capacity, 1920 ... gallons per minute	3	.....	2,839	3,875	.....	.....	544	2,000	24,495
49	Pump capacity, 1910 ... gallons per minute	518	1,716	140	208	.....	6	609	50	70,558
50	Average lift, 1920 ... feet	62	1	31	27	.....	.....	50	52	111
	CAPITAL INVESTED.									
51	Capital invested to Jan. 1, 1920 ... dollars	777,482	69,975	758,484	225,051	160,886	21,100	363,939	194,471	64,216
52	Capital invested to July 1, 1910 ... dollars	300,708	122,834	19,089	197,682	190,940	1,010	70,925	254,063	355,274
53	Per cent of increase, 1910–1920	158.6	—43.5	.....	13.2	—15.7	.....	413.1	—23.5	.....
54	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	17.97	6.44	79.56	17.60	2.49	18.11	20.23	5.95	35.58
55	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	17.79	7.41	3.20	8.33	4.30	1.55	8.09	4.89	165.94
	ESTIMATED FINAL COST.									
56	Estimated final cost of existing enterprises in 1920 ... dollars	788,502	69,975	1,069,439	259,351	177,176	23,600	382,389	227,991	64,616
57	Estimated final cost of existing enterprises in 1910 ... dollars	1,189,708	347,056	19,089	301,582	190,940	1,010	70,981	254,063	355,274
58	Per cent of increase, 1910–1920	—33.7	—79.8	.....	—14.0	—7.2	.....	438.7	—10.3	.....
59	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	11.46	5.72	57.53	8.71	2.01	15.23	19.07	4.67	24.39
60	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	22.70	6.71	1.83	7.22	3.16	0.92	2.36	3.40	30.67

[1] Included in "All other counties" in 1910.
[2] Includes Curry, Lea, Quay, and Roosevelt Counties. Lea County formed from parts of Chaves and Eddy Counties in 1917.

NORTH DAKOTA.

INTRODUCTION.

The following pages present the statistics of irrigation for the state of North Dakota collected at the census of 1920. Statistics of acreage irrigated, of acreage, yield, and value of crops grown on irrigated land, and of cost of operation and maintenance relate to the year 1919; other items relate to the year 1920. Throughout the report figures for the census of 1910 are given for purposes of comparison; and, for the purpose of showing the historical development of irrigation, items which have been reported in censuses previous to 1910 are presented.

Statistics of number of farms irrigated and of acreage, yield, and value of crops grown on irrigated land were collected in the general census of agriculture. All other statistics were obtained in a special canvass of irrigation enterprises.

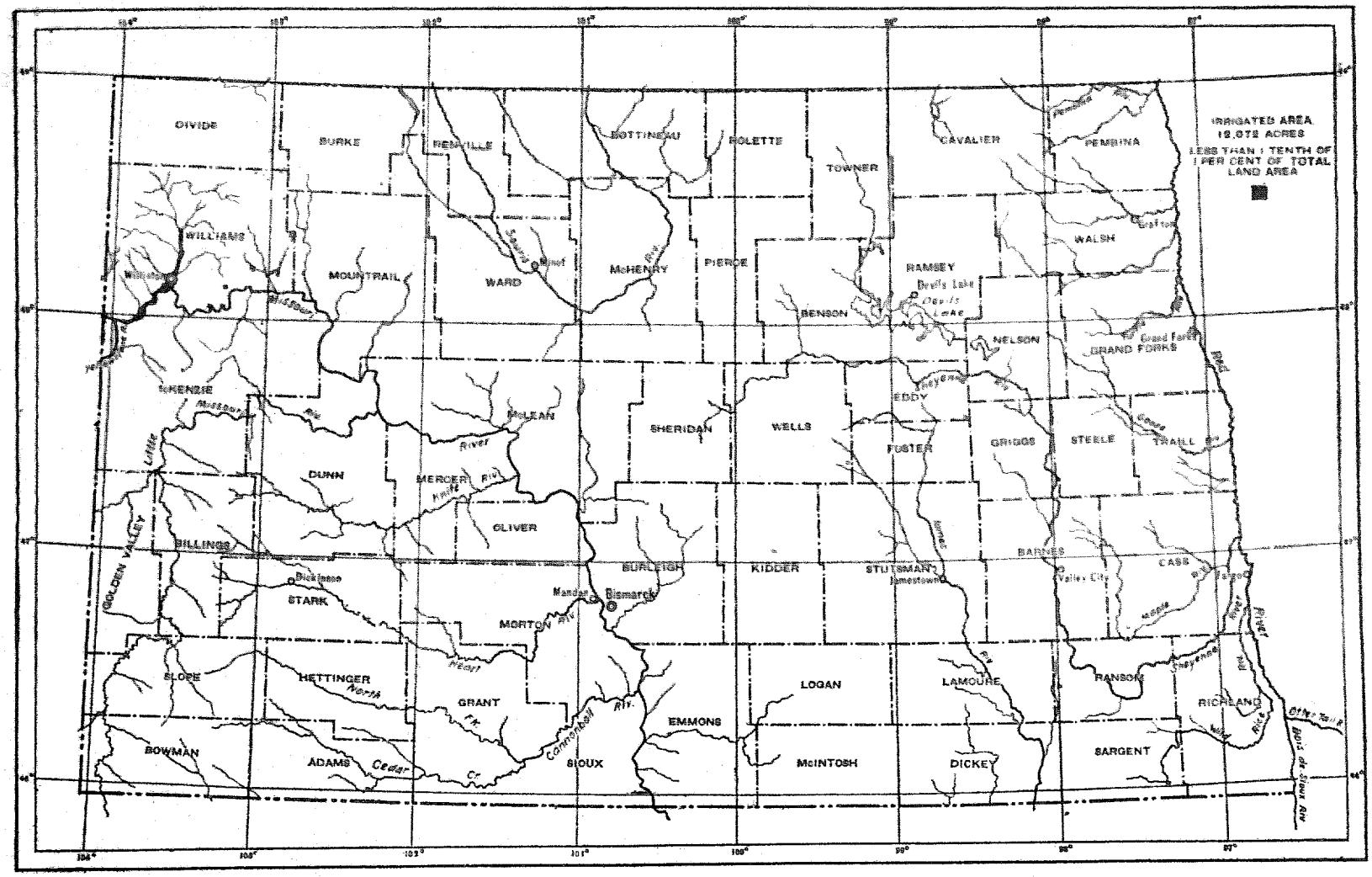
TABLE 1.—SUMMARY FOR THE STATE: 1920 AND 1910.

ITEM.	CENSUS OF—		INCREASE.[1]	
	1920	1910	Amount.	Per cent.
Number of all farms	77,690	74,360	3,330	4.5
Approximate land area of the state ... acres	44,917,120	44,917,120	.....	.....
All land in farms ... acres	36,214,751	28,426,650	7,788,101	27.4
Improved land in farms ... acres	24,563,178	20,455,092	4,108,086	20.1
Number of farms irrigated	340	69	271	.....
Area irrigated ... acres	12,072	10,248	1,824	17.8
Area enterprises were capable of irrigating ... acres	34,235	21,917	12,318	56.2
Area included in enterprises ... acres	57,476	38,173	19,303	50.6
Per cent irrigated:				
Number of all farms	0.4	0.1	0.3	.....
Approximate land area of the state	(2)	(2)	.....	.....
Land in farms	(2)	(2)	.....	.....
Improved land in farms	(2)	0.1	.....	.....
Excess of area enterprises were capable of irrigating over area irrigated ... acres	22,163	11,669	10,494	89.9
Excess of area included in enterprises over area irrigated ... acres	45,404	27,925	17,479	62.6
Capital invested	$1,857,118	$836,482	$1,020,636	122.0
Average per acre enterprises were capable of irrigating	$54.25	$38.17	$16.08	42.1
Estimated final cost of existing enterprises	$2,072,766	$836,482	$1,236,284	147.8
Average per acre included in enterprises	$36.06	$21.91	$14.15	64.6
Average cost of operation and maintenance per acre	$5.50	$28.40	−$22.90	−80.6
IRRIGATION WORKS.				
Number of enterprises	30	49	−19	.....
Number of main ditches	32	47	−15	.....
Length of main ditches ... miles	58	52	6	.....
Capacity of main ditches ... second-feet	836	2,161	−1,325	−61.3
Number of lateral ditches	58	46	12	.....
Length of lateral ditches ... miles	93	74	19	.....
Number of reservoirs	9	22	−13	.....
Capacity of reservoirs ... acre-feet	1,110	132,187	−131,077	−99.2
Number of pumped wells	(3)	1	−1	.....
Capacity of pumped wells ... gallons per minute	(3)	15	15	.....
Number of pumping plants	4	4	.....	.....
Engine capacity ... horsepower	2,068	2,038	30	1.5
Pump capacity ... gallons per minute	51,250	182,115	−130,865	−71.9
Average lift ... feet	38	(4)	38	.....

[1] A minus sign (−) denotes decrease. Per cent not shown when base is less than 100.
[2] Less than one-tenth of 1 per cent.
[3] Not reported in 1920.
[4] Not reported in 1910.

NORTH DAKOTA

APPROXIMATE LOCATION AND EXTENT OF IRRIGATED LAND.



CLIMATIC CONDITIONS.

Throughout the state of North Dakota the precipitation is, in normal years, sufficient for the maturing of crops, without irrigation, the normal rainfall for the state being 17.92 inches. In the western part of the state, however, the precipitation is below the average for the state, and irrigation is practiced to a limited extent. In 1919 the precipitation was below the normal, being below 15 inches over most of the western half of the state, and below 10 inches over the southwestern part of the state. This low precipitation resulted in a short supply of water for irrigation where water is taken from small local streams, and it is probable that some land was not irrigated in 1919 which would have been if water had been available.

WATER SUPPLY FOR IRRIGATION.

The whole of that part of the state of North Dakota within which irrigation is practiced lies within the drainage basin of Missouri River and its tributaries. With the exception of the Missouri itself these streams are plains streams and subject to drouth when local rainfall fails. The Missouri is fed by mountain streams, and supplies sufficient water for the limited area receiving water from it.

There are many artesian wells in the state, but they are not used for irrigation.

FARMS AND ACREAGE IRRIGATED.

TABLE 2.—NUMBER OF FARMS AND ACREAGE IRRIGATED: 1890 TO 1920.

CENSUS YEAR.	FARMS IRRIGATED.			AREA IRRIGATED.				
	Number.	Per cent of increase.	Per cent of all farms.	Acres.	Per cent of increase.	Per cent of total land area.	Per cent of land in farms.	Per cent of improved land in farms.
1920	340	392.8	0.4	12,072	17.8	(1)	(1)	(1)
1910	69	27.8	0.1	10,248	110.3	(1)	(1)	0.1
1900	54	671.4	0.1	4,872	994.8	(1)	(1)	0.1
1890	7	.....	(1)	445	.....	(1)	(1)	(1)

[1] Less than one-tenth of 1 per cent.

TABLE 3.—ACREAGE, CLASSIFIED BY DATE OF BEGINNING OF ENTERPRISES SUPPLYING WATER FOR IRRIGATION.

DATE OF BEGINNING.	Number of enterprises.	Area included in enterprises, 1920 (acres).	AREA IRRIGATED IN 1919.		Area enterprises were capable of irrigating in 1920 (acres).
			Acres.	Per cent of acreage in enterprises.	
Total	30	57,476	12,072	21.0	34,235
1880-1889 [1]	3	2,100	595	28.3	1,060
1890-1899	5	2,130	458	21.5	1,320
1900-1904	9	4,967	955	19.2	3,235
1905-1909	2	46,031	8,766	19.0	26,238
1910-1914	1	325	285	87.7	325
1915-1919	6	1,128	330	29.3	1,042
Not reported	4	795	683	85.9	795

[1] Dakota Territory.

TABLE 4.—ACREAGE, CLASSIFIED BY SOURCE OF WATER SUPPLY: 1919 AND 1909.

CLASS.	AREA IRRIGATED (ACRES).				Area enterprises were capable of irrigating in 1920 (acres).	Area included in enterprises, 1920 (acres).
	1919	1909	Increase.[1]			
			Amount.	Per cent.		
Total	12,072	10,248	1,824	17.8	34,235	57,476
Streams, gravity	9,930	7,153	1,877	26.2	21,281	39,740
Streams, pumped	2,409	1,614	855	53.0	12,298	26,949
Wells, pumped	.....	1	−1	.....	.....	.....
Springs	.....	200	−200	.....	.....	.....
Stored storm water	508	1,280	−772	−60.3	606	606
Other mixed	65	.....	65	.....	90	90

[1] A minus sign (−) denotes decrease.

ACREAGE, BY CHARACTER OF ENTERPRISE.

An irrigation district law was enacted in North Dakota in 1917, and a district has been organized to take over the Williston project of the United States Reclamation Service, but this project is credited to the Reclamation Service in Table 5 because the Government built the works and still controls them to a large extent.

North Dakota has not accepted the conditions of the Federal Carey Act (act of Congress, Aug. 18, 1894).

TABLE 5.—ACREAGE, CLASSIFIED BY CHARACTER OF ENTERPRISE: 1920 AND 1910.

ITEM AND CLASS.	CENSUS OF—		INCREASE.[1]	
	1920	1910	Amount.	Per cent.
ACREAGE IRRIGATED.				
Total	12,072	10,248	1,824	17.8
Individual and partnership	3,306	8,638	−5,332	−61.7
U. S. Reclamation Service	8,766	1,610	7,156	444.5
ACREAGE ENTERPRISES WERE CAPABLE OF IRRIGATING.				
Total	34,235	21,917	12,318	56.2
Individual and partnership	7,997	9,821	−1,824	−18.6
U. S. Reclamation Service	26,238	12,096	14,142	116.9
ACREAGE INCLUDED IN ENTERPRISES.				
Total	57,476	38,173	19,303	50.6
Individual and partnership	11,445	13,693	−2,248	−16.4
U. S. Reclamation Service	46,031	24,480	21,551	88.0

[1] A minus sign (−) denotes decrease.

ACREAGE, BY CHARACTER OF WATER RIGHTS.

The laws of North Dakota relating to water rights are summarized in the following paragraphs:

North Dakota was organized from a part of Dakota territory and admitted to the Union in 1889.

The constitution of the state made the following declaration regarding water: "All flowing streams and natural water sources shall forever remain the property of the state for mining, irrigation, and manufacturing purposes." (Sec. 210.)

In 1905 the state adopted a comprehensive code covering the subject of water rights.

This code contained the following general provision: "All waters within the limits of the state from all sources of water supply belong to the public and, except as to navigable waters, are subject to appropriation for beneficial use." (Laws 1905, ch. 34, sec. 1.)

Under this law any party wishing to acquire water rights is required to apply to the state engineer for a permit. When works are completed the state engineer issues a certificate of completion, and when water has been put to use a license is issued.

The law of 1905 provided the machinery for a complete adjudication of all rights to water. The state engineer was to make hydrographic surveys of all streams and ditches, and, when these surveys were completed, file reports with the attorney general of the state, "who shall, within 60 days thereafter, enter suit on behalf of the state for the determination of all rights to the use of such water." (Laws 1905, ch. 34, secs. 14 and 15.) Table 6 indicates that this provision of the law has not been carried out.

TABLE 6.—ACREAGE IRRIGATED, CLASSIFIED BY CHARACTER OF RIGHTS UNDER WHICH WATER IS RECEIVED: 1919 AND 1909.

CLASS.	1919		1909
	Acres.	Per cent of total.	Per cent of total.
Total	12,072	100.0	100.0
Appropriation and use	6,348	52.6	88.9
Notice filed and posted	2,328	19.3	6.8
Permit from state	2,996	24.3	4.3
Not reported	460	3.8	(1)

[1] All land for which the class of water rights was reported was included in "Appropriation and use."

ACREAGE, BY DRAINAGE BASIN.

The report of a special irrigation census taken in 1902 presented all data by drainage basins rather than by counties. The results of the census of 1920 have been tabulated on the same basis, and the data for 1902 are presented for purposes of comparison. For no other census have the results been tabulated in this form. The acreage reported for each drainage basin in 1919 comprises all the irrigated land in that drainage basin, including that watered from springs and wells. In the 1902 results the acreages irrigated from springs and wells were reported separately in such a way that it is not possible to tell in what drainage basin these areas are situated. This area is so small, however, that the comparisons are not affected seriously.

TABLE 7.—ACREAGE IRRIGATED, CLASSIFIED BY DRAINAGE BASIN: 1919 AND 1902.

DRAINAGE BASIN.	AREA IRRIGATED (ACRES).			Area included in enterprises, 1920 (acres).	Area enterprises were capable of irrigating in 1920 (acres).
	1919	1902	Per cent of increase.		
Total	12,072	10,384	16.3	57,476	34,235
Missouri River and tributaries	12,072	9,444	27.8	57,476	34,235
Mouse River and tributaries	(1)	676			
Red River of the North and tributaries	(1)	6			
Springs	(2)	256			
Wells	(2)	2			

[1] Not reported in 1919. [2] Included in figures for streams.

CAPITAL INVESTED AND COST OF OPERATION AND MAINTENANCE.

TABLE 8.—CAPITAL INVESTED IN IRRIGATION ENTERPRISES: 1890 TO 1920.

CENSUS YEAR.	Amount.	Per cent of increase.[1]	AVERAGE PER ACRE.	
			Amount.	Per cent of increase.
1920	$1,857,118	122.0	$54.25	42.1
1910	836,482		38.17	993.7
1900	16,980		3.49	
1890	(2)			

[1] Per cent not shown when more than 1,000.
[2] Not reported in 1890.

TABLE 9.—CAPITAL INVESTED, CLASSIFIED BY DATE OF BEGINNING.

DATE OF BEGINNING.	Amount.	Per cent of total.	Average per acre.
Total	$1,857,118	100.0	$54.25
1880-1889[1]	8,000	0.4	7.55
1890-1899	17,669	1.0	11.62
1900-1904	37,714	2.0	11.59
1905-1909	1,777,570	95.7	67.75
1910-1914	2,000	0.1	6.15
1915-1919	11,207	0.6	10.76
Not reported	2,958	0.2	3.72

[1] Dakota Territory.

TABLE 10.—CAPITAL INVESTED, 1920, AND COST OF OPERATION AND MAINTENANCE, 1919, CLASSIFIED BY SOURCE OF WATER SUPPLY.

[When water is pumped, cost of operation and maintenance includes cost of fuel and attendance.]

CLASS.	CAPITAL INVESTED, 1920.			OPERATION AND MAINTENANCE, 1919.	
	Amount.	Per cent of total.	Average per acre.	Area for which cost is reported (acres).	Average cost per acre.[1]
Total	$1,857,118	100.0	$54.25	10,951	$5.50
Streams, gravity	1,299,951	70.0	61.20	8,485	3.55
Streams, pumped	552,007	29.7	44.89	2,466	12.21
Stored storm water	4,660	0.3	7.69		
Other mixed	500		5.56		

[1] Based on area irrigated in 1919.

TABLE 11.—CAPITAL INVESTED, CLASSIFIED BY DRAINAGE BASIN: 1920 AND 1902.

DRAINAGE BASIN.	1920	1902	Increase.
Total	$1,857,118	$45,087	$1,812,031
Missouri River and tributaries	1,857,118	40,375	1,816,743
Mouse River and tributaries	(1)	3,637	
Red River of the North and tributaries	(1)	300	
Springs	(2)	600	
Wells	(2)	175	

[1] Not reported in 1920. [2] Included in figures for streams.

TABLE 12.—CAPITAL INVESTED, 1920, AND COST OF OPERATION AND MAINTENANCE, 1919, CLASSIFIED BY CHARACTER OF ENTERPRISE.

[When water is pumped, cost of operation and maintenance includes cost of fuel and attendance.]

CLASS.	CAPITAL INVESTED, 1920.		OPERATION AND MAINTENANCE, 1919.	
	Amount.	Per cent of total.	Area for which cost is reported (acres).	Average cost per acre.[1]
Total	$1,857,118	100.0	10,951	$5.50
Individual and partnership	81,693	4.4	2,185	0.79
U. S. Reclamation Service	1,775,425	95.6	8,766	6.67

[1] Based on area irrigated in 1919.

DRAINAGE OF IRRIGATED LAND.

The acreages reported in Table 13 relate to lands within the boundaries of irrigation projects, and do not include lands within the vicinity of these projects. "Additional acreage needing drainage" includes all lands so reported by the owners of the enterprises, and includes lands producing partial crops as well as those wholly unproductive.

TABLE 13.—ACREAGE WITHIN IRRIGATION ENTERPRISES FOR WHICH DRAINS HAVE BEEN INSTALLED AND ADDITIONAL ACREAGE IN NEED OF DRAINAGE: 1920.

Number of enterprises reporting land drained or needing drainage	8
Acreage included in enterprises reporting land drained or needing drainage	49,581
Acreage for which drains have been installed	1,615
Additional acreage needing drainage	639
Per cent that acreage for which drains have been installed is of total acreage included in enterprises reporting drainage	3.3
Per cent that acreage for which drains have been installed is of total acreage included in irrigation enterprises in the state	2.8
Per cent that acreage for which drains have been installed plus that needing drainage is of total acreage included in irrigation enterprises in the state	4.0

QUANTITY OF WATER USED.

The quantity of water used in 1919 was reported on only part of the irrigation schedules. While the data are incomplete, the reports represent sufficient acreages to serve as bases for reliable averages. In all cases in which the quantity is reported the water was measured.

TABLE 14.—QUANTITY OF WATER USED IN 1919.

Average volume of water entering canals	second-feet	130
Area irrigated in 1919	acres	8,766
Average number of acres per second-foot		67.4
Total quantity of water entering canals	acre-feet	28,198
Area irrigated in 1919	acres	8,766
Average quantity per acre	acre-feet	3.2
Total quantity of water delivered	acre-feet	11,636
Area irrigated in 1919	acres	8,766
Average quantity per acre	acre-feet	1.3

IRRIGATION WORKS.

TABLE 15.—IRRIGATION WORKS, CLASSIFIED BY DATE OF BEGINNING.

DATE OF BEGINNING.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.		Pipe lines, length (miles).	PUMPING PLANTS.			
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).		Number.	Engine capacity (horse-power).	Pumps. Number.	Pumps. Capacity (gallons per minute).
Total	26	11	32	836	58	58	93	9	1,110	0.3	4	2,068	10	51,250
1880–1889[1]	8	2	4		6									
1890–1899	2	4	7	28	7	5	2	1	140		1	8	1	250
1900–1904	9	2	10	327	11	4	3	6	563					
1905–1909			2	371	26	22	6			0.3	2	2,040	8	50,000
1910–1914	2	1	1	100	1	25	81							
1915–1919	4	2	5	10	4	2	1	2	407		1	20	1	1,000
Not reported	1		3		3									

[1] Dakota Territory.

TABLE 16.—IRRIGATION WORKS, CLASSIFIED BY CHARACTER OF ENTERPRISE: 1920.

CLASS.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.		Pipe lines, length (miles).	PUMPING PLANTS.			
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).		Number.	Engine capacity (horse-power).	Pumps. Number.	Pumps. Capacity (gallons per minute).
Total	26	11	32	836	58	58	93	9	1,110	0.3	4	2,068	10	51,250
Individual and partnership	26	11	30	465	32	33	12	9	1,110		2	28	2	1,250
U. S. Reclamation Service			2	371	26	25	81			0.3	2	2,040	8	50,000

CROPS.

TABLE 17.—ACREAGE, YIELD, AND VALUE OF PRINCIPAL CROPS GROWN ON IRRIGATED LAND, AND COMPARISONS WITH TOTALS FOR THE STATE: 1919 AND 1909.

[Totals for the state, used in making comparisons, are shown in state bulletin on agriculture.]

	Crop.	Area harvested.					Quantity harvested.					
		1919		1909				1919		1909		
		Acres.	Per cent of total for state.	Acres.	Per cent of total for state.	Per cent of increase.[1]	Unit.	Amount.	Per cent of total for state.	Amount.	Per cent of total for state.	Per cent of increase.[1]
	Cereals:											
1	Oats	2,879	0.1	544	(2)	427.6	Bu.	30,555	0.1	25,655	(2)	19.1
2	Spring wheat	15,713	0.2	1,268	(2)		Bu.	80,292	0.1	28,011	(2)	186.6
3	Barley	1,196	0.1	(3)			Bu.	10,565	0.1	(3)		
4	Rye	2,040	0.1	(3)			Bu.	8,673	0.1	(3)		
	Hay and forage:											
5	Small grains cut for hay	1,664	0.3	(3)			Tons	906	0.2	(3)		
6	Other tame or cultivated grasses	1,028	0.4	(3)			Tons	453	0.1	(3)		
7	Wild, salt, or prairie grasses	779	(2)	1,057	(2)	−26.3	Tons	301	(2)	1,424	0.1	−78.9

	Crop.	Average yield per acre, 1919.						Value.				
		Unit.	For state.	On non-irrigated land.	On irrigated land.			1919		1909		
					Average.	Per cent of average for state.	Per cent of average on non-irrigated land.	Amount.	Per cent of total for state.	Amount.	Per cent of total for state.	Per cent of increase.[1]
	Cereals:											
1	Oats	Bu.	14.6	14.6	10.6	72.6	72.6	$24,444	0.1	$8,368		192.1
2	Spring wheat	Bu.	6.8	6.8	5.1	75.0	75.0	192,701	0.1	26,145		637.0
3	Barley	Bu.	11.1	11.1	8.9	80.2	80.2	12,150	0.1	(3)		
4	Rye	Bu.	6.7	6.7	4.3	64.2	64.2	12,576	0.1	(3)		
	Hay and forage:											
5	Small grains cut for hay	Tons	0.60	0.60	0.54	90.0	90.0	13,137	0.2	(3)		
6	Other tame or cultivated grasses	Tons	1.23	1.23	0.44	35.8	35.8	7,474	0.1	(3)		
7	Wild, salt, or prairie grasses	Tons	0.77	0.77	0.39	50.6	50.6	4,666	(2)	9,518	0.1	−51.0

[1] A minus sign (−) denotes decrease. Per cent not shown when more than 1,000. [2] Less than one-tenth of 1 per cent. [3] Not reported separately in 1909.

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910.

[A minus sign (—) denotes decrease. Per cent not shown when base is less than 100, or when per cent is more than 1,000.]

		THE STATE.	McKenzie.	Williams.	All other counties.
1	Number of all farms in 1920	77,690	2,933	2,437	72,220
2	Number of farms irrigated in 1919	340	156	184	
3	Per cent of all farms	0.4	7.7	7.6	
4	Number of farms irrigated in 1909	69	7	53	9
5	Per cent of increase, 1909-1919				
	LAND AND FARM AREA.				
6	Approximate land area ... acres	44,917,120	1,922,080	1,368,320	41,726,720
7	All land in farms ... acres	36,214,751	1,231,379	987,569	33,995,812
8	Improved land in farms ... acres	24,563,179	363,760	508,272	23,691,046
9	Area irrigated in 1919 ... acres	12,072	6,630	5,442	
10	Per cent of improved land in farms	(1)	1.8	1.1	
11	Area irrigated in 1909 ... acres	10,248	850	8,043	1,355
12	Per cent of increase, 1909-1919	17.8	680.0	—32.3	
13	Area enterprises were capable of irrigating in 1920 ... acres	34,295	14,726	19,569	
14	Area enterprises were capable of irrigating in 1910 ... acres	21,917	850	19,604	1,463
15	Per cent of increase, 1910-1920	56.2		—0.8	
16	Area included in enterprises in 1920 ... acres	57,476	27,424	28,052	
17	Area included in enterprises in 1910 ... acres	38,173	1,532	34,865	1,776
18	Per cent of increase, 1910-1920	50.6		3.4	
	IRRIGATION WORKS.				
	Independent enterprises:				
19	Number, 1920	30	4	26	
20	Number, 1910	49	6	34	9
	Main ditches:				
21	Number, 1920	32	4	28	
22	Number, 1910	47	5	35	7
23	Length, 1920 ... miles	58	26	32	
24	Length, 1910 ... miles	52	8	40	4
25	Capacity, 1920 ... second-feet	836	276	560	
26	Capacity, 1910 ... second-feet	2,161	162	1,703	296
	Laterals:				
27	Number, 1920	58		58	
28	Number, 1910	46	16	30	
29	Length, 1920 ... miles	93	34	59	
30	Length, 1910 ... miles	74	1	73	
	Reservoirs:				
31	Number, 1920	9	1	8	
32	Number, 1910	22	8	13	1
33	Capacity, 1920 ... acre-feet	1,119	400	719	
34	Capacity, 1910 ... acre-feet	132,187	25	132,157	5
	Pumped wells:				
35	Number, 1920				
36	Number, 1910	1			1
37	Capacity, 1920 ... gallons per minute				
38	Capacity, 1910 ... gallons per minute	15			15
	Pumping plants:				
39	Number, 1920	4		4	
40	Number, 1910	4	1	1	2
41	Engine capacity, 1920 ... horsepower	2,008	960	48	
42	Engine capacity, 1910 ... horsepower	2,008	30	2,000	8
43	Pump capacity, 1920 ... gallons per minute	51,250		51,250	
44	Pump capacity, 1910 ... gallons per minute	182,115	2,000	180,000	115
45	Average lift, 1920 ... feet	38		38	
	CAPITAL INVESTED.				
46	Capital invested to Jan. 1, 1920 ... dollars	1,857,118	1,235,209	621,909	
47	Capital invested to July 1, 1910 ... dollars	836,482	6,663	781,100	48,719
48	Per cent of increase, 1910-1920	122.0		—20.4	
49	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	54.25	83.88	31.88	
50	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	38.17	7.84	39.72	34.72
	ESTIMATED FINAL COST.				
51	Estimated final cost of existing enterprises in 1920 ... dollars	2,072,766	1,221,457	751,309	
52	Estimated final cost of existing enterprises in 1910 ... dollars	836,482	6,663	781,100	48,719
53	Per cent of increase, 1910-1920	147.8		—3.8	
54	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	36.06	61.88	26.84	
55	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	21.91	4.35	22.40	27.43

[1] Less than one-tenth of 1 per cent.

OKLAHOMA.

INTRODUCTION.

The following pages present the statistics of irrigation for the state of Oklahoma collected at the census of 1920. Statistics of acreage irrigated, of acreage and yield of crops grown on irrigated land, and of cost of operation and maintenance relate to the year 1919; other items relate to the year 1920. Throughout the report figures for the census of 1910 are given for purposes of comparison; and, for the purpose of showing the historical development of irrigation, items which have been reported in censuses previous to 1910 are presented.

Statistics of number of farms irrigated and of acreage and yield of crops grown on irrigated land were collected in the general census of agriculture. All other statistics were obtained in a special canvass of irrigation enterprises.

Alfalfa and corn are the only crops for which the area reported as irrigated exceeds 100 acres. The area of irrigated alfalfa reported is 417 acres, with a yield of 615 tons, or 1.47 tons per acre. The average yield for the whole state is 1.96 tons per acre. The area of corn reported as irrigated is 237 acres, with a yield of 4,124 bushels, or 17.4 bushels per acre. The average yield for the state is 21.8 bushels per acre. The remaining irrigated area is divided among other farm crops, gardens, and pastures

TABLE 1.—SUMMARY FOR THE STATE: 1920 AND 1910.

ITEM.	CENSUS OF—		INCREASE.[1]	
	1920	1910	Amount.	Per cent.
Number of all farms	191,988	190,192	1,796	0.9
Approximate land area of the state ... acres	44,424,960	44,424,960	.....	.....
All land in farms ... acres	31,951,934	28,859,353	3,092,581	10.7
Improved land in farms ... acres	18,125,321	17,551,337	573,984	3.3
Number of farms irrigated	73	137	−64	−46.7
Area irrigated ... acres	2,969	4,388	−1,419	−32.3
Area enterprises were capable of irrigating ... acres	9,672	6,397	3,275	51.2
Area included in enterprises ... acres	11,742	8,528	3,214	37.7
Per cent irrigated:				
Number of all farms	(2)	0.1	.....	.....
Approximate land area of the state	(2)	(2)	.....	.....
Land in farms	(2)	(2)	.....	.....
Improved land in farms	(2)	(2)	.....	.....
Excess of area enterprises were capable of irrigating over area irrigated ... acres	6,703	2,009	4,694	233.6
Excess of area included in enterprises over area irrigated ... acres	8,773	4,140	4,633	111.9
Capital invested	$151,325	$47,200	$104,125	220.6
Average per acre enterprises were capable of irrigating	$15.65	$7.38	$8.27	112.1
Estimated final cost of existing enterprises	$162,775	$47,200	$115,575	244.9
Average per acre included in enterprises	$13.86	$5.53	$8.33	150.6
Average cost of operation and maintenance per acre	$2.92	$0.51	$2.41	472.5
IRRIGATION WORKS.				
Number of enterprises	33	114	−81	−71.1
Number of main ditches	18	47	−29	.....
Length of main ditches ... miles	38	54	−16	.....
Capacity of main ditches ... second-feet	344	155	189	121.9
Number of lateral ditches	72	106	−34	−32.1
Length of lateral ditches ... miles	19	31	−12	.....
Number of reservoirs	8	11	−3	.....
Capacity of reservoirs ... acre-feet	52	22	30	.....
Number of flowing wells	1	(3)	1	.....
Capacity of flowing wells ... gallons per minute	100	(3)	100	.....
Number of pumped wells	19	65	−46	.....
Capacity of pumped wells ... gallons per minute	3,643	1,791	1,852	103.4
Number of pumping plants	22	68	−46	.....
Engine capacity ... horsepower	184	107	77	72.0
Pump capacity ... gallons per minute	7,668	4,541	3,127	68.9
Average lift ... feet	59	(3)	59	.....

[1] A minus sign (−) denotes decrease. Per cent not shown when base is less than 100.

[2] Less than one-tenth of 1 per cent.

[3] Not reported in 1910.

CLIMATIC CONDITIONS.

The larger part of the state of Oklahoma receives sufficient rainfall to obviate the necessity for irrigation, the normal annual precipitation for the state being about 34 inches, and of this about three-fourths occurs during the growing season. In the extreme northwestern part of the state the normal annual precipitation is about 20 inches, but a large part of the rainfall in late summer in this section as well as in the rest of the state, comes in local showers, and crops sometimes suffer for moisture.

In the western part of the state the spring and summer precipitation in 1919 was far above normal, and there was little or no need of irrigation.

WATER SUPPLY FOR IRRIGATION.

Most of western Oklahoma is well watered. It is drained by the Salt Fork of the Arkansas, the Cimarron, the North Canadian, the South Canadian, the Washita, and the Red Rivers and their tributaries. As a rule these streams do not carry large volumes of water. They are subject to sudden rises coming from heavy local rains, but the floods are seldom of long duration. Without the storing of flood waters these streams are not reliable sources of water for irrigation.

No doubt ground water can be obtained from wells in the stream valleys, but the demand for water for irrigation has not been sufficient to bring about either the storing of flood water or the sinking of wells.

FARMS AND ACREAGE IRRIGATED.

TABLE 2.—NUMBER OF FARMS AND ACREAGE IRRIGATED: 1900 TO 1920.

CENSUS YEAR.	FARMS IRRIGATED.			AREA IRRIGATED.				
	Number.	Per cent of increase.[1]	Per cent of all farms.	Acres.	Per cent of increase.[1]	Per cent of total land area.	Per cent of land in farms.	Per cent of improved land in farms.
1920	73	−46.7	(2)	2,969	−32.3	(2)	(2)	(2)
1910	137	10.5	0.1	4,388	59.0	(2)	(2)	(2)
1900	124	.....	0.1	2,759	.....	(2)	(2)	(2)

[1] A minus sign (−) denotes decrease. [2] Less than one-tenth of 1 per cent.

TABLE 3.—ACREAGE, CLASSIFIED BY DATE OF BEGINNING OF ENTERPRISES SUPPLYING WATER FOR IRRIGATION.

DATE OF BEGINNING.	Number of enterprises.	Area included in enterprises, 1920 (acres).	AREA IRRIGATED IN 1919.		Area enterprises were capable of irrigating in 1920 (acres).
			Acres.	Per cent of acreage in enterprises.	
Total	33	11,742	2,969	25.3	9,672
1890–1899	5	8,812	2,392	27.1	8,112
1900–1904	3	159	108	67.9	159
1905–1909	2	150	55	36.7	150
1910–1914	12	1,983	298	15.0	633
1915–1919	9	398	36	9.0	378
Not reported	2	240	80	33.3	240

TABLE 4.—ACREAGE, CLASSIFIED BY SOURCE OF WATER SUPPLY: 1919 AND 1909.

CLASS.	AREA IRRIGATED (ACRES).				Area enterprises were capable of irrigating in 1920 (acres).	Area included in enterprises, 1920 (acres).
	1919	1909	Increase.[1]			
			Amount.	Per cent.		
Total	2,969	4,388	−1,419	−32.3	9,672	11,742
Streams, gravity	2,522	4,205	−1,683	−40.0	8,972	11,022
Streams, pumped	188	50	138	.....	355	355
Wells, pumped	107	69	38	.....	118	138
Wells, flowing	18	.....	18	.....	18	18
Lakes, gravity	.....	28	−28	.....	.....	.....
Springs	6	16	−10	.....	6	6
Stored storm water	.....	20	−20	.....	.....	.....
City water	3	(2)	3	.....	3	3
Mixed	125	(2)	125	.....	200	200

[1] A minus sign (−) denotes decrease. Per cent not shown when base is less than 100.

[2] Not included in classification in 1910.

ACREAGE, BY CHARACTER OF ENTERPRISE.

The constitution of the state of Oklahoma, adopted in 1907, contains the following section relating to organization for land reclamation:

"The legislature shall have the power and shall provide for a system of levees, drains, and ditches and of irrigation in this state when deemed expedient, and provide for a system of taxation on the lands affected or benefited by such levees, drains, and ditches and irrigation, or on crops produced on such land, to discharge such bonded indebtedness or expense necessarily incurred in the establishment of such improvements; and to provide for compulsory issuance of bonds by the owners or lessees of the lands benefited by such levees, drains and ditches, or irrigation."—Art. XVI, sec. 3.

In 1915 the legislature enacted an irrigation district law under this section of the constitution, but no districts are reported.

The state has never accepted the conditions of the Federal Carey Act (act of Aug. 18, 1894).

TABLE 5.—ACREAGE, CLASSIFIED BY CHARACTER OF ENTERPRISE: 1920 AND 1910.

ITEM AND CLASS.	CENSUS OF—		INCREASE.[1]	
	1920	1910	Acres.	Per cent.
ACREAGE IRRIGATED.				
Total	2,969	4,388	−1,419	−32.3
Individual	969	2,388	−1,419	−59.4
Cooperative	2,000	2,000	.....	.....
ACREAGE ENTERPRISES WERE CAPABLE OF IRRIGATING.				
Total	9,672	6,397	3,275	51.2
Individual	2,072	3,397	−1,325	−39.0
Cooperative	7,600	3,000	4,600	153.3
ACREAGE INCLUDED IN ENTERPRISES.				
Total	11,742	8,528	3,214	37.7
Individual	4,142	5,028	−886	−17.6
Cooperative	7,600	3,500	4,100	117.1

[1] A minus sign (−) denotes decrease.

An act passed in 1897 provided for the organization of corporations to build irrigation works and authorized such corporations to enter into contracts for the sale of water rights, having these secured by liens on the lands covered, or to lease water and have the rentals secured by liens on the crops grown, or otherwise. No such commercial companies are reported.

The United States Reclamation Service has investigated proposed enterprises in Oklahoma, but has not undertaken any of them.

ACREAGE, BY CHARACTER OF WATER RIGHTS.

The laws of Oklahoma relating to water rights are summarized in the following paragraphs:

The territory of Oklahoma was organized in 1890, and in 1897 the territorial legislature enacted its first law relating to water rights. This law contained the following section:

"The unappropriated waters of the ordinary flow or underflow of every running stream or flowing river, and the storm or rain water of every river or natural stream, canon, ravine, depression, or watershed within those portions of the state of Oklahoma in which by reason of the insufficient rainfall, or by reason of the irregularity of the rainfall, irrigation is beneficial for agricultural purposes, are hereby declared to be the property of the public, and may be acquired by appropriation for the uses and purposes and in the manner as hereinafter provided."

This law contained the following proviso recognizing riparian rights: "Provided, that such flow or underflow of water shall not be diverted to the prejudice of the rights of the riparian owner without his consent, except after condemnation thereof in the manner as hereinafter provided."

This law provided for the filing of claims for new enterprises with county recorders of deeds, and required also the filing of claims for previously existing rights.

In 1905, the territory created the office of territorial engineer and provided that parties wishing to acquire rights to water should apply to the engineer for permits. The law provided for the submitting of proof of completion of works and the issuing of certificates of completion and for the submitting of proof of having put the water appropriated to a beneficial use and the issuing of licenses to divert the quantities of water to which rights had been acquired.

The state engineer is directed to make surveys and collect the information necessary for defining rights to water and to transmit the results to the attorney general of the state, who is directed to bring suits on behalf of the state for the adjudication of rights. The attorney general is directed also to intervene in suits brought by other parties, while the courts are directed to call on the state engineer for information when suits involving water rights are brought.

TABLE 6.—ACREAGE IRRIGATED, CLASSIFIED BY CHARACTER OF RIGHTS UNDER WHICH WATER IS RECEIVED: 1919 AND 1909.

CLASS.	1919		1909, per cent of total.
	Acres.	Per cent of total.	
Total	2,969	100.0	100.0
Appropriation and use	35	1.2	77.4
Notice filed and posted	215	7.2	5.4
Adjudicated by court	2,200	74.1	17.1
Permit from state	310	10.4	.....
Riparian rights	80	2.7	.....
Underground	120	4.0	(1)
Other and mixed	3	0.1	(1)
Not reported	6	0.2	(1)

[1] All land for which the class of water rights was not reported was included in "Appropriation and use."

ACREAGE, BY DRAINAGE BASIN.

TABLE 7.—ACREAGE IRRIGATED, CLASSIFIED BY DRAINAGE BASIN: 1919 AND 1902.

DRAINAGE BASIN.	AREA IRRIGATED (ACRES).			Area included in enterprises, 1920 (acres).	Area enterprises were capable of irrigating in 1920 (acres).
	1919	1902	Per cent of increase.[1]		
Total	2,969	[2] 3,328	−10.8	11,742	9,672
Arkansas River and tributaries	2,843	[2] 3,207	−11.4	11,449	9,379
Canadian River	251	869	−71.1	502	495
Cimarron River	2,588	1,963	31.8	10,929	8,879
Other tributaries of Arkansas River	4	220	−98.2	18	5
Red River and tributaries	126	121	4.1	293	293

[1] A minus sign (−) denotes decrease.
[2] Includes 155 acres irrigated by springs but not shown by drainage basins.

CAPITAL INVESTED AND COST OF OPERATION AND MAINTENANCE.

TABLE 8.—CAPITAL INVESTED IN IRRIGATION ENTERPRISES: 1900 TO 1920.

CENSUS YEAR.	Amount.	Per cent of increase.	AVERAGE PER ACRE.	
			Amount.	Per cent of increase.[1]
1920	$151,325	220.6	$15.65	112.1
1910	47,209	115.8	7.38	−6.9
1900	21,872	.....	7.93	.....

[1] A minus sign (−) denotes decrease.

TABLE 9.—CAPITAL INVESTED, CLASSIFIED BY DATE OF BEGINNING.

DATE OF BEGINNING.	Amount.	Per cent of total.	Average per acre.
Total	$151,325	100.0	$15.65
1890–1899	54,378	35.9	6.76
1900–1904	3,403	2.2	21.40
1905–1909	4,085	2.7	27.23
1910–1914	67,191	44.3	106.60
1915–1919	17,099	11.2	45.60
Not reported	5,249	3.5	22.29

TABLE 10.—CAPITAL INVESTED, 1920, AND COST OF OPERATION AND MAINTENANCE, 1919, CLASSIFIED BY SOURCE OF WATER SUPPLY.

[When water is pumped, cost of operation and maintenance includes cost of fuel and attendance.]

CLASS.	CAPITAL INVESTED, 1920.			OPERATION AND MAINTENANCE, 1919.	
	Amount.	Per cent of total.	Average per acre.	Area for which cost is reported (acres).	Average cost per acre.[1]
Total	$151,325	100.0	$15.65	2,626	$2.92
Streams, gravity	90,040	59.5	16.04	2,322	1.56
Streams, pumped	4,210	2.8	11.86	123	3.74
Wells, pumped	47,675	31.1	398.94	22	40.78
Wells, flowing	5,000	3.3	277.78	18	53.56
Springs	1,000	0.7	166.67	6	4.17
City water	1,500	1.0	500.00	.....	.....
Mixed	2,500	1.7	12.56	125	10.00

[1] Based on area irrigated in 1919.

TABLE 11.—CAPITAL INVESTED, CLASSIFIED BY DRAINAGE BASIN: 1920 AND 1902.

DRAINAGE BASIN.	1920	1902	INCREASE.	
			Amount.	Per cent.
Total	$151,325	[1] $36,770	$114,555	311.5
Arkansas River and tributaries	142,597	[1] 35,802	106,795	298.3
Canadian River	46,234	6,918	39,316	568.3
Cimarron River	93,157	15,977	77,180	483.1
Other tributaries of Arkansas River	3,206	1,582	1,624	102.7
Red River and tributaries	8,728	968	7,760	801.7

[1] Includes $11,225 invested in springs and wells but not shown by drainage basins.

TABLE 12.—CAPITAL INVESTED, 1920, AND COST OF OPERATION AND MAINTENANCE, 1919, CLASSIFIED BY CHARACTER OF ENTERPRISE.

[When water is pumped, cost of operation and maintenance includes cost of fuel and attendance.]

CLASS.	CAPITAL INVESTED, 1920.		OPERATION AND MAINTENANCE, 1919.	
	Amount.	Per cent of total.	Area for which cost is reported (acres).	Average cost per acre.[1]
Total	$151,325	100.0	2,626	$2.92
Individual	110,658	73.1	626	8.73
Cooperative	40,667	26.9	2,000	1.10

[1] Based on area irrigated in 1919.

DRAINAGE OF IRRIGATED LAND.

The acreages reported in Table 13 relate to lands within the boundaries of irrigation projects, and do not include lands within the vicinity of these projects. "Acreage needing drainage" includes all lands so reported by the owners of the enterprises, and includes lands producing partial crops as well as those wholly unproductive.

TABLE 13.—ACREAGE WITHIN IRRIGATION ENTERPRISES FOR WHICH DRAINS HAVE BEEN INSTALLED AND ADDITIONAL ACREAGE IN NEED OF DRAINAGE: 1920.

[No land is reported as having had drains installed.]

Number of enterprises reporting land needing drainage	3
Acreage included in enterprises reporting land needing drainage	1,960
Acreage needing drainage	1,820
Per cent that acreage needing drainage is of total acreage in irrigation enterprises in the state	15.5

QUANTITY OF WATER USED.

The quantity of water used in 1919 was reported on only one irrigation schedule, and in this instance the water was not measured. The average volume entering the canal was reported as 2 second-feet, and the area irrigated was 125 acres, making an average of 62.5 acres per second-foot.

IRRIGATION WORKS.

TABLE 14.—IRRIGATION WORKS, CLASSIFIED BY DATE OF BEGINNING.

DATE OF BEGINNING.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES.			LATERAL DITCHES.		RESERVOIRS.	
			Number.	Capacity (second-feet).	Length (miles).	Number.	Length (miles).	Number.	Capacity (acre-feet).
Total	7	3	18	344	38	72	19	8	52
1890–1899	3		5	182	25	28	17		
1900–1904	1	1	3	31	2	34		2	
1905–1909	1		2	7	1	8	1		
1910–1914	1	1	5	70	7	2	1	3	2
1915–1919	1		2	54	3			1	
Not reported		1	1					2	50

DATE OF BEGINNING.	Pipe lines, length (miles).	FLOWING WELLS.		PUMPED WELLS.		PUMPING PLANTS.			
		Number.	Capacity (gallons per minute).	Number.	Capacity (gallons per minute).	Number.	Engine capacity (horse-power).	Pumps.	
								Number.	Capacity (gallons per minute).
Total	4.3	1	100	19	3,643	22	184	26	7,668
1900–1904				1	35	1		1	35
1905–1909						1	12	1	750
1910–1914	1.8	1	100	11	2,980	12	121	15	5,265
1915–1919	2.4			7	628	7	39	8	1,618
Not reported	0.1					1	12	1	

TABLE 15.—IRRIGATION WORKS, CLASSIFIED BY CHARACTER OF ENTERPRISE: 1920.

CLASS.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES. Number.	MAIN DITCHES. Capacity (second-feet).	MAIN DITCHES. Length (miles).	LATERAL DITCHES. Number.	LATERAL DITCHES. Length (miles).	RESERVOIRS. Number.	RESERVOIRS. Capacity (acre-feet).
Total	7	3	18	344	38	72	19	8	52
Individual	6	3	17	194	22	49	3	8	52
Cooperative	1		1	150	16	23	16		

CLASS.	Pipe lines, length (miles).	FLOWING WELLS. Number.	FLOWING WELLS. Capacity (gallons per minute).	PUMPED WELLS. Number.	PUMPED WELLS. Capacity (gallons per minute).	PUMPING PLANTS. Number.	PUMPING PLANTS. Engine capacity (horsepower).	PUMPING PLANTS. Pumps. Number.	PUMPING PLANTS. Pumps. Capacity (gallons per minute).
Total	4.3	1	100	19	3,643	22	184	26	7,668
Individual	4.3	1	100	19	3,643	22	184	26	7,668

TABLE 16.—IRRIGATION WORKS, CLASSIFIED BY DRAINAGE BASIN: 1920.

DRAINAGE BASIN.	Number of diverting dams.	Number of storage dams.	MAIN DITCHES. Number.	MAIN DITCHES. Capacity (second-feet).	MAIN DITCHES. Length (miles).	LATERAL DITCHES. Number.	LATERAL DITCHES. Length (miles).	RESERVOIRS. Number.	RESERVOIRS. Capacity (acre-feet).
Total	7	3	18	344	38	72	19	8	52
Arkansas River and tributaries	7	2	14	290	38	70	18	7	52
Canadian River		2	3	8	3	9	1	6	52
Cimarron River	7		9	282	35	61	17	1	
Other tributaries of Arkansas River									
Red River and tributaries		1	4	54		2	1	1	

DRAINAGE BASIN.	Pipe lines, length (miles).	FLOWING WELLS. Number.	FLOWING WELLS. Capacity (gallons per minute).	PUMPED WELLS. Number.	PUMPED WELLS. Capacity (gallons per minute).	PUMPING PLANTS. Number.	PUMPING PLANTS. Engine capacity (horsepower).	PUMPING PLANTS. Pumps. Number.	PUMPING PLANTS. Pumps. Capacity (gallons per minute).	PUMPING PLANTS. Average lift (feet).
Total	4.3	1	100	19	3,643	22	184	26	7,668	59
Arkansas River and tributaries	4.3			19	3,643	18	120	22	4,668	69
Canadian River	4.0			12	1,106	12	78	16	3,141	89
Cimarron River				5	2,485	4	33	4	1,485	26
Other tributaries of Arkansas River	0.3			2	52	2	9	2	42	19
Red River and tributaries		1	100			4	64	4	3,000	39

COUNTY TABLE.—ACREAGE IRRIGATED, 1919 AND 1909; AND ACREAGE IN ENTERPRISES, IRRIGATION WORKS, AND CAPITAL INVESTED IN IRRIGATION ENTERPRISES, 1920 AND 1910.

[A minus sign (−) denotes decrease. Per cent not shown when base is less than 100 or when per cent is more than 1,000.]

		The State.	Beaver.	Cimarron.	All other counties.
1	Number of all farms in 1920	191,988	2,518	767	188,703
2	Number of farms irrigated in 1919	73	15	17	41
3	Per cent of all farms	(1)	0.6	2.2	(1)
4	Number of farms irrigated in 1909	137	11	32	94
5	Per cent of increase, 1909-1919	−46.7	.....	.....	.....
	LAND AND FARM AREA.				
6	Approximate land area ... acres	44,424,960	1,160,320	1,183,360	42,081,280
7	All land in farms ... acres	31,951,934	1,099,058	809,024	30,043,852
8	Improved land in farms ... acres	18,125,321	508,103	97,177	17,520,041
9	Area irrigated in 1919 ... acres	2,969	2,008	315	646
10	Per cent of improved land in farms	(1)	0.4	0.3	(1)
11	Area irrigated in 1909 ... acres	4,388	138	708	3,542
12	Per cent of increase, 1909-1919	−32.3	.....	−55.5	−81.8
13	Area enterprises were capable of irrigating in 1920 ... acres	9,672	7,609	905	1,158
14	Area enterprises were capable of irrigating in 1910 ... acres	6,397	259	995	5,143
15	Per cent of increase, 1910-1920	51.2	.....	−9.0	−77.5
16	Area included in enterprises in 1920 ... acres	11,742	7,609	2,255	1,878
17	Area included in enterprises in 1910 ... acres	8,528	353	1,165	7,010
18	Per cent of increase, 1910-1920	37.7	.....	93.6	−73.2
	IRRIGATION WORKS.				
	Independent enterprises:				
19	Number, 1920	33	3	6	24
20	Number, 1910	114	11	32	71
	Main ditches:				
21	Number, 1920	18	3	5	10
22	Number, 1910	47	2	16	29
23	Length, 1920 ... miles	38	17	14	7
24	Length, 1910 ... miles	54	3	10	41
25	Capacity, 1920 ... second-feet	344	150	123	71
26	Capacity, 1910 ... second-feet	155	2	42	111
	Laterals:				
27	Number, 1920	72	53	8	11
28	Number, 1910	106	13	59	34
29	Length, 1920 ... miles	19	16	1	2
30	Length, 1910 ... miles	31	3	13	15
	Reservoirs:				
31	Number, 1920	8	1	.....	7
32	Number, 1910	11	5	.....	6
33	Capacity, 1920 ... acre-feet	52	.....	.....	52
34	Capacity, 1910 ... acre-feet	22	10	.....	12
	Flowing wells:				
35	Number, 1920	1	.....	.....	1
36	Number, 1910	.....	.....	.....	.....
37	Capacity, 1920 ... gallons per minute	100	.....	.....	100
38	Capacity, 1910 ... gallons per minute	.....	.....	.....	.....
	Pumped wells:				
39	Number, 1920	19	1	1	17
40	Number, 1910	65	7	17	41
41	Capacity, 1920 ... gallons per minute	3,643	35	1,600	2,008
42	Capacity, 1910 ... gallons per minute	1,791	199	400	1,192
	Pumping plants:				
43	Number, 1920	22	1	1	20
44	Number, 1910	68	7	18	43
45	Engine capacity, 1920 ... horsepower	184	.....	8	176
46	Engine capacity, 1910 ... horsepower	107	7	32	68
47	Pump capacity, 1920 ... gallons per minute	7,668	35	600	7,033
48	Pump capacity, 1910 ... gallons per minute	4,541	199	1,240	3,102
49	Average lift, 1920 ... feet	59	.....	16	62
	CAPITAL INVESTED.				
50	Capital invested to Jan. 1, 1920 ... dollars	151,325	41,360	33,680	76,285
51	Capital invested to July 1, 1910 ... dollars	47,200	3,699	8,360	35,141
52	Per cent of increase, 1910-1920	220.6	.....	302.9	117.1
53	Average cost per acre based on area enterprises were capable of supplying with water in 1920 ... dollars	15.65	5.44	37.22	65.88
54	Average cost per acre based on area enterprises were capable of supplying with water in 1910 ... dollars	7.38	14.28	8.40	6.83
	ESTIMATED FINAL COST.				
55	Estimated final cost of existing enterprises in 1920 ... dollars	162,775	41,360	42,680	78,735
56	Estimated final cost of existing enterprises in 1910 ... dollars	47,200	3,699	8,360	35,141
57	Per cent of increase, 1910-1920	244.9	.....	410.5	124.1
58	Average cost per acre based on estimated final cost and area included in enterprises in 1920 ... dollars	13.86	5.44	18.93	41.92
59	Average cost per acre based on estimated final cost and area included in enterprises in 1910 ... dollars	5.53	10.48	7.18	5.01

[1] Less than one-tenth of 1 per cent.