

PART II
SUMMARY FOR THE UNITED STATES AND REPORTS BY STATES WITH STATISTICS
FOR COUNTIES

SUMMARY FOR THE UNITED STATES

Introduction.—This summary (pages 18 to 46) presents for organized drainage enterprises in the United States, statistics on land and capital classified by character of enterprise, date of organization, type and purpose of drainage, arrearage and delinquency in payment of principal and interest on bonds or other obligations, method and regularity of maintenance, completion of works, and ownership of power equipment; condition and use of land; and drainage works, including pumping plants.

Data on the number of farms reporting drainage and the area of farm land provided with drainage, collected by census enumerators on the general farm schedule, are given in Table I, page 19, and State Table XI, page 46.

Since farm lands provided with drains may be either within or without an organized enterprise, and since these drains may be either supplemental to or independent of the works installed by an enterprise, the figures for the two parts of the drainage census are shown separately.

All 48 States and the District of Columbia reported some drainage on farms, but only 35 States reported organized drainage enterprises. A list of these States is shown on page VII.

Condition of land in enterprises.—Nearly two-thirds of the land in drainage enterprises in the United States is located north of the Ohio and Missouri Rivers. The land of this section, excepting large swampy areas in Wisconsin and northern Minnesota, was generally in farms before drainage enterprises were organized.

The land in the drainage enterprises of the Mississippi Delta or alluvial bottoms below the mouth of the Ohio, and that in drainage enterprises of the Coastal Plain region between the Potomac River and the Rio Grande was largely swampy and unfit for cultivation prior to drainage. The enterprises of this section are usually quite large while those north of the Ohio and Missouri Rivers are relatively much smaller.

In the arid portions of the Western States practically all drainage enterprises are located on irrigated land, and the prevention of damage from seepage and alkali was the principal object in drainage. When this object was accomplished by pumping from drainage wells the drainage water was often used again for irrigating land. Where the drainage work is done directly by an irrigation enterprise, the drainage enterprise has been considered as identical with the irrigation enterprise, as all irrigable lands are usually assessed for the necessary drainage works; however, in the drainage census of 1920, only the lands then served by drainage works were included. Of the 2,644,674 acres located in such irrigation enterprises in 1930, 1,607,674 acres are served by drainage works and it is probable that most of the remaining portion will ultimately require drainage. The drainage enterprises of the arid West therefore contain approximately 1,037,000 acres not yet served by drainage works. Much of the drainage of irrigated lands is accomplished by forming separate drainage districts covering the area for which protection from seepage and alkali is necessary, but the above figures apply

only to those irrigation projects which do their own drainage work directly.

About 1,000,000 acres of high or ridge land having natural drainage and only indirectly benefited by the drainage works, were reported within enterprises principally in Minnesota, Ohio, and Iowa. In these States the assessments are apportioned according to the amount of wet land in such enterprises. These high or ridge lands, however, are liable as security for bonds or other obligations of the district.

Of all land in enterprises, approximately 75 per cent was reported as improved, 14 per cent as woodland, and 11 per cent as other unimproved land. Of the total, 9 per cent was unfit to raise any crop for lack of drainage; and 24 per cent was idle in 1929.

The condition of land in enterprises considered by geographic divisions was reported as follows: Of the total land in enterprises in the Pacific and Rocky Mountain States, approximately 88 per cent was improved; 2 per cent, unfit to raise any crop for lack of drainage; and 17 per cent, idle in 1929. Of the total in the East North Central and West North Central States 85 per cent was improved; 6 per cent, unfit; and 13 per cent, idle. Of the total in the South Atlantic, East South Central, and West South Central States, 49 per cent was improved; 16 per cent, unfit; and 53 per cent, idle. The high percentage of idle land in these divisions covering the Southern States is partly due to the inclusion of the Everglades Drainage District, most of which is still unimproved. If the lands within the Everglades Drainage District were excluded, the remainder would show 58 per cent of the land as improved; 14 per cent, unfit to raise any crop; and 42 per cent, idle.

In the East North Central and West North Central divisions most of the land in enterprises was in farms prior to drainage and the idle land reported is largely located in those enterprises of northern Minnesota, Wisconsin, and southeastern Missouri, which were organized to reclaim lands that were swampy or too wet for cultivation. The large acreage of idle land in the South Atlantic, East South Central, and West South Central divisions is due to the fact that most of the enterprises are located in the swampy sections of the Mississippi Delta and the Coastal Plain region where clearing and settlement proceed slowly after outlet drainage is provided. Much of this land also has been drained since the decline in the value of farm produce and the subsequent decrease in demand for new agricultural lands. The condition of land in enterprises for each of the drainage States is shown in State Table I, page 24, by geographic divisions and States.

The usual purpose of an organized drainage enterprise is to provide adequate outlets into which the farms of the district may be drained, and to afford relief for the district as a unit. Therefore, the fact that an enterprise which has completed its drainage works contains land still unfit to raise any crop, or land fit only for a partial crop, does not necessarily show that the works are inadequate. Table I includes a summary of the condition of land in drainage enterprises.

TABLE 1.—SUMMARY FOR THE UNITED STATES: 1930 AND 1920

ITEM (See definitions in Introduction)	CENSUS OF—		INCREASE ¹		
	1930	1920	Amount	Per cent	
FARMS AND DRAINAGE ON FARMS					
All farms.....	number.....	6,288,048	6,448,343	—160,095	—2.5
Farms reporting drainage.....	number.....	651,172	624,815	—273,043	—20.6
All land in farms.....	acres.....	986,771,010	955,883,715	30,887,301	3.2
Farm land provided with drainage.....	acres.....	44,523,095	53,024,075	—8,501,290	—16.0
AREA, DRAINS, AND INVESTMENT IN ENTERPRISES					
Approximate land area of 35 States reporting organized drainage enterprises ²	acres.....	1,743,600,840	1,717,932,160	25,767,680	1.5
Land in drainage enterprises.....	acres.....	84,408,093	65,405,038	18,913,055	28.0
Improved land.....	acres.....	93,514,081	44,288,235	19,225,846	43.4
Unimproved land:					
Woodland.....	acres.....	11,310,402	11,283,532	26,870	0.2
Other.....	acres.....	9,583,610	9,923,271	—339,661	—3.4
Land unfit to raise any crop for lack of drainage.....	acres.....	7,390,078	* 7,224,213	171,865	2.4
Land drained, fit to raise normal crop.....	acres.....	66,234,390	(³)		
Land partly drained, fit for partial crop.....	acres.....	10,777,625	* 3,011,407	7,766,218	257.0
Land in occupied farms.....	acres.....	68,640,100	(⁴)		
Land in planted crops.....	acres.....	54,427,577	(⁴)		
Land idle.....	acres.....	20,003,315	(⁴)		
Ditches, completed.....	miles.....	138,673.0	107,468.2	31,204.8	29.0
Tile drains, completed.....	miles.....	55,031.9	42,311.7	12,720.2	30.1
Capital invested in enterprises.....	dollars.....	680,732,880	372,273,567	308,459,313	82.0
Average, per acre.....	dollars.....	8.06	5.68	2.38	41.0

¹ A minus sign (—) denotes decrease.

² The 35 States which reported organized drainage enterprises in 1930 are Arizona, Arkansas, California, Colorado, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Mexico, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, Washington, Wisconsin, and Wyoming. In 1920, all of these States except Virginia were included in the drainage census.

³ "Swampy, subject to overflow, seeped, or alkali."

⁴ Not called for on schedule.

⁵ "Suffering a loss of crops from defective drainage."

AREA AND CAPITAL

Area of enterprises.—Statistics by counties require that an enterprise located in more than one county be divided, and the part in each county be considered as a separate enterprise. In this way, 67,927 drainage enterprises are shown for the United States with an average area of 1,892 acres. There are 66 such enterprises of 100,000 acres or more, 4,273 of between 5,000 and 100,000 acres, 32,532 of between 500 and 5,000 acres, and 31,056 of less than 500 acres.

The area of enterprises exceeds the land in enterprises by 44,086,985 acres, which is the amount of overlap. Most of this overlap occurs in Ohio, Indiana, and Michigan, and is largely due to the fact that much of the maintenance work is done by letting contracts for the repair, extension, and enlargement of the drains of enterprises and apportioning the costs according to benefits as in the case of original enterprises. Due to this fact the area of all enterprises in Ohio is nearly three times that of the land drained, and a few counties have a total area of enterprises that is approximately six times as large as the land drained. This method of repair with resulting overlapping is confined to States in which drainage enterprises are largely under the control of county officials. In addition to the States mentioned above, Minnesota and Iowa have considerable overlapping in some of their counties.

The areas of enterprises by size are shown by geographic divisions and States in State Table II.

TABLE 2.—AREA OF ENTERPRISES, BY SIZE: 1930 AND 1920

SIZE GROUP	AREA OF ENTERPRISES ¹				Land in enterprises, 1930
	1930		1920		
	Acres	Per cent 100.0	Acres	Per cent 100.0	Acres
All enterprises.....	128,405,078	100.0	95,620,291	100.0	84,408,093
Less than 100 acres.....	324,157	0.2			175,237
100 to 199 acres.....	1,040,664	0.8	1,162,025	1.2	574,701
200 to 499 acres.....	5,984,023	4.7	5,222,615	5.4	3,292,820
500 to 999 acres.....	11,130,096	8.7	9,091,510	9.5	6,329,741
1,000 to 4,999 acres.....	34,074,009	26.5	29,522,536	30.9	20,552,211
5,000 to 9,999 acres.....	15,805,002	12.3	13,357,930	14.0	10,354,392
10,000 to 49,999 acres.....	35,075,951	27.3	23,820,140	24.0	24,105,640
50,000 to 99,999 acres.....	11,403,982	8.9	8,605,530	9.0	8,577,771
100,000 to 499,999 acres.....	10,218,995	8.0	4,850,978	5.1	7,067,285
500,000 acres and over.....	3,378,190	2.6			3,378,190

¹ The sum of the areas of individual enterprises, including overlap.

Character of enterprises.—All drainage enterprises have been classified according to their character as defined in the following paragraphs. A synopsis of State drainage laws, governing the establishment, organization, financing, and maintenance of the various classes of enterprises, appears in Part III, pages 355 to 422, of this volume.

Organized drainage enterprises having executive officers exclusively their own, chosen according to the State drainage laws, are classed as *drainage districts*.

Enterprises which, in common with others, are under the control of State, county, or township officials, are classed as *State projects*, *county drains*, or *township drains*, according to the public officials in control.

Drainage projects under the control of the officers of an irrigation organization are classed as *irrigation enterprises*. In such cases the drainage is incidental to land reclamation by irrigation, and both the drainage and irrigation operations are functions of the one enterprise.

Enterprises under the control of individuals, or organizations engaged in the draining of land for purposes of development, subdivision, and sale, are classed as *commercial developments*.

Enterprises without legal organization, as such, belonging to individuals, partnerships, or agricultural companies, are classed as *individually owned projects*. Projects of this type are included only when the area drained is 500 acres or more.

According to the foregoing classifications there were 4,213 drainage districts; 62,707 county drains; 212 township drains; 41 State projects; 68 irrigation enterprises; 26 commercial developments; 655 individually owned projects; and 5 projects representing other types of organization within the 35 drainage States. Many county drains are overlapping enterprises formed usually to repair, improve, or extend the drains of earlier enterprises.

TABLE 3.—LAND AND CAPITAL, BY CHARACTER OF ENTERPRISE, 1930

CHARACTER OF ENTERPRISE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	84,408,093	100.0	680,732,880	100.0
Drainage districts.....	32,544,972	38.6	357,799,462	52.6
County drains.....	47,547,137	56.3	287,391,766	42.2
Township drains.....	193,929	0.2	944,397	0.1
State projects.....	608,309	0.7	1,448,680	0.2
Irrigation enterprises.....	2,644,674	3.1	23,200,176	3.4
Commercial developments.....	72,457	0.1	3,083,319	0.4
Individually owned projects.....	782,423	0.9	6,578,561	1.0
Other.....	14,192	(¹)	226,529	(¹)

¹ Less than one-tenth of 1 per cent.

Type of drainage.—The works completed to January 1, 1930, included 138,673 miles of ditches, 55,032 miles of tile drains, 6,540 miles of levees, and 444 drainage wells from which water was pumped in order to lower the water table and prevent damage from seepage and alkali. Drains and levees installed by individual farmers supplemental to the works of an enterprise are not included. A considerable mileage of tile drains privately installed is thus omitted from the statistics. There were 292 enterprises on which drainage pumps were located. Some of the pumping plants served land in adjoining enterprises in addition to the land of the enterprise on which the plants were located.

The land shown as drained by gravity only includes land drained by either ditches or tile, or a combination of ditches and tile. All three classes of land may or may not have some accessory levees.

The land drained all or part by pumping includes that of enterprises which reported some land served by pumps. The portion shown with all the drainage by pumping is entirely dependent for drainage, at least a part of the time, upon the operation of pumps. The remainder includes those enterprises having part of their drainage by gravity and part by pumping.

Type of drainage is shown by States in State Table III, and the acreage served per mile of drains, by geographic divisions and States, in State Table IX.

TABLE 4.—LAND AND CAPITAL, BY TYPE OF DRAINAGE, 1930

TYPE OF DRAINAGE (See definitions in Introduction)	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	84,408,093	100.0	680,732,880	100.0
Gravity drainage only.....	80,765,598	95.7	573,708,076	84.3
Ditches and levees.....	60,234,328	71.4	373,316,473	54.8
Tile drains and levees.....	8,325,463	9.9	70,780,265	10.4
Ditches, tile drains, and levees.....	12,205,817	14.4	129,671,338	19.1
Drainage, all or part by pumping.....	3,642,495	4.3	106,964,804	15.7
All drainage by pumping.....	1,808,433	1.9	79,894,531	11.7
Part gravity and part pumping.....	2,034,062	2.4	27,070,273	4.0

Pumping plants.—Within the 35 drainage States there were 292 enterprises on which pumps were located. In a few cases these pumps served land in more than one enterprise. Of this number, 12 enterprises pumped from drainage wells, located on irrigated lands, with the purpose of lowering the water table and thus preventing damage from seepage and alkali. There were 444 wells from which water was thus pumped and in many cases this water was used again for irrigation. The pumps installed in these wells were usually of the deep-well turbine type. The static lift varied considerably and averaged 47 feet. The area served per well averaged 505 acres.

The remaining 280 enterprises had pumping plants of the more common type where the surplus water is brought to the plant by open ditches and then, when necessary, pumped over a levee.

The total capacity of all engines and motors of the 292 enterprises was 99,747 horsepower. About two-thirds of this power was supplied by electric motors and the remainder by steam and internal combustion engines. The proportion of power supplied by electric motors and by internal combustion engines has increased during the last 10-year census period, while that supplied by steam engines has decreased.

The total capacity of the 1,028 pumps of all enterprises was 17,854,824 gallons per minute. As some enterprises did not report separately the number and capacity of each type of pump, an exact division is not possible, but approximately 80 per cent of the total pump capacity is represented by centrifugal pumps. The turbine pumps were used with drainage wells on irrigated land.

The total area served by pumps is somewhat smaller than the area tributary to the pumps, for in some enterprises outside lands drain onto the area served. The average lift of water was 10.8 feet. This average was determined by weighting the lift of the pumps of each enterprise in proportion to the total capacity of its pumps.

The engine and pump capacity of plants and also the number of wells pumped for drainage are shown by geographic divisions and States in State Table I.

The pump capacity in depth in inches in 24 hours over the area served, the average lift, and the plant ratio are shown by geographic divisions and States in State Table VII.

TABLE 5.—PUMPING PLANTS AND LAND SERVED, BY KIND OF POWER: 1930 AND 1920

KIND OF POWER	Enterprises	Engine or motor capacity		Pump capacity	Land served	
		Number	H. p.			Per cent	G. p. m.
All enterprises.....	1930..... 1920.....	292 211	99,747 67,180	100.0 100.0	17,854,824 15,940,160	2,174,803 1,514,010
Electric.....	1930..... 1920.....	170 90	64,033 36,472	64.2 54.3	8,368,505 5,733,750	1,380,480 706,704
Internal combustion.....	1930..... 1920.....	73 38	13,118 6,710	13.2 10.0	4,024,960 1,845,162	347,207 250,627
Steam.....	1930..... 1920.....	22 63	9,730 17,376	9.8 25.8	3,092,000 7,120,448	227,022 497,160
Steam and electric.....	1930..... 1920.....	9 11	5,900 5,485	5.9 8.2	619,600 974,200	82,001 67,400
Electric and internal combustion.....	1930..... 1920.....	12 6	2,936 890	2.9 1.3	426,750 180,500	85,230 14,723
Steam and internal combustion.....	1930..... 1920.....	6 3	4,030 250	4.0 0.4	1,113,000 80,100	62,764 0,700
Water wheel.....	1920.....	1				694

TABLE 6.—PUMPING PLANTS AND LAND SERVED, BY KIND OF PUMP, 1930

KIND OF PUMP	Pumps	Pump capacity		Engine or motor capacity	Land served
		Number	G. p. m.			Per cent
All enterprises.....	1,028	17,854,824	100.0	99,747	2,174,803
Centrifugal.....	562	13,456,224	75.4	73,337	1,656,717
Screw.....	29	1,483,600	8.3	4,265	163,357
Rotary.....	36	946,800	5.3	3,616	82,727
Turbine.....	157	105,800	0.9	3,126	89,820
Centrifugal and—					
Screw.....	19	830,400	4.7	3,475	59,570
Rotary.....	7	520,000	2.9	815	15,500
Turbine.....	56	60,000	0.4	850	28,112
Centrifugal, turbine, and screw.....	172	380,000	2.1	10,264	80,000

Arrears and delinquency.—There were 1,064 enterprises, with approximately 17 per cent of the invested capital and covering about 12 per cent of the land in organized districts, reported as in arrears in payment of principal or interest on bonds or other obligations; while the remaining 66,863 enterprises were reported as not in arrears. Reports of 2,034 enterprises, covering 24,741,991 acres, show a total of 10,050,800 acres delinquent in drainage taxes; 65,328 enterprises, covering 56,763,971 acres, reported no delinquency; while 565 enterprises failed to report.

On account of the overlapping of enterprises, the area delinquent contains some land that was reported delinquent in more than one drainage project; but the data available do not permit of an accurate determination of the acreage that was twice reported. It is probable that this duplication is not material except in the States of Minnesota, Arkansas, Missouri, and Florida. The duplication in these States is roughly estimated as follows: Minnesota, 83,000 acres; Arkansas, 50,000 acres; Missouri, 65,000 acres; and Florida, 635,000 acres, all of which are in the Everglades area.

Neither the arrearage nor the delinquency in dollars was asked. Doubtless in many cases the arrearage was quite small and was caused by failure to meet payments due on principal or interest on obligations other than bonds. By far the greater amount of arrearage and delinquency was found in those enterprises having a large acreage of unimproved and idle land.

Arrearage and delinquency are shown by States in State Table IV, page 34.

TABLE 7.—LAND, CAPITAL INVESTED, AND AREA DELINQUENT IN DRAINAGE TAXES, ACCORDING TO ARREARAGE IN PAYMENT OF PRINCIPAL OR INTEREST ON BONDS OR OTHER OBLIGATIONS, 1930

FINANCIAL STATUS	Land		Capital invested to Jan. 1, 1930		Area delinquent
	Acrea	Per cent	Dollars	Per cent	
All enterprises.....	81,408,093	100.0	689,732,880	100.0	10,050,800
Enterprises in arrears.....	8,812,578	11.0	112,062,060	16.4	5,188,980
With some delinquent land.....	8,261,824	10.4	102,332,965	15.0	5,188,980
With no delinquent land.....	550,754	0.6	5,229,532	0.8	
With no report on delinquency.....	481,600	0.6	5,400,480	0.8	
Enterprises not in arrears.....	74,595,515	88.4	567,769,894	83.4	4,861,811
With some delinquent land.....	15,950,167	18.9	148,015,254	20.3	4,861,811
With no delinquent land.....	58,645,348	69.6	409,619,142	60.1	
With no report on delinquency.....	2,420,462	2.9	20,135,498	3.0	

Purpose of drainage.—In some cases the drainage development accomplished two or more purposes. An enterprise, prior to drainage, may contain swamp land, improved land in farms, land subject to overflow, and land damaged by seepage and alkali from irrigation. The object in drainage may be to reclaim or benefit all such lands. However, the land is classified according to the principal purpose reported.

In the East North Central and West North Central divisions the principal purpose of drainage was the improvement of lands already in farms. However, in Wisconsin and Missouri the reclamation of swamp lands, and in Kansas protection against overflow, was reported as the dominant purpose.

In the South Atlantic division the principal purpose was the reclamation of swamp lands not previously in farms.

In the East South Central and West South Central divisions the principal purpose was the improvement of land already in farms; excepting in Tennessee, Mississippi, and Arkansas, where reclamation of swamp land was the principal purpose.

In the Mountain division the removal of seepage and alkali from irrigation was by far the principal purpose in drainage as nearly all the drainage enterprises of this group are located on irrigated lands.

In the Pacific division the removal of seepage and alkali was the dominant reason, but the reclamation of wet and swampy land in California and Oregon and the improvement of land in farms in Washington were also important reasons for drainage.

For the most part, enterprises reporting reclamation of swamp land as their principal purpose were located in the Coastal Plain region between Virginia and Texas; in the Mississippi Delta; in Wisconsin; and in northern Minnesota. Those reporting the improvement of land already in farms were generally located in the States north of the Ohio and Missouri Rivers. The object here was to provide better drainage for wet lands already in cultivation in order to secure greater crop yields. Enterprises reporting the removal of seepage and alkali as their main object were located on irrigated lands of the arid section of the West. Those reporting protection against overflow as their major purpose were usually located in the river or creek bottoms of the Central States, and in the Piedmont section of the South Atlantic States. Much of this land was in cultivation prior to drainage but was subject to occasional loss of crops from floods, and

SUMMARY FOR THE UNITED STATES

the drainage works consisted largely of channel improvements. A number of enterprises organized for protection against overflow are located in the Great Valley of California and the coastal sections of Washington and Oregon, but these depend largely on dikes and pumps for flood protection.

TABLE 8.—LAND AND CAPITAL, BY PURPOSE OF DRAINAGE, 1930

PURPOSE OF DRAINAGE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	84,408,093	100.0	680,732,880	100.0
Reclamation of swamp land not previously in farms.....	22,858,597	27.1	211,575,252	31.1
Improvement of land already in farms.....	53,020,590	62.8	364,200,640	53.5
Removal of seepage and alkali from irrigation.....	3,395,144	4.0	30,283,693	5.8
Protection against overflow.....	5,127,750	6.1	65,574,295	9.6

Date of organization.—A period of one or more years may elapse between the date of organization and the beginning of actual construction, and in large enterprises the work may extend over a period of several years. For these reasons the original drainage was accomplished somewhat later than the dates shown. It was not feasible to secure dates of beginning and ending of construction work, so the date of establishment of each enterprise was used. Where the drainage work was done directly by an irrigation enterprise, the year in which drainage was undertaken is used instead of the year of organization of the irrigation project.

These statistics show that approximately 60 per cent of the land in enterprises and 63 per cent of the invested capital is in drainage projects organized during the 15-year period from 1905 to 1919. Land and capital, classified by date of organization, is shown by geographic divisions and States in State Table VI.

TABLE 9.—LAND AND CAPITAL, BY DATE OF ORGANIZATION, 1930

DATE OF ORGANIZATION	Land		Area of enterprises		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Acres ¹	Overlapped acres	Dollars	Per cent
All enterprises.....	84,408,093	100.0	128,495,078	44,080,985	680,732,880	100.0
Before 1870.....	919,117	1.1	1,050,844	137,727	1,263,389	0.2
1870-1879.....	2,516,942	3.0	3,480,915	903,973	11,317,800	1.7
1880-1889.....	6,052,807	7.2	9,549,227	3,496,420	28,085,384	4.1
1890-1899.....	5,957,503	7.0	11,265,052	5,307,540	32,838,911	4.8
1900-1904.....	7,665,823	9.1	12,380,936	4,715,113	34,130,050	5.0
1905-1909.....	18,328,017	21.7	23,862,554	5,534,537	111,612,254	16.4
1910-1914.....	16,448,377	19.5	22,331,693	5,883,316	125,953,183	18.5
1915-1919.....	15,802,902	18.7	23,422,034	7,619,132	100,583,008	28.0
1920-1924.....	7,428,179	8.8	12,735,730	5,307,500	102,970,838	15.1
1925-1929.....	3,288,426	3.9	8,410,084	5,121,658	42,012,361	6.2

¹ Includes overlap.

TABLE 10.—CONDITION OF LAND AND LAND AVAILABLE FOR SETTLEMENT, BY DATE OF ORGANIZATION, 1930

DATE OF ORGANIZATION	LAND IN ENTERPRISES					Land available for settlement
	Total	Condition of land			Other unimproved land	
		Improved land	Woodland	Other unimproved land		
All enterprises.....	Acres 84,408,093	Acres 63,514,081	P. ct. 75.2	Acres 11,310,402	Acres 9,583,610	Acres 7,987,171
Before 1870.....	919,117	827,668	90.1	80,247	5,204	992
1870-1879.....	2,516,942	2,319,080	92.2	172,517	24,745	1,583
1880-1889.....	6,052,807	5,626,614	93.0	337,306	88,887	18,736
1890-1899.....	5,957,503	5,389,676	90.5	302,512	205,810	9,123
1900-1904.....	7,665,823	6,533,061	85.2	665,857	469,005	102,428
1905-1909.....	18,328,017	11,877,989	64.8	2,599,401	3,880,647	2,562,423
1910-1914.....	16,448,377	11,850,159	72.0	2,519,243	2,078,960	1,822,444
1915-1919.....	15,802,902	11,088,824	70.2	2,898,377	1,815,201	2,016,905
1920-1924.....	7,428,179	5,431,945	73.1	1,304,530	691,698	1,101,174
1925-1929.....	3,288,426	2,568,479	78.1	398,906	320,041	261,361

Method of maintenance.—Some enterprises reported more than one method of maintenance, but in such cases the principal method is shown.

Many enterprises doubtless vary their method of maintenance according to the amount and nature of the work, and economic conditions. The classification given is therefore very general.

TABLE 11.—LAND AND CAPITAL, BY METHOD OF MAINTENANCE, 1930

METHOD OF MAINTENANCE	Land		Capital invested to Jan. 1, 1930	
	Acres	P. ct.	Dollars	P. ct.
All enterprises.....	84,408,093	100.0	680,732,880	100.0
By district forces.....	26,303,633	31.2	291,230,055	42.8
By contract.....	31,340,100	37.1	226,226,023	33.2
By work apportioned to landowners.....	11,682,891	13.8	67,808,115	10.0
Other, none, and not reported.....	15,072,409	17.0	95,462,687	14.0

Cost of operation and maintenance.—Since many enterprises do not have annual maintenance, it is necessary to include those that reported *no* cost as well as those that reported *some* cost for 1929, in order to determine a fair average cost of maintenance for the 35 drainage States. Approximately 35 per cent of the land reporting showed some cost, and 65 per cent showed no cost in 1929. The average cost for all enterprises was 9 cents per acre. This average cost is doubtless lower than the amount that should be spent if the works were to be kept in good repair. The low average is partly due to the fact that in a number of States, particularly Michigan, Indiana, and Ohio, much of the repair work is accomplished by forming new enterprises covering the lands of earlier ones and assessing the costs of repair or reconstruction against the land by proceedings similar to those followed in the establishment of the original enterprises. Such expenditures have been reported as capital invested. It is also probable that the expenditures in 1929 were affected by the low value of agricultural products and that much maintenance work which would have been done under normal economic conditions was curtailed or omitted. It should also be noted that the drains of approximately 14 per cent of the land in enterprises were maintained by apportioning the work to landowners, and it is certain that little of their work was included at its equivalent contract value.

The operation and maintenance costs of enterprises drained all or part by pumping are divided between those having all their lands served by pumps and those having only a part served by pumps and the remainder by gravity. It should here be noted that the cost of operation and maintenance of pumping plants depends largely on the number of days the pumps are operated. This in turn depends on flood and rainfall conditions during the growing season which vary considerably from year to year.

The conditions mentioned indicate that the costs shown for operation and maintenance in 1929 are probably less than the amount that should be expended during an average year to keep drainage works in good repair.

Cost of operation and maintenance is shown by States in State Table V. Legal provisions relating to operation and maintenance in the drainage States are included in the "Synopsis of Drainage Laws," pages 355 to 422 of this volume.

TABLE 12.—LAND AND COST OF OPERATION AND MAINTENANCE, 1929, BY TYPE OF DRAINAGE

TYPE OF DRAINAGE (See definitions in Introduction)	Land report- ing on cost	COST REPORTED	
		Total	Per acre
	<i>Acres</i>	<i>Dollars</i>	<i>Dollars</i>
All enterprises reporting.....	82,878,144	7,005,035	0.09
Gravity drainage only.....	70,255,718	4,574,249	0.06
Ditches and levees.....	68,854,052	3,257,382	0.06
Tile drains and levees.....	8,317,930	194,238	0.02
Ditches, tile drains, and levees.....	12,083,736	1,122,620	0.09
Drainage, all or part by pumping.....	3,622,426	3,030,786	0.84
All drainage by pumping.....	1,598,350	1,893,554	1.18
Part gravity and part pumping.....	2,024,076	1,137,232	0.56

Completion of works.—There were only 328 enterprises, covering 3.4 per cent of the land in drainage projects, which reported works under construction on January 1, 1930. This number included both new enterprises which had begun construction of their works and old enterprises which had completed their original plans but were making enlargements or extensions on the above date. The remaining enterprises reported their works as completed. The 1920 census was taken at a time when many new projects had begun construction; hence, the percentage of incomplete enterprises was rather high.

Land and capital invested to January 1, 1930, according to completion of works, are shown by geographic divisions and States in State Table VIII.

TABLE 13.—LAND AND CAPITAL, BY COMPLETION OF WORKS: 1930 AND 1920

ENTERPRISES	Land		CAPITAL		
			Total	Invested	Required for completion
	<i>Acres</i>	<i>Per cent</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>
All enterprises... 1930	84,408,093	100.0	690,078,970	680,732,880	0,346,099
..... 1920	65,405,038	100.0	434,504,970	372,273,567	62,321,412
Enterprises completed..... 1930	81,577,229	96.6	638,625,164	638,625,164	.....
..... 1920	56,763,751	86.7	293,857,023	293,857,023	.....
Enterprises under construction..... 1930	2,830,864	3.4	51,453,816	42,107,710	0,346,099
..... 1920	8,731,287	13.3	140,737,956	78,410,544	62,321,412

Regularity of maintenance.—Approximately 48 per cent of the drainage projects, covering 53 per cent of the land in enterprises, reported systematic maintenance of their drainage works. Doubtless most of these enterprises practiced annual maintenance but others probably did their maintenance work in alternate years. Thus, some enterprises which reported systematic maintenance may have shown no cost of maintenance in 1929.

The remaining projects which did not have systematic maintenance included both enterprises which performed their maintenance work at irregular intervals, and some which had done no maintenance work since the projects were completed.

Regularity of maintenance is shown by geographic divisions and States in State Table VIII.

TABLE 14.—LAND AND CAPITAL, BY REGULARITY OF MAINTENANCE, 1930

MAINTENANCE STATUS	Land		Capital invested to Jan. 1, 1930	
	<i>Acres</i>	<i>Per cent</i>	<i>Dollars</i>	<i>Per cent</i>
All enterprises.....	84,408,093	100.0	680,732,880	100.0
Systematic maintenance.....	44,680,707	52.9	435,960,546	64.0
Nonsystematic maintenance.....	39,727,386	47.1	244,766,334	36.0

Power equipment used for maintenance.—Only 2.5 per cent of the drainage projects, covering approximately 14 per cent of the land in enterprises, owned excavators or other power equipment used principally for maintenance. The remaining enterprises reported no such equipment.

Ownership of power equipment is shown by geographic divisions and States in State Table VIII.

TABLE 15.—LAND AND CAPITAL, BY OWNERSHIP OF POWER EQUIPMENT USED FOR MAINTENANCE, 1930

EQUIPMENT STATUS	Land		Capital invested to Jan. 1, 1930	
	<i>Acres</i>	<i>Per cent</i>	<i>Dollars</i>	<i>Per cent</i>
All enterprises.....	84,408,093	100.0	680,732,880	100.0
Owning power equipment.....	11,610,079	13.8	127,084,521	18.7
Not owning power equipment.....	72,798,014	86.2	553,648,359	81.3

Land not assessed but benefited.—A total of 273,972 acres, or less than one-third of 1 per cent of all land in enterprises, was reported as benefited by the drainage improvements but not assessed for costs. About half of this amount was school land. It is probable that some land so exempted from drainage taxes was not reported and it is also probable that there is a small amount of duplication in the acreage due to overlapping. The results are only approximate. The land shown as exempted for reasons "Other or not reported" includes about 6,000 acres in Minnesota which represent "accretions" from shallow lakes drained by the abutting property owners. As the beds of these shallow lakes are State property and therefore cannot be assessed, the benefits which accrue are assessed to the riparian lands in proportion to the "accretions" that will be added to each tract. After drainage the owners may secure title to the reclaimed land.

Approximately 1,000,000 acres of high or ridge land within enterprises located almost entirely in Minnesota, Ohio, and Iowa were also reported as indirectly benefited. These lands are not included in the non-assessed lands. In such cases the costs of drainage were apportioned according to the amount of wet land in each division or tract of land, but the assessment so made was a lien on the entire tract.

TABLE 16.—LAND NOT ASSESSED, BY REASON FOR NONASSESSMENT, 1930

REASON FOR NONASSESSMENT	Land not assessed	
	<i>Acres</i>	<i>Proportion of total</i>
All enterprises.....	273,972	100.0
School land.....	135,416	49.4
State land.....	31,393	11.5
Church land.....	322	0.1
United States Government land.....	35,514	13.0
Land used for right of way.....	49,407	18.0
Other or not reported.....	27,920	10.2

SUMMARY FOR THE UNITED STATES

STATE TABLE I.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER ACRE, AND CONDI

ITEM (See definitions in Introduction)	SOUTH ATLANTIC					EAST SOUTH CENTRAL			
	Virginia	North Carolina	South Carolina	Georgia	Florida	Kentucky	Tennessee	Mississippi	
LAND AREA									
1	Approximate land area.....1930.....acres.....	25,767,680	31,193,600	19,516,800	37,584,000	36,111,040	25,715,840	26,679,630	29,671,680
2	Land in enterprises.....1930.....acres.....	15,042	679,236	208,249	84,255	5,954,934	655,625	593,560	2,388,496
3	.....1920.....acres.....	(1)	542,828	140,631	65,452	1,637,073	358,480	363,071	1,601,444
4	Increase, ² 1920-1930.....per cent.....		25.1	48.7	28.7	263.8	63.4	63.2	86.6
5	Area of all enterprises (overlapping areas included).....1930.....acres.....	15,042	688,436	208,249	84,255	7,373,627	626,408	599,392	3,159,914
6	Excess over land in enterprises (total areas overlapping).....acres.....		9,200			1,418,693	40,783	5,832	171,448
CONDITION AND USE OF LAND									
7	Land unfit to raise any crop.....1930.....acres.....		79,267	33,002	24,114	1,350,593	47,302	133,230	286,155
8	Land unfit to raise any crop prior to drainage.....acres.....	11,270	478,003	113,839	60,449	4,638,795	254,413	407,252	1,475,068
9	Decrease since drainage.....per cent.....	100.0	83.4	71.0	60.1	70.2	81.4	67.3	80.6
10	Land fit to raise a normal crop.....1930.....acres.....	13,138	438,992	139,587	46,592	1,967,568	428,883	367,895	2,434,593
11	Land fit to raise a normal crop prior to drainage.....acres.....	2,008	39,653	51,491	12,704	71,580	143,706	91,541	915,086
12	Increase since drainage ².....per cent.....	554.3	389.6	156.2	266.8		198.4	301.8	166.0
13	Land fit to raise a partial crop.....1930.....acres.....	1,904	160,977	35,660	13,549	2,006,783	109,440	92,525	267,748
14	Land fit to raise a partial crop prior to drainage.....acres.....	1,764	111,580	39,919	11,102	1,244,550	187,506	94,707	508,342
15	Decrease since drainage ².....per cent.....	+7.9	+44.3	10.7	+22.0	+109.5	41.0	2.4	55.3
16	Improved land.....1930.....acres.....	6,042	305,597	75,592	44,975	783,033	445,613	286,008	1,950,356
17	.....1920.....acres.....	(1)	204,928	59,075	20,753	94,580	245,334	103,218	941,239
18	Increase, ² 1920-1930.....per cent.....		49.1	28.0	51.2	727.8	81.6	75.2	107.2
19	Unimproved land—								
20	Woodland.....1930.....acres.....	8,500	209,961	120,313	10,153	1,830,512	101,709	219,510	905,712
21	Other.....1930.....acres.....	500	163,678	12,344	20,127	3,332,389	38,303	88,042	132,428
22	Land in occupied farms.....1930.....acres.....	5,791	331,121	94,744	63,805	395,200	515,191	413,791	2,092,809
23	Land in planted crops.....1930.....acres.....	4,748	267,525	61,606	37,097	216,536	320,084	212,690	1,801,947
24	Woodland cleared and cultivated since drainage.....1930.....acres.....	1,700	88,917	5,800	9,173	107,396	69,491	119,931	787,806
25	Land idle.....1930.....acres.....	9,500	363,415	126,396	35,640	5,595,445	223,064	324,460	975,970
25	Land available for settlement.....1930.....acres.....	0,000	248,147	71,834	4,787	2,325,423	8,274	44,467	687,363
DRAINAGE WORKS, 1930									
26	Ditches—								
27	Completed.....miles.....	40.0	1,483.5	423.0	406.9	5,112.6	1,204.8	1,413.0	4,022.1
28	Additional under construction.....miles.....		42.6	36.5		400.6		3.5	42.0
29	Tile drains—								
30	Completed.....miles.....			160.0	40.0		71.0		43.5
31	Additional under construction.....miles.....		0.0						
32	Levees and dikes—								
33	Completed.....miles.....		22.0	11.0		718.4		20.8	227.7
34	Additional under construction.....miles.....					49.5			10.2
35	Pumping plants—								
36	Engine or motor capacity.....horsepower.....		3,000		60	5,065			370
37	Pump capacity.....gallons per minute.....		1,000,000		4,000	1,969,799			169,000
38	Land served by pumps.....acres.....		100,000		200	129,872			8,040
39	Wells—								
40	Pumped for drainage.....number.....								
41	Land drained by ditches only ³.....acres.....	15,042	573,996	207,049	80,555	1,731,452	563,925	502,882	2,326,238
42	Length of ditches.....miles.....	40.0	1,427.6	441.5	451.9	2,065.0	1,148.7	1,372.5	3,363.0
43	Land drained by tile only ³.....acres.....								2,400
44	Length of tile.....miles.....								20.0
45	Land drained by ditches and tile ³.....acres.....					3,000			5,131
46	Length of ditches.....miles.....					25.0			30.5
47	Length of tile.....miles.....					40.0			23.5
48	Land having ditches and levees ³.....acres.....		3,800			3,720,794		30,678	554,410
49	Length of ditches.....miles.....		17.0			2,364.4		44.0	457.9
50	Length of levees.....miles.....		8.0			570.1		20.8	221.9
51	Land having tile drains and levees.....acres.....								
52	Length of tile.....miles.....								
53	Length of levees.....miles.....								
54	Land having ditches, tile drains, and levees ³.....acres.....		1,440	1,200					
55	Length of ditches.....miles.....		6.5	18.0					
56	Length of tile.....miles.....		6.0	150.0					
57	Length of levees.....miles.....		1.0	11.0					
58	Land drained by pumps and other drainage works ⁴.....acres.....		100,000		700	502,688			100,317
59	Length of ditches.....miles.....		75.0		20.0	1,143.8			212.7
60	Length of tile.....miles.....								
61	Length of levees.....miles.....		13.0			217.8			16.0
62	Land protected by levees of an outside agency.....acres.....					109,609		1,500	1,548,244
CAPITAL INVESTED AND COST PER ACRE									
63	Capital invested in enterprises to Jan. 1, 1930.....dollars.....	241,608	4,719,070	1,265,276	1,918,525	45,487,795	5,357,633	6,366,747	23,601,443
64	.....1920.....dollars.....	(1)	3,023,518	582,183	794,585	13,846,807	1,521,725	2,025,044	7,076,164
65	Increase, ² 1920-1930.....per cent.....		30.2	117.3	141.4	228.5	252.1	117.6	233.5
66	Estimated cost of enterprises when completed.....1930.....dollars.....	241,608	4,848,738	1,333,276	1,918,525	48,407,539	5,357,633	6,416,812	23,802,443
67	.....1920.....dollars.....	(1)	4,526,018	936,514	1,098,249	29,762,497	1,820,996	3,447,991	8,561,264
68	Average, per acre when completed.....1930.....dollars.....	16.06	7.14	6.40	22.77	8.13	9.15	10.81	8.00
69	.....1920.....dollars.....	(1)	8.34	6.69	16.78	16.35	5.08	9.48	5.35
70	Invested in and required for completion of—								
71	Enterprises having ditches only.....1930.....dollars.....	241,608	4,039,738	1,198,276	1,848,525	13,784,166	5,065,717	5,923,172	17,673,440
72	Average, per acre.....dollars.....	16.06	7.04	5.79	22.95	7.96	9.00	10.52	7.60
73	Enterprises having tile drains only.....1930.....dollars.....						1,979		20,000
74	Average, per acre.....dollars.....						16.91		8.33
75	Enterprises having ditches and tile drains.....1930.....dollars.....				20,000		289,937		51,600
76	Average, per acre.....dollars.....		46,000		6.67		12.00		10.06
77	Enterprises having ditches and levees.....1930.....dollars.....		12.11			29,678,316		493,640	5,181,122
78	Average, per acre.....dollars.....					7.08		16.09	0.35
79	Enterprises having tile drains and levees.....1930.....dollars.....								
80	Average, per acre.....dollars.....		13,000	135,000					
81	Enterprises having ditches, tile drains, and levees.....1930.....dollars.....		9.03	112.60					
82	Average, per acre.....dollars.....		760,000		50,000	4,945,057			976,281
83	Enterprises having pumps and other drainage works.....1930.....dollars.....		7.50		71.43				0.73
84	Average, per acre.....dollars.....								

1 No organized drainage enterprises reported.

2 A minus sign (-) denotes decrease. A plus sign (+) denotes increase. Per cent not shown when more than 1,000.

3 When works under construction have been completed.

4 Area of enterprises having some land served by pumps.

DRAINAGE

TION AND USE OF LAND, 1930 AND 1920; AND DRAINAGE WORKS, 1930; BY DIVISIONS AND STATES—Continued

WEST SOUTH CENTRAL				MOUNTAIN								PACIFIC			
Arkansas	Louisiana	Oklahoma	Texas	Montana	Idaho	Wyoming	Colorado	New Mexico	Arizona	Utah	Nevada	Washington	Oregon	California	
33,016,000	29,081,760	44,424,960	167,934,720	63,523,840	53,346,560	62,430,720	66,341,120	78,401,920	72,838,400	52,597,760	70,285,440	42,775,040	61,188,480	99,617,280	1
4,631,155	3,655,483	170,158	2,883,356	167,620	375,464	245,703	366,710	170,292	318,931	156,052	102,080	367,242	211,182	2,233,714	2
3,479,591	2,266,928	12,150	2,166,128	168,682	64,642	95,474	171,656	140,219	39,640	113,823	15,940	94,924	4,000	1,108,310	3
33.1	61.3	33.1	33.1	-0.6	480.8	157.4	113.6	25.7	704.6	37.1	922.5	286.0		101.5	4
5,764,808	4,093,113	171,118	2,883,356	167,620	375,464	248,310	367,350	170,292	318,931	156,052	102,980	304,851	211,182	2,294,068	5
1,133,653	437,630	660				2,613	640					27,600		60,354	6
586,661	786,889	5,734	218,617	6,388	13,670	9,021	5,504	15,220	4,125	5,600	139	0,879	30,575	12,619	7
2,418,309	1,759,753	101,894	966,577	58,960	146,490	99,947	193,536	60,868	103,681	59,901	53,029	133,588	131,623	1,084,124	8
75.7	55.3	91.4	77.4	89.2	90.7	91.0	97.2	75.0	90.0	90.0	99.7	92.6	76.8	98.8	9
3,435,280	2,486,972	143,221	2,178,417	152,871	333,204	210,762	313,039	144,760	313,112	142,041	160,109	320,166	153,381	2,011,189	10
1,385,111	1,133,171	36,421	1,052,337	83,042	160,865	115,263	88,319	50,524	214,950	41,910	90,551	161,800	53,100	633,625	11
148.0	119.5	293.2	107.0	84.1	107.1	90.7	254.4	186.5	45.7	241.1	76.8	108.4	188.0	217.7	12
609,211	381,622	21,203	456,322	8,370	28,560	16,920	48,176	16,322	1,604	7,511	2,732	28,197	27,226	209,906	13
827,675	762,559	31,843	864,442	25,627	68,109	30,493	84,864	64,000	300	54,241	10,400	71,814	20,450	516,565	14
26.4	50.0	33.4	43.7	67.3	58.0	44.5	43.2	74.9	-464.7	86.2	85.0	80.7	-2.0	59.4	15
2,614,427	2,267,737	142,766	2,011,044	148,768	354,575	181,828	302,023	146,557	309,112	137,062	122,918	332,205	144,253	2,007,987	16
1,491,777	1,260,391	8,845	1,107,153	141,252	62,098	84,846	123,031	92,477	36,880	97,314	7,970	81,880	4,000	1,038,835	17
75.3	78.6	81.6	81.6	5.3	580.6	114.3	145.5	58.5	738.2	41.8		305.8		83.3	18
1,762,968	746,560	11,923	176,511		637	1,100			75	4,759		18,531	9,912	8,500	19
263,770	641,186	15,469	695,801	18,861	20,252	62,775	64,696	29,735	0,744	13,331	40,062	16,440	57,017	217,227	20
2,040,035	2,571,531	103,036	1,895,486	150,844	302,303	188,327	305,966	151,516	304,802	169,518	155,491	351,898	146,576	2,024,446	21
2,425,632	1,822,620	135,956	1,278,207	114,266	334,546	163,015	274,922	137,570	278,060	90,368	113,512	309,818	116,987	1,794,313	22
798,381	404,429	20,240	209,524	1,675	4,675	1,675	4,280	60,000	1,760	1,760		24,065	11,188	15,354	23
2,035,403	1,348,437	26,092	816,461	18,170	28,673	64,478	69,780	30,996	39,219	60,046	45,306	33,764	52,663	360,292	24
1,210,414	338,867	1,063	772,223	7,243	6,836	30,505	53,513	13,400	1,519	20,651	7,489	4,653	48,784	52,700	25
4,974.3	7,701.2	303.0	3,661.8	284.2	651.2	521.0	814.0	282.9	340.4	304.3	334.8	746.7	495.1	4,605.9	26
64.0	43.7	6.5	68.0	25.0	20.5	33.0	6.5	29.5		6.8	11.8	6.5	58.0	108.1	27
0.1	2.0		8.5	76.7	19.9	237.6	369.5	305.4	14.3	1,944.5	4.0	109.2	42.5	486.2	28
						6.5							0.2		29
201.0	576.3		215.0		74.8			12.0	2.5	2.0	33.0	78.8	121.4	1,389.5	30
1.0	9.0				14.0							3.0	18.0	5.0	31
515	6,405		510		1,435			10,780			18	982	2,173	41,748	32
156,500	2,950,500		33,930		174,675			458,750			900	184,500	488,800	5,548,000	33
18,201	123,163		21,079		46,434			130,000			60	19,857	50,386	1,022,062	34
			44		6			172					1	218	35
3,902,617	3,100,265	170,158	2,047,425	73,095	140,546	125,043	112,143	5,340	23,483	18,724	84,096	244,606	26,785	94,430	36
4,108.5	6,873.0	300.5	3,144.6	138.2	271.8	341.1	525.9	7.3	23.0	46.5	83.8	504.8	79.3	272.7	37
			3,817	220	220	14,740	12,518	25,072	2,808	12,210		26,414	500	4,295	38
			10.3	3.7	3.7	17.2	85.3	130.0	7.5	71.5		71.3	2.0	24.1	39
8,800	5,000		217,000	90,717	41,029	105,920	242,058	57,590	640	124,518		54,138	58,724	546,017	40
15.0	2.0		170.0	171.0	87.2	212.0	295.5	30.6	0.2	262.6		129.5	138.3	342.2	41
0.1	2.0		8.4	60.4	13.6	226.0	284.2	175.4	1.5	1,873.0		99.1	16.8	313.7	42
544,387	427,055		513,052		1,200			87,400		600	1,600	7,732	34,452	284,894	43
628.8	328.1		172.7		1.0			274.5		2.0	10.0	20.5	65.0	347.0	44
198.9	290.2		170.0		1.0			12.0		2.0	10.0	8.5	10.1	211.0	45
															46
															47
															48
															49
															50
															51
															52
175,261	123,163		87,279		192,460				292,000		77,284	27,312	90,721	1,200,830	53
280.0	641.8		202.5		311.7				320.2		252.8	75.9	260.5	3,733.8	54
					2.6				5.3		4.0	3.5	23.7	143.5	55
4.0	286.1		37.0		87.8				2.5		23.0	69.3	129.3	1,174.4	56
2,534,714	1,208,976		75,000					15,000				27,012	14,978	301,274	57
															58
37,532,575	20,762,645	2,283,508	12,002,940	1,879,296	5,112,444	5,250,573	4,358,860	3,270,371	1,875,100	4,772,000	1,349,774	4,637,576	4,165,549	66,451,668	59
14,147,174	9,021,991	76,415	5,700,805	664,900	1,608,569	1,175,062	1,081,875	1,710,709	414,425	1,005,473	117,851	1,307,419	200,000	47,687,153	60
165.3	130.0		110.5	182.0	206.4	346.5	302.0	91.7	362.5	374.6		231.9		30.3	61
37,829,775	20,070,245	2,303,798	12,186,628	1,930,427	5,345,944	5,599,032	4,395,866	3,474,631	4,894,000	4,894,000	1,400,174	4,655,076	4,843,047	67,251,068	62
25,888,500	9,900,788	77,415	6,400,805	846,466	1,788,569	1,067,367	1,285,070	2,096,290	1,020,425	2,870,773	117,851	1,436,419	200,000	54,021,627	63
8.17	5.74	13.54	4.23	11.87	14.24	22.70	11.00	10.71	6.29	30.78	8.59	12.68	22.94	30.11	64
7.44	4.41	6.37	2.95	5.02	27.67	17.46	7.40	20.73	25.89	25.22	7.30	15.13	50.00	48.74	65
25,250,957	11,480,723	2,303,798	6,334,325	689,541	1,358,479	1,651,787	1,304,000	30,000	145,500	260,900	295,091	2,175,343	405,566	1,780,000	66
6.47	3.71	13.54	3.09	9.43	9.66	13.21	12.16	5.62	6.20	14.25	3.51	8.89	15.14	17.09	67
				50,904	18,582	337,000	292,700	401,935	65,000	305,000		505,223	20,000	222,362	68
				15.09	81.14	22.80	23.38	18.04	23.30	24.08		22.53	40.00	51.77	69
20,500	15,000		1,030,000	1,230,982	820,144	3,610,245	2,730,160	014,800	7,000	4,212,100		1,183,953	1,008,055	3,614,671	70
2.98	3.00		4.75	13.67	19.90	34.08	11.32	15.80	10.94	33.83		21.87	17.17	6.61	71
8,723,318	3,131,722		2,214,671		50,5										

SUMMARY FOR THE UNITED STATES

STATE TABLE II.—NUMBER, AREA,¹ AND LAND OF DRAINAGE ENTERPRISES, BY SIZE, BY DIVISIONS AND STATES: 1930 AND 1920

DIVISION AND STATE	TOTAL						LESS THAN 100 ACRES ²		
	Enterprises		Area		Land		Enter- prises, 1930	Area, 1930	Land, 1930
	1930	1920	1930	1920	1930	1920			
	Number	Number	Acres	Acres	Acres	Acres	Number	Acres	Acres
Total (35 States).....	67,927	47,369	128,495,078	95,029,291	84,408,093	65,495,038	6,077	324,157	175,237
GEOGRAPHIC DIVISIONS:									
East North Central.....	57,462	40,193	68,730,722	59,131,079	33,485,754	31,627,176	5,850	310,802	165,764
West North Central.....	7,505	5,865	29,223,484	21,262,120	23,690,882	19,217,367	203	12,455	8,729
South Atlantic.....	369	261	8,360,000	2,517,852	6,041,716	2,385,384	5	270	270
East South Central.....	751	441	4,385,744	2,320,635	4,167,081	2,323,595	4	162	162
West South Central.....	1,177	344	12,012,395	8,303,124	11,340,152	7,924,197			
Mountain.....	218	98	1,073,023	810,070	1,060,770	810,076	2	153	153
Pacific.....	385	197	2,000,101	1,217,796	2,812,138	1,207,243	4	306	150
EAST NORTH CENTRAL:									
Ohio.....	26,191	18,607	24,010,020	23,464,812	8,165,494	8,107,204	2,037	140,097	85,793
Indiana.....	18,339	11,848	23,049,787	15,015,221	10,214,014	9,037,183	2,505	120,770	53,983
Illinois.....	1,919	1,365	5,741,910	4,090,599	5,032,082	3,009,049	10	510	328
Michigan.....	10,640	8,583	15,032,692	15,766,478	9,180,851	9,729,171	623	38,582	24,420
Wisconsin.....	373	290	895,698	794,569	892,713	794,569	24	1,231	1,231
WEST NORTH CENTRAL:									
Minnesota.....	2,885	2,340	14,631,505	9,074,662	11,474,683	9,232,700	57	3,423	3,374
Iowa.....	3,730	2,883	7,397,044	5,005,743	6,137,049	5,224,478	138	8,604	4,927
Missouri.....	367	238	4,111,570	3,104,889	3,150,022	2,596,204			
North Dakota.....	152	137	1,183,382	1,240,328	1,004,142	1,240,328			
South Dakota.....	205	00	697,758	234,201	697,758	222,002	7	348	348
Nebraska.....	138	123	863,800	708,450	870,450	607,730	1	80	80
Kansas.....	88	54	257,720	93,856	257,160	93,856			
SOUTH ATLANTIC:									
Virginia.....	3	(3)	15,042	(3)	15,042	(3)			
North Carolina.....	130	104	688,436	552,428	679,230	542,828	2	98	98
South Carolina.....	31	17	208,249	140,031	208,249	140,031	1	39	39
Georgia.....	59	46	84,255	65,452	84,255	65,452	2	142	142
Florida.....	146	94	7,373,627	1,759,941	5,954,934	1,637,073			
EAST SOUTH CENTRAL:									
Kentucky.....	216	170	626,408	358,480	585,625	358,480			
Tennessee.....	191	95	599,392	363,671	593,560	363,671	3	97	97
Mississippi.....	344	167	3,150,944	1,604,484	2,988,496	1,601,444	1	65	65
WEST SOUTH CENTRAL:									
Arkansas.....	316	174	5,764,808	3,842,812	4,631,155	3,479,591			
Louisiana.....	741	111	4,093,113	2,342,034	3,655,483	2,266,328			
Oklahoma.....	33	5	171,118	12,150	170,153	12,150			
Texas.....	87	54	2,883,356	2,166,128	2,883,356	2,166,128			
MOUNTAIN:									
Montana.....	27	17	167,629	168,682	167,629	168,682			
Idaho.....	50	13	375,464	64,642	375,464	64,642	2	153	153
Wyoming.....	26	15	248,316	95,474	245,703	95,474			
Colorado.....	58	24	367,359	171,656	366,719	171,656			
New Mexico.....	11	8	176,292	140,219	170,292	140,219			
Arizona.....	7	3	313,931	39,640	318,931	39,640			
Utah.....	32	17	156,052	113,823	156,052	113,823			
Nevada.....	7	1	162,980	15,940	162,980	15,940			
PACIFIC:									
Washington.....	172	52	394,851	105,477	367,242	94,924	2	156	
Oregon.....	51	1	211,182	4,000	211,182	4,000	2	150	150
California.....	162	144	2,294,098	1,108,319	2,233,714	1,108,319			

¹ The sum of the areas of individual enterprises, including overlap.² The group "Less than 100 acres" included in group "100 to 199 acres" for 1920.³ No organized drainage enterprises reported.

DRAINAGE

29

STATE TABLE II.—NUMBER, AREA,¹ AND LAND OF DRAINAGE ENTERPRISES, BY SIZE, BY DIVISIONS AND STATES: 1930 AND 1920—Continued

DIVISION AND STATE	100 TO 199 ACRES ²						200 TO 499 ACRES					
	Enterprises		Area		Land		Enterprises		Area		Land	
	1930	1920	1930	1920	1930	1920	1930	1920	1930	1920	1930	1920
	Number	Number	Acres	Acres	Acres	Acres	Number	Number	Acres	Acres	Acres	Acres
Total (35 States).....	7,099	9,075	1,040,664	1,152,025	574,791	791,506	17,880	13,130	5,984,023	5,222,615	3,292,826	3,263,873
GEOGRAPHIC DIVISIONS:												
East North Central.....	6,704	8,464	981,712	1,079,778	533,213	731,461	16,535	11,780	5,522,430	4,758,575	2,916,646	2,860,268
West North Central.....	362	550	54,147	49,024	37,539	57,144	1,208	1,256	413,058	431,234	331,376	372,502
South Atlantic.....	5	8	668	648	608	618	25	17	8,711	5,761	8,711	5,761
East South Central.....	10	17	1,396	1,772	1,396	1,772	66	57	22,023	20,587	22,923	20,587
West South Central.....	1	---	110	---	110	---	5	6	1,708	3,497	1,003	2,597
Mountain.....	3	1	461	140	464	140	4	---	1,544	---	1,544	---
Pacific.....	14	5	2,167	663	1,401	341	37	8	13,040	2,961	10,623	2,158
EAST NORTH CENTRAL:												
Ohio.....	3,469	5,001	508,937	658,953	261,966	418,913	7,830	5,623	2,610,498	2,495,990	1,157,809	1,274,870
Indiana.....	2,100	2,201	307,243	255,985	167,571	104,640	5,207	3,479	1,720,422	1,218,792	989,248	878,821
Illinois.....	23	34	3,363	3,951	1,186	2,680	201	147	69,788	50,556	31,427	32,153
Michigan.....	1,082	1,108	158,923	155,089	98,374	109,428	3,292	2,451	1,076,140	967,221	710,571	648,495
Wisconsin.....	30	57	4,116	5,800	4,116	5,800	89	86	27,591	26,010	27,591	26,010
WEST NORTH CENTRAL:												
Minnesota.....	94	304	14,230	36,177	14,043	35,877	335	554	110,324	191,751	112,053	188,974
Iowa.....	257	263	38,501	31,250	22,080	10,670	812	655	276,093	222,770	198,342	167,264
Missouri.....	2	1	206	177	206	177	11	3	3,907	1,058	3,207	1,058
North Dakota.....	---	---	---	---	---	---	---	---	---	---	---	---
South Dakota.....	7	6	872	519	872	519	30	28	10,635	10,027	10,635	10,027
Nebraska.....	1	2	160	320	160	320	8	3	2,461	1,200	2,304	760
Kansas.....	1	4	172	575	172	575	12	13	4,235	4,419	4,235	4,419
SOUTH ATLANTIC:												
Virginia.....	---	---	---	---	---	---	---	---	---	---	---	---
North Carolina.....	3	2	418	120	418	120	15	9	5,075	2,907	5,075	2,907
South Carolina.....	---	1	---	40	---	40	1	---	496	---	496	---
Georgia.....	2	5	250	488	250	488	7	8	2,316	2,704	2,316	2,704
Florida.....	---	---	---	---	---	---	2	---	824	---	824	---
EAST SOUTH CENTRAL:												
Kentucky.....	6	10	795	1,051	795	1,051	23	45	7,530	16,537	7,530	16,537
Tennessee.....	2	1	271	121	271	121	23	6	8,423	2,150	8,423	2,150
Mississippi.....	2	---	330	---	330	---	20	6	6,964	1,894	6,964	1,894
WEST SOUTH CENTRAL:												
Arkansas.....	1	---	110	---	110	---	3	3	1,038	1,140	333	240
Louisiana.....	---	---	---	---	---	---	---	---	---	---	---	---
Oklahoma.....	---	---	---	---	---	---	2	1	670	400	670	400
Texas.....	---	---	---	---	---	---	---	2	1,957	---	---	1,957
MOUNTAIN:												
Montana.....	1	---	120	---	120	---	1	---	387	---	387	---
Idaho.....	1	---	154	---	154	---	1	---	255	---	255	---
Wyoming.....	---	1	---	140	---	140	---	---	---	---	---	---
Colorado.....	---	---	---	---	---	---	2	---	902	---	902	---
New Mexico.....	---	---	---	---	---	---	---	---	---	---	---	---
Arizona.....	---	---	---	---	---	---	---	---	---	---	---	---
Utah.....	1	---	190	---	190	---	---	---	---	---	---	---
Nevada.....	---	---	---	---	---	---	---	---	---	---	---	---
PACIFIC:												
Washington.....	11	3	1,750	322	900	---	27	5	9,314	1,625	6,897	822
Oregon.....	3	---	411	---	411	---	6	---	1,910	---	1,910	---
California.....	---	2	---	341	---	341	4	3	1,810	1,336	1,810	1,336

¹ The sum of the areas of individual enterprises, including overlap.

² The group "Less than 100 acres" included in group "100 to 199 acres" for 1920.

SUMMARY FOR THE UNITED STATES

STATE TABLE II.—NUMBER, AREA,¹ AND LAND OF DRAINAGE ENTERPRISES, BY SIZE, BY DIVISIONS AND STATES: 1930 AND 1920—Continued

DIVISION AND STATE	500 TO 999 ACRES						1,000 TO 4,000 ACRES					
	Enterprises		Area		Land		Enterprises		Area		Land	
	1930	1920	1930	1920	1930	1920	1930	1920	1930	1920	1930	1920
	Number	Number	Acres	Acres	Acres	Acres	Number	Number	Acres	Acres	Acres	Acres
Total (35 States).....	15,765	10,712	11,130,096	9,091,516	6,329,741	5,456,072	16,767	11,757	34,074,009	29,522,536	20,552,211	18,632,901
GEOGRAPHIC DIVISIONS:												
East North Central.....	13,477	9,333	9,502,405	8,114,828	4,910,904	4,582,226	12,844	9,385	25,369,074	24,250,222	12,856,847	13,792,323
West North Central.....	1,541	1,216	1,114,777	862,073	949,942	764,032	2,925	1,877	6,434,818	4,114,017	5,558,820	3,728,005
South Atlantic.....	57	47	40,263	33,246	39,453	33,246	128	95	292,049	204,181	270,861	198,431
East South Central.....	122	63	84,791	45,397	78,311	44,597	333	200	759,863	449,067	725,094	446,827
West South Central.....	472	10	321,936	6,688	289,293	4,968	273	68	594,907	181,683	535,954	159,956
Mountain.....	27	15	18,182	10,064	17,642	10,064	102	45	202,636	110,799	200,023	110,799
Pacific.....	69	28	47,742	19,220	44,236	16,859	162	87	300,642	212,567	344,690	205,470
EAST NORTH CENTRAL:												
Ohio.....	6,184	4,058	4,364,144	3,928,812	1,749,864	1,625,720	5,512	3,493	10,532,356	9,615,220	3,618,980	3,288,121
Indiana.....	4,117	2,812	2,896,966	2,098,534	1,643,358	1,526,423	3,645	2,465	7,256,727	5,017,315	3,737,747	3,528,421
Illinois.....	441	290	320,560	210,371	216,087	169,207	942	675	2,100,720	1,547,068	1,832,131	1,447,048
Michigan.....	2,656	2,133	1,866,876	1,840,136	1,249,207	1,232,901	2,631	2,674	5,193,743	7,062,624	3,454,032	5,359,782
Wisconsin.....	79	40	53,853	27,975	52,448	27,975	114	78	225,528	168,651	223,948	168,651
WEST NORTH CENTRAL:												
Minnesota.....	487	437	356,396	307,812	343,443	303,215	1,235	610	2,828,230	1,385,737	2,537,592	1,335,447
Iowa.....	927	704	663,537	500,453	520,966	409,317	1,290	1,010	2,639,362	2,065,702	2,157,620	1,704,264
Missouri.....	37	18	28,667	13,154	21,393	10,991	149	98	373,337	230,414	293,633	217,559
North Dakota.....	3	1	2,120	640	2,120	640	62	59	184,520	148,680	164,730	148,680
South Dakota.....	43	18	33,181	13,495	33,181	13,495	92	30	191,305	68,146	191,305	56,007
Nebraska.....	23	22	15,649	14,570	14,169	14,570	58	63	139,639	173,192	135,599	143,052
Kansas.....	21	16	15,227	11,944	14,670	11,944	39	10	78,425	33,086	78,425	33,086
SOUTH ATLANTIC:												
Virginia.....							2		5,504		5,504	
North Carolina.....	26	23	17,924	15,928	17,924	15,928	52	44	117,907	96,026	115,107	93,226
South Carolina.....	5	3	3,655	2,198	3,655	2,198	11	8	27,109	19,793	27,109	19,793
Georgia.....	22	16	15,704	11,750	15,704	11,750	23	14	40,043	25,205	40,043	25,205
Florida.....	4	5	2,080	3,370	2,170	3,370	40	26	101,486	63,157	83,101	60,297
EAST SOUTH CENTRAL:												
Kentucky.....	55	33	36,596	23,143	35,605	23,143	90	67	202,222	130,176	198,470	130,176
Tennessee.....	39	17	28,581	12,465	28,581	12,465	91	49	209,899	117,651	205,619	117,651
Mississippi.....	28	13	19,795	9,789	14,125	8,989	143	84	347,762	201,240	320,915	199,000
WEST SOUTH CENTRAL:												
Arkansas.....	17	5	12,060	3,669	7,700	1,049	91	39	235,900	103,001	187,316	80,780
Louisiana.....	454	4	309,076	2,269	280,793	2,269	146	25	258,098	64,093	249,289	55,557
Oklahoma.....		1		760		760	10	2	46,570	5,000	45,616	5,000
Texas.....	1		800		800		17	2	53,733	9,619	53,733	9,619
MOUNTAIN:												
Montana.....	6	2	4,093	1,307	4,093	1,307	13	10	34,157	23,711	34,157	23,711
Idaho.....	8	4	5,632	2,472	5,632	2,472	23	6	60,005	15,210	60,005	15,210
Wyoming.....		1		500		500	11	7	33,438	21,514	30,825	21,514
Colorado.....	9	5	5,986	3,399	5,346	3,399	25	11	59,784	21,260	59,784	21,260
New Mexico.....							3		8,740		8,740	
Arizona.....	1	1	640	640	640	640	3		5,691		5,691	
Utah.....	3	2	1,831	1,749	1,831	1,749	21	11	53,981	20,104	53,981	20,104
Nevada.....							3		7,740		7,740	
PACIFIC:												
Washington.....	47	13	32,331	9,161	28,825	6,830	72	26	139,169	52,820	125,986	46,723
Oregon.....	7		5,052		5,052		21	1	42,697	4,000	42,697	4,000
California.....	15	15	10,359	10,059	10,359	10,059	69	60	178,776	155,747	176,016	155,747

¹ The sum of the areas of individual enterprises, including overlap.

DRAINAGE

STATE TABLE II.—NUMBER, AREA,¹ AND LAND OF DRAINAGE ENTERPRISES, BY SIZE, BY DIVISIONS AND STATES: 1930 AND 1920—Continued

DIVISION AND STATE	5,000 TO 9,999 ACRES						10,000 TO 49,999 ACRES					
	Enterprises		Area		Land		Enterprises		Area		Land	
	1930	1920	1930	1920	1930	1920	1930	1920	1930	1920	1930	1920
	Number	Number	Acres	Acres	Acres	Acres	Number	Number	Acres	Acres	Acres	Acres
Total (35 States).....	2,291	1,472	15,865,002	13,357,936	10,354,392	9,191,006	1,814	1,107	35,075,951	23,820,149	24,105,040	17,737,704
GEOGRAPHIC DIVISIONS:												
East North Central.....	1,216	835	8,505,740	8,872,008	4,208,374	4,972,214	740	359	13,377,514	8,011,127	5,952,434	3,725,483
West North Central.....	686	440	4,851,362	3,111,888	3,065,475	2,805,515	573	451	10,019,015	9,000,603	8,516,089	8,016,542
South Atlantic.....	50	31	338,489	231,818	200,070	194,000	72	46	1,526,046	1,009,085	1,162,611	940,885
East South Central.....	103	47	701,298	328,020	603,258	328,020	103	51	1,996,099	911,332	1,027,355	911,332
West South Central.....	121	69	807,873	471,420	702,462	437,840	247	145	5,523,438	3,257,131	4,837,376	3,083,251
Mountain.....	35	17	254,056	128,883	254,056	128,883	39	17	804,211	336,190	804,211	336,190
Pacific.....	50	33	346,178	223,304	330,007	223,304	40	36	804,028	694,081	815,534	604,081
EAST NORTH CENTRAL:												
Ohio.....	373	300	2,540,773	2,850,517	955,813	823,323	175	122	2,073,427	3,152,280	580,580	671,127
Indiana.....	307	229	2,727,803	1,718,075	1,100,008	1,050,216	274	141	5,088,005	2,917,817	1,677,442	1,480,005
Illinois.....	203	144	1,360,351	976,000	1,210,534	955,010	98	74	1,728,101	1,239,719	1,609,508	1,239,709
Michigan.....	254	151	1,743,097	3,251,318	1,071,007	2,050,220	177	5	3,281,204	1,072,885	1,772,727	199,256
Wisconsin.....	19	11	124,722	75,427	124,722	75,427	16	14	306,177	238,420	306,177	238,420
WEST NORTH CENTRAL:												
Minnesota.....	335	177	2,388,231	1,250,804	1,700,800	1,155,678	306	234	5,968,444	4,630,074	4,470,501	4,150,542
Iowa.....	185	141	1,295,465	1,005,124	1,143,475	928,723	110	107	2,054,594	1,895,407	1,723,300	1,732,004
Missouri.....	64	48	450,062	311,884	377,076	302,068	85	60	1,721,812	1,557,927	1,210,054	1,306,271
North Dakota.....	53	51	394,082	358,300	366,172	353,300	32	32	479,500	501,377	438,500	501,377
South Dakota.....	15	3	97,062	17,788	97,062	17,788	9	5	190,697	124,226	190,697	124,226
Nebraska.....	23	17	140,908	115,106	144,038	110,106	21	14	413,263	275,562	413,263	210,422
Kansas.....	11	3	74,062	22,792	74,062	22,792	4	2	84,705	21,040	84,705	21,040
SOUTH ATLANTIC:												
Virginia.....	1		9,538		9,538							
North Carolina.....	12	11	81,272	71,717	74,872	64,917	10	14	365,742	205,040	305,742	205,040
South Carolina.....	7	3	44,628	20,400	44,628	20,400	6	1	132,322	40,000	132,322	40,000
Georgia.....	2	2	15,800	15,245	15,800	15,245	1	1	10,000	10,000	10,000	10,000
Florida.....	28	18	187,251	114,450	145,832	94,038	40	30	1,017,982	694,045	654,577	625,245
EAST SOUTH CENTRAL:												
Kentucky.....	19	11	122,746	79,592	113,740	70,592	13	7	200,098	107,381	183,787	107,381
Tennessee.....	17	13	115,598	91,612	115,598	91,612	16	9	230,523	130,600	234,971	130,600
Mississippi.....	67	23	462,951	157,410	373,914	157,410	74	36	1,558,678	664,285	1,508,697	664,285
WEST SOUTH CENTRAL:												
Arkansas.....	67	39	493,382	274,227	357,086	240,647	111	68	2,414,091	1,473,391	1,931,363	1,360,711
Louisiana.....	37	22	250,448	150,161	230,333	153,161	90	47	2,044,403	1,037,196	1,835,759	975,996
Oklahoma.....	9	1	60,381	6,000	60,381	6,000	3		63,491		63,491	
Texas.....	8	4	54,662	32,032	54,662	32,032	43	30	1,006,793	746,544	1,000,793	746,544
MOUNTAIN:												
Montana.....	2	3	11,792	10,664	11,792	10,664	4	1	117,080	24,000	117,080	24,000
Idaho.....	8	1	60,291	6,960	60,291	6,960	6	2	181,947	40,000	181,947	40,000
Wyoming.....	9	4	63,067	27,400	63,067	27,400	5	2	100,375	45,920	100,375	45,920
Colorado.....	9	3	73,941	26,000	73,941	26,000	13	4	226,746	71,000	226,746	71,000
New Mexico.....	4	4	29,456	34,579	29,456	34,579	3	3	54,102	31,040	54,102	31,040
Arizona.....		1	9,000		9,000		1	1	20,600	30,000	20,600	30,000
Utah.....		3	15,545	5,280	15,545	5,280	4	3	85,405	77,600	85,405	77,600
Nevada.....							3	1	77,950	15,940	77,950	15,940
PACIFIC:												
Washington.....	10	3	74,317	19,649	66,736	19,649	2	2	47,808	21,000	47,808	21,000
Oregon.....	8		51,451		51,451		4		109,511		109,511	
California.....	32	30	220,410	203,655	211,010	203,655	34	33	707,399	672,181	658,215	672,181

¹The sum of the areas of individual enterprises, including overlap.

SUMMARY FOR THE UNITED STATES

STATE TABLE II.—NUMBER, AREA,¹ AND LAND OF DRAINAGE ENTERPRISES, BY SIZE, BY DIVISIONS AND STATES: 1930 AND 1920—Continued

DIVISION AND STATE	50,000 TO 99,999 ACRES						100,000 ACRES AND OVER ²					
	Enterprises		Area		Land		Enterprises		Area		Land	
	1930	1920	1930	1920	1930	1920	1930	1920	1930	1920	1930	1920
Total (35 States).....	Number	Number	Acres	Acres	Acres	Acres	Number	Number	Acres	Acres	Acres	Acres
	108	116	11,403,982	8,605,530	8,577,771	6,508,673	66	31	13,597,194	4,850,978	10,445,484	3,923,243
GEOGRAPHIC DIVISIONS:												
East North Central.....	42	20	2,887,378	2,639,347	1,200,366	941,752	15	5	2,273,652	755,799	741,140	21,449
West North Central.....	53	31	3,502,044	2,035,668	2,800,754	1,884,518	14	11	1,920,308	1,631,624	1,480,158	1,468,939
South Atlantic.....	11	11	732,777	662,513	594,877	602,513	16	3	5,430,327	380,000	4,573,553	349,300
East South Central.....	9	4	687,514	320,400	677,594	320,400	1	2	131,678	249,460	131,678	249,460
West South Central.....	43	40	2,888,050	2,708,010	2,592,861	2,510,400	15	9	2,709,373	1,734,095	2,381,093	1,734,095
Mountain.....	5	2	329,777	124,000	329,777	124,000	1	1	242,000	100,000	242,000	100,000
Pacific.....	5	1	375,542	65,000	375,542	65,000	4	-----	889,856	-----	889,856	-----
EAST NORTH CENTRAL:												
Ohio.....	5	7	312,707	763,025	45,080	105,121	-----	-----	-----	-----	-----	-----
Indiana.....	27	13	1,878,000	1,032,904	561,187	391,248	7	5	1,044,155	755,799	283,870	21,449
Illinois.....	1	1	98,481	62,333	98,481	62,333	-----	-----	-----	-----	-----	-----
Michigan.....	7	1	445,530	568,205	342,538	120,170	8	-----	1,229,407	-----	457,276	-----
Wisconsin.....	2	4	152,480	262,890	152,480	262,890	-----	-----	-----	-----	-----	-----
WEST NORTH CENTRAL:												
Minnesota.....	28	15	1,838,078	944,846	1,275,578	848,414	8	9	1,167,243	1,226,562	947,699	1,214,562
Iowa.....	4	3	279,408	184,867	228,118	172,570	1	-----	142,080	-----	138,800	-----
Missouri.....	14	8	922,594	546,213	843,894	503,793	5	2	610,985	405,002	399,650	251,377
North Dakota.....	2	3	122,560	231,241	122,560	231,241	-----	-----	-----	-----	-----	-----
South Dakota.....	2	-----	166,758	-----	166,758	-----	-----	-----	-----	-----	-----	-----
Nebraska.....	3	2	172,646	128,500	169,846	128,500	-----	-----	-----	-----	-----	-----
Kansas.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
SOUTH ATLANTIC:												
Virginia.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
North Carolina.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
South Carolina.....	-----	1	-----	57,000	-----	57,000	1	1	100,000	100,000	100,000	100,000
Georgia.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Florida.....	11	10	732,777	604,913	594,877	604,913	15	2	5,330,327	280,000	4,473,553	249,300
EAST SOUTH CENTRAL:												
Kentucky.....	1	-----	55,600	-----	45,686	-----	-----	-----	-----	-----	-----	-----
Tennessee.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Mississippi.....	8	4	631,908	320,400	631,908	320,400	1	2	131,678	249,460	131,678	249,460
WEST SOUTH CENTRAL:												
Arkansas.....	18	16	1,228,710	1,162,120	1,090,010	964,000	8	4	1,379,517	825,204	1,051,237	825,204
Louisiana.....	11	10	604,813	623,385	502,324	623,385	3	3	556,985	450,960	556,985	450,960
Oklahoma.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Texas.....	14	14	904,527	918,105	904,527	918,105	4	2	772,871	457,871	772,871	457,871
MOUNTAIN:												
Montana.....	-----	-----	-----	-----	-----	-----	-----	1	-----	100,000	-----	100,000
Idaho.....	1	-----	67,057	-----	67,057	-----	-----	-----	-----	-----	-----	-----
Wyoming.....	1	-----	51,436	-----	51,436	-----	-----	-----	-----	-----	-----	-----
Colorado.....	-----	1	-----	50,000	-----	50,000	-----	-----	-----	-----	-----	-----
New Mexico.....	1	1	84,000	74,000	84,000	74,000	-----	-----	-----	-----	-----	-----
Arizona.....	1	-----	50,000	-----	50,000	-----	1	-----	242,000	-----	242,000	-----
Utah.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Nevada.....	1	-----	77,284	-----	77,284	-----	-----	-----	-----	-----	-----	-----
PACIFIC:												
Washington.....	1	-----	90,000	-----	90,000	-----	-----	-----	-----	-----	-----	-----
Oregon.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
California.....	4	1	285,542	65,000	285,542	65,000	4	-----	889,856	-----	889,856	-----

¹ The sum of the areas of individual enterprises, including overlap.² Includes 1 enterprise in California and 3 enterprises in Florida with 500,000 acres and over.

DRAINAGE

IN DRAINAGE TAXES, ACCORDING TO ARREARAGE IN PAYMENT OF PRINCIPAL OR INTEREST ON OBLIGATIONS, 1930

ENTERPRISES IN ARREARS—CON.					ENTERPRISES NOT IN ARREARS													1
With no report on delinquency					With some delinquent land					With no delinquent land				With no report on delinquency				
Land		Capital invested to Jan. 1, 1930			Land	Capital invested to Jan. 1, 1930		Area delinquent	Land		Capital invested to Jan. 1, 1930		Land		Capital invested to Jan. 1, 1930			
Acres	Per cent 100.0	Dollars	Per cent 100.0	Acres		Per cent 100.0	Dollars		Per cent 100.0	Acres	Per cent 100.0	Dollars	Per cent 100.0	Acres	Per cent 100.0	Dollars	Per cent 100.0	
481,669		5,400,489		15,950,167		139,015,254		4,861,811		50,224,896		400,610,142		2,420,402		20,135,498		

OPERATION AND MAINTENANCE, 1929, BY TYPE OF DRAINAGE

STATE	DRAINAGE, ALL OR PART BY PUMPING								
	Total	Land reporting on cost			Cost reported				
		All drainage by pumping	Part gravity and part pumping	Total		All drainage by pumping		Part gravity and part pumping	
				Cost	Per acre	Cost	Per acre	Cost	Per acre
Total (35 States)	Acres 3,622,426	Acres 1,568,368	Acres 2,024,070	Dollars 3,030,786	Dollars 0.84	Dollars 1,893,564	Dollars 1.18	Dollars 1,137,232	Dollars 0.56

¹ Less than 1 cent per acre.

SUMMARY FOR THE UNITED STATES

STATE TABLE VI.—LAND IN DRAINAGE ENTERPRISES AND CAPITAL

1	DIVISION AND STATE	ALL ENTERPRISES						BEFORE 1870					
		Land		Area		Capital invested to Jan. 1, 1930		Land		Area		Capital invested to Jan. 1, 1930	
		Acres	Per cent	Acres ¹	Overlapped acres	Dollars	Per cent	Acres	Per cent	Acres ¹	Overlapped acres	Dollars	Per cent
1	Total (35 States) ----	84,408,093	100.0	128,495,078	44,086,985	680,732,880	100.0	919,117	1.1	1,056,844	137,727	1,283,389	0.2
GEOGRAPHIC DIVISIONS:													
2	East North Central.....	33,485,754	100.0	68,730,722	35,244,068	209,880,213	100.0	750,081	2.3	892,488	136,407	1,030,031	0.5
3	West North Central.....	23,090,882	100.0	20,223,484	5,532,602	206,190,547	100.0						
4	South Atlantic.....	6,941,716	100.0	8,360,009	1,427,893	53,632,283	100.0	5,650	0.1	5,650		26,608	(*)
5	East South Central.....	4,167,681	100.0	4,385,744	218,063	35,325,823	100.0						
6	West South Central.....	11,340,152	100.0	12,012,395	1,572,243	72,571,767	100.0	157,377	1.4	168,697	1,320	197,750	0.3
7	Mountain.....	1,060,770	100.0	1,073,023	3,253	27,877,424	100.0						
8	Pacific.....	2,812,138	100.0	2,000,101	87,963	75,254,823	100.0						
EAST NORTH CENTRAL:													
9	Ohio.....	8,165,494	100.0	24,010,629	15,845,135	30,836,449	100.0	692,823	8.5	828,410	135,587	950,727	2.6
10	Indiana.....	10,214,014	100.0	23,040,787	12,835,773	54,110,854	100.0	63,258	0.6	64,078	820	82,304	0.1
11	Illinois.....	5,032,682	100.0	5,741,916	709,234	75,018,548	100.0						
12	Michigan.....	9,180,851	100.0	15,032,692	5,851,841	37,677,084	100.0						
13	Wisconsin.....	892,713	100.0	895,698	2,085	6,207,278	100.0						
WEST NORTH CENTRAL:													
14	Minnesota.....	11,474,683	100.0	14,681,505	3,206,822	64,139,641	100.0						
15	Iowa.....	6,137,649	100.0	7,397,644	1,259,995	77,478,893	100.0						
16	Missouri.....	3,150,022	100.0	4,111,570	961,548	47,340,174	100.0						
17	North Dakota.....	1,094,142	100.0	1,183,382	89,240	3,148,919	100.0						
18	South Dakota.....	697,758	100.0	697,758		4,534,768	100.0						
19	Nebraska.....	879,459	100.0	893,899	14,440	9,847,070	100.0						
20	Kansas.....	257,169	100.0	257,726	557	2,701,082	100.0						
SOUTH ATLANTIC:													
21	Virginia.....	15,042	100.0	15,042		241,608	100.0	3,504	22.0	3,804		6,698	2.7
22	North Carolina.....	679,236	100.0	688,430	9,200	4,719,079	100.0	2,355	0.4	2,355		20,000	0.4
23	South Carolina.....	208,240	100.0	208,240		1,265,276	100.0						
24	Georgia.....	84,255	100.0	84,255		1,018,525	100.0						
25	Florida.....	5,054,034	100.0	7,373,627	1,418,693	45,487,795	100.0						
EAST SOUTH CENTRAL:													
26	Kentucky.....	585,625	100.0	620,408	40,783	5,357,633	100.0						
27	Tennessee.....	593,560	100.0	599,392	5,832	6,300,747	100.0						
28	Mississippi.....	2,988,496	100.0	3,159,944	171,448	23,001,443	100.0						
WEST SOUTH CENTRAL:													
29	Arkansas.....	4,631,155	100.0	5,764,808	1,133,653	37,532,575	100.0						
30	Louisiana.....	3,655,483	100.0	4,003,113	437,630	20,752,645	100.0	157,377	4.3	158,697	1,320	197,750	1.0
31	Oklahoma.....	170,158	100.0	171,118	960	2,283,568	100.0						
32	Texas.....	2,883,356	100.0	2,883,356		12,002,049	100.0						
MOUNTAIN:													
33	Montana.....	167,629	100.0	167,629		1,879,296	100.0						
34	Idaho.....	375,464	100.0	375,464		5,112,444	100.0						
35	Wyoming.....	245,703	100.0	248,316	2,613	5,250,573	100.0						
36	Colorado.....	366,719	100.0	367,356	640	4,358,866	100.0						
37	New Mexico.....	176,292	100.0	176,292		3,270,371	100.0						
38	Arizona.....	318,931	100.0	318,931		1,875,160	100.0						
39	Utah.....	156,052	100.0	156,052		4,772,000	100.0						
40	Nevada.....	162,980	100.0	162,980		1,349,774	100.0						
PACIFIC:													
41	Washington.....	367,242	100.0	394,851	27,609	4,637,576	100.0						
42	Oregon.....	211,182	100.0	211,182		4,165,549	100.0						
43	California.....	2,233,714	100.0	2,294,068	60,354	69,451,698	100.0						

¹ Includes overlap.² Less than one-tenth of 1 per cent.

DRAINAGE

INVESTED, BY DATE OF ORGANIZATION, BY DIVISIONS AND STATES, 1930

1870-1879						1880-1889						1890-1899						
Land		Area		Capital invested to Jan. 1, 1930		Land		Area		Capital invested to Jan. 1, 1930		Land		Area		Capital invested to Jan. 1, 1930		
Acres	Per cent	Acres ¹	Over-lapped acres	Dollars	Per cent	Acres	Per cent	Acres ¹	Over-lapped acres	Dollars	Per cent	Acres	Per cent	Acres ¹	Over-lapped acres	Dollars	Per cent	
2,516,942	3.0	3,480,915	963,973	11,317,806	1.7	6,052,907	7.2	9,549,227	3,496,420	28,035,384	4.1	5,957,593	7.9	11,205,062	5,307,540	32,836,911	4.8	1
2,421,076	7.2	3,385,640	963,973	4,570,519	2.2	5,042,710	10.8	9,125,483	3,482,767	24,142,094	11.5	4,006,330	14.7	10,192,472	5,280,133	21,310,052	10.2	2
22,540	0.1	22,540	-----	33,887	(?)	80,067	0.3	93,067	13,000	145,220	0.1	691,492	2.9	707,349	15,857	1,180,980	0.5	3
						3,000	(?)	3,000		20,000	(?)	12,000	0.2	12,000	-----	82,000	0.1	4
										10,617	0.4	10,617	0.4	10,617	-----	105,675	0.3	5
3,273	(?)	3,273	-----	6,890	(?)	47,939	0.4	48,592	653	58,945	0.1	224,340	2.0	220,899	5,550	2,085,907	2.9	6
1,200	0.1	1,200	-----	3,000	(?)							1,600	0.1	1,600	-----	180,000	0.5	7
08,253	2.4	08,253	-----	6,607,600	8.9	270,085	9.0	270,085	-----	3,008,535	4.9	105,115	3.7	105,115	-----	7,887,307	10.5	8
1,340,008	10.5	2,165,850	810,782	3,018,405	8.2	2,092,004	25.6	4,499,578	2,406,674	5,501,608	15.2	1,299,401	15.0	4,738,241	3,438,780	4,084,972	12.7	9
1,058,651	10.4	1,205,842	147,101	1,442,192	2.7	2,502,801	24.5	3,518,205	1,015,314	5,712,936	10.6	1,663,232	10.3	3,136,382	1,473,150	5,146,053	9.5	10
8,710	0.2	8,710	-----	108,730	0.1	1,033,690	20.5	1,094,469	60,779	12,806,562	17.1	790,380	15.7	878,035	87,646	9,215,336	12.3	11
												1,147,799	12.5	1,434,358	286,557	2,280,020	6.1	12
												5,458	0.6	5,458	-----	11,535	0.2	13
																		14
						38,600	0.3	38,600	-----	32,425	(?)	468,062	4.1	484,510	15,857	386,052	0.6	14
						22,540	0.4	22,540	-----	33,887	(?)	8,204	0.1	8,204	-----	16,555	(?)	15
												360	(?)	360	-----	253,020	0.5	16
												63,150	2.0	63,150	-----	69,473	2.2	17
												73,550	6.7	73,550	-----	-----	-----	18
																		19
																		20
																		21
																		22
																		23
																		24
																		25
																		26
																		27
																		28
																		29
																		30
																		31
																		32
																		33
																		34
																		35
																		36
																		37
																		38
																		39
																		40
																		41
																		42
																		43

SUMMARY FOR THE UNITED STATES

STATE TABLE VI.—LAND IN DRAINAGE ENTERPRISES AND CAPITAL INVESTED, BY DATE OF ORGANIZATION, BY DIVISIONS AND STATES, 1930—Continued

DIVISION AND STATE	1900-1904						1905-1909					
	Land		Area		Capital invested to Jan. 1, 1930		Land		Area		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Acres ¹	Overlapped acres	Dollars	Per cent	Acres	Per cent	Acres ¹	Overlapped acres	Dollars	Per cent
Total (36 States).....	7,665,823	9.1	12,380,636	4,715,113	34,139,666	5.0	18,328,017	21.7	23,892,554	5,534,537	111,612,264	16.4
GEOGRAPHIC DIVISIONS:												
East North Central.....	5,324,570	15.9	9,780,619	4,450,040	23,674,184	11.2	4,742,937	14.2	9,491,315	4,748,408	37,000,338	17.6
West North Central.....	1,885,120	8.0	2,141,332	250,212	6,623,015	3.3	6,165,523	26.2	6,930,985	735,462	41,188,997	20.0
South Atlantic.....	3,387	(?)	3,387	-----	30,718	0.1	4,508,590	64.9	4,508,590	-----	16,825,359	31.4
East South Central.....	23,162	0.6	23,162	-----	96,838	0.3	304,062	7.3	304,062	-----	1,465,572	4.2
West South Central.....	342,640	3.0	342,640	2,861	1,245,850	1.7	2,197,551	19.4	2,245,218	47,667	7,010,000	6.7
Mountain.....	9,724	0.5	9,724	-----	32,533	0.1	69,696	3.1	69,696	-----	429,620	1.5
Pacific.....	77,211	2.8	77,211	-----	2,230,518	3.0	318,658	11.3	321,658	3,000	7,686,368	10.2
EAST NORTH CENTRAL:												
Ohio.....	716,502	8.8	2,594,733	2,178,231	3,608,773	9.8	850,232	10.4	2,827,227	1,976,905	5,642,215	16.3
Indiana.....	1,278,471	12.5	2,584,437	1,305,966	5,201,750	9.6	1,062,998	10.4	2,521,770	1,458,772	5,527,576	10.2
Illinois.....	559,514	11.1	640,165	83,651	7,400,153	9.9	942,804	18.7	1,001,434	148,630	19,314,454	25.7
Michigan.....	2,534,071	27.6	3,422,263	888,102	5,833,557	15.5	1,719,021	18.7	2,882,332	1,163,311	5,353,790	14.2
Wisconsin.....	239,021	26.8	239,021	-----	1,469,051	23.7	167,832	18.8	168,582	700	1,165,273	18.8
WEST NORTH CENTRAL:												
Minnesota.....	823,483	7.2	1,016,823	193,340	1,470,836	2.3	2,420,005	21.1	2,767,463	347,458	6,501,049	10.1
Iowa.....	414,294	6.8	418,914	4,620	3,010,878	3.9	1,760,870	28.8	1,632,347	165,477	12,679,250	10.4
Missouri.....	423,226	13.4	476,708	52,482	1,068,999	4.2	1,183,462	37.6	1,381,559	198,007	17,186,979	36.3
North Dakota.....	195,210	17.8	200,080	5,770	264,556	8.4	370,478	33.0	392,508	22,030	698,605	22.2
South Dakota.....	-----	-----	-----	-----	-----	-----	189,195	27.1	189,195	-----	1,137,431	25.1
Nebraska.....	19,878	2.3	19,878	-----	25,256	0.4	222,040	25.3	224,440	2,400	1,988,006	29.9
Kansas.....	9,029	3.5	9,029	-----	182,490	6.8	43,473	16.9	43,473	-----	907,521	36.9
SOUTH ATLANTIC:												
Virginia.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
North Carolina.....	-----	-----	-----	-----	-----	-----	30,780	4.5	30,780	-----	224,677	4.5
South Carolina.....	500	0.2	500	-----	2,000	0.2	-----	-----	-----	-----	-----	-----
Georgia.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Florida.....	2,887	(?)	2,887	-----	28,718	0.1	4,477,810	75.2	4,477,810	-----	10,000,682	36.5
EAST SOUTH CENTRAL:												
Kentucky.....	18,162	3.1	18,162	-----	46,838	0.9	35,694	6.1	35,694	-----	105,107	2.0
Tennessee.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Mississippi.....	5,000	0.2	5,000	-----	50,000	0.2	268,368	9.0	268,368	-----	1,360,465	5.8
WEST SOUTH CENTRAL:												
Arkansas.....	-----	-----	-----	-----	-----	-----	871,779	18.8	917,936	46,160	3,297,500	8.7
Louisiana.....	337,640	9.2	340,501	2,861	1,205,850	5.8	479,160	13.1	480,697	1,507	1,313,609	6.5
Oklahoma.....	5,000	2.9	5,000	-----	40,000	1.7	57,612	33.9	57,612	-----	791,891	34.7
Texas.....	-----	-----	-----	-----	-----	-----	788,973	27.4	788,973	-----	1,697,000	13.4
MOUNTAIN:												
Montana.....	-----	-----	-----	-----	-----	-----	19,641	11.7	19,641	-----	163,380	8.7
Idaho.....	-----	-----	-----	-----	-----	-----	16,000	4.2	16,000	-----	121,000	2.4
Wyoming.....	9,724	4.0	9,724	-----	32,533	0.6	-----	-----	-----	-----	-----	-----
Colorado.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
New Mexico.....	-----	-----	-----	-----	-----	-----	25,055	14.2	25,055	-----	145,240	4.4
Arizona.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Utah.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Nevada.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
PACIFIC:												
Washington.....	38,938	10.6	38,938	-----	133,413	2.9	30,354	8.3	30,354	-----	293,703	4.4
Oregon.....	-----	-----	-----	-----	-----	-----	53,691	25.4	53,691	-----	637,410	15.3
California.....	38,273	1.7	38,273	-----	2,103,195	3.2	234,613	10.5	237,613	3,000	6,845,255	10.3

¹ Includes overlap.

? Less than one-tenth of 1 per cent.

DRAINAGE

39

STATE TABLE VI.—LAND IN DRAINAGE ENTERPRISES AND CAPITAL INVESTED, BY DATE OF ORGANIZATION, BY DIVISIONS AND STATES, 1930—Continued

DIVISION AND STATE	1910-1914						1915-1919					
	Land		Area		Capital invested to Jan. 1, 1930		Land		Area		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Acres ¹	Overlapped acres	Dollars	Per cent	Acres	Per cent	Acres ¹	Overlapped acres	Dollars	Per cent
Total (36 States).....	16,448,377	19.5	22,331,693	5,883,316	126,953,183	18.5	15,802,902	18.7	23,422,034	7,619,132	100,583,008	28.0
GEOGRAPHIC DIVISIONS:												
East North Central.....	3,802,400	11.4	8,155,070	4,352,010	28,348,261	13.5	3,287,087	9.8	8,013,405	4,725,418	31,836,891	15.2
West North Central.....	6,498,558	27.4	7,617,150	1,118,592	45,501,288	22.1	5,053,494	25.1	7,840,425	1,886,031	71,084,361	34.5
South Atlantic.....	432,378	6.2	483,713	51,335	4,165,694	7.8	1,134,501	16.3	1,612,733	478,232	18,573,539	34.0
East South Central.....	1,060,698	25.4	1,063,970	3,272	7,102,833	20.1	1,360,312	35.3	1,448,924	53,612	12,678,821	35.0
West South Central.....	3,198,628	28.2	3,494,337	295,700	15,195,283	20.0	2,884,704	25.4	3,348,767	464,003	26,595,921	36.5
Mountain.....	431,728	21.9	431,728	-----	5,631,834	20.2	858,233	43.0	858,233	-----	13,698,315	49.2
Pacific.....	1,023,927	36.4	1,085,725	61,798	19,917,900	26.5	293,611	10.5	299,547	5,036	16,205,220	21.5
EAST NORTH CENTRAL:												
Ohio.....	460,161	5.6	1,919,595	1,450,434	3,972,943	10.8	323,835	4.0	1,467,453	1,143,618	3,724,554	10.1
Indiana.....	1,220,001	12.1	3,292,730	2,093,048	8,376,110	15.5	696,917	6.8	2,884,595	2,187,648	9,000,074	18.3
Illinois.....	772,810	15.5	839,905	62,086	10,196,997	13.6	337,362	6.7	405,692	68,300	6,970,047	9.3
Michigan.....	1,221,785	13.3	1,080,227	707,442	4,983,475	13.2	1,713,405	18.7	3,037,892	1,324,487	9,774,099	25.9
Wisconsin.....	113,604	12.7	113,604	-----	818,826	13.2	216,468	24.2	217,833	1,365	1,453,117	23.4
WEST NORTH CENTRAL:												
Minnesota.....	3,624,506	31.6	4,219,372	595,106	12,989,989	20.3	3,290,051	28.7	4,493,214	1,203,163	27,044,315	42.2
Iowa.....	1,810,000	20.5	2,072,205	262,205	19,628,432	25.3	1,484,280	24.1	2,069,701	528,481	20,797,272	38.4
Missouri.....	655,261	20.8	894,542	230,281	10,428,541	22.0	350,562	11.1	479,672	128,510	8,760,464	18.4
North Dakota.....	108,470	9.0	129,100	20,720	270,613	8.6	316,709	20.0	338,209	21,500	1,607,260	51.0
South Dakota.....	86,563	12.4	86,563	-----	383,757	8.5	100,907	23.1	160,067	-----	1,427,819	31.5
Nebraska.....	161,728	18.4	163,008	1,280	1,559,548	22.8	257,566	20.3	292,286	4,720	1,821,596	26.0
Kansas.....	52,270	20.3	52,270	-----	330,408	12.2	96,419	37.6	96,470	567	685,566	25.4
SOUTH ATLANTIC:												
Virginia.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
North Carolina.....	251,512	37.0	200,712	9,200	1,530,957	32.0	222,510	32.8	222,510	-----	1,815,522	38.5
South Carolina.....	18,603	8.0	18,603	-----	181,250	14.3	57,368	27.0	57,368	-----	454,015	35.9
Georgia.....	1,092	2.0	1,092	-----	64,060	3.4	60,405	82.4	60,405	-----	1,304,241	72.7
Florida.....	160,571	2.7	202,766	42,135	2,370,627	5.2	785,218	13.2	1,263,450	478,232	14,969,961	32.8
EAST SOUTH CENTRAL:												
Kentucky.....	135,797	23.2	136,939	272	1,047,502	19.0	226,915	38.8	240,215	22,300	2,594,237	48.4
Tennessee.....	147,245	24.8	147,245	-----	1,362,824	20.5	339,585	57.2	345,417	5,832	3,508,130	55.1
Mississippi.....	777,980	20.0	780,680	3,000	4,752,447	20.1	833,812	27.6	854,292	30,480	6,670,464	27.9
WEST SOUTH CENTRAL:												
Arkansas.....	1,516,714	32.7	1,704,734	248,020	7,560,657	20.2	1,498,461	32.4	1,784,230	285,709	18,250,238	48.7
Louisiana.....	522,695	14.3	579,384	47,689	3,060,852	17.0	931,075	25.5	1,108,600	177,834	4,678,500	22.1
Oklahoma.....	33,006	19.4	33,006	-----	403,108	21.6	3,600	2.1	4,000	400	22,100	1.0
Texas.....	1,126,123	39.0	1,126,123	-----	3,474,666	28.0	451,028	15.7	451,028	-----	3,646,083	30.4
MOUNTAIN:												
Montana.....	6,075	3.6	6,075	-----	164,304	8.7	8,692	5.2	8,692	-----	53,000	2.8
Idaho.....	222,184	59.2	222,184	-----	1,535,030	30.0	66,845	17.8	66,845	-----	1,430,156	28.0
Wyoming.....	57,782	23.5	57,782	-----	2,091,945	39.3	69,648	28.3	69,648	-----	1,360,210	26.5
Colorado.....	16,440	4.5	16,440	-----	124,000	2.8	159,046	43.4	159,046	-----	2,301,070	54.9
New Mexico.....	44,097	25.0	44,097	-----	971,555	20.6	102,400	58.1	102,400	-----	2,117,590	64.6
Arizona.....	50,000	15.7	50,000	-----	620,000	33.1	244,040	70.5	244,040	-----	1,084,000	57.8
Utah.....	5,150	3.3	5,150	-----	60,000	1.3	125,338	80.3	125,338	-----	4,205,500	88.1
Nevada.....	30,000	18.4	30,000	-----	95,000	7.0	82,224	50.5	82,224	-----	1,026,774	76.1
PACIFIC:												
Washington.....	176,732	48.1	189,436	12,704	2,015,574	43.5	39,635	10.8	45,571	5,936	1,103,107	23.8
Oregon.....	4,553	2.2	4,553	-----	190,000	4.6	65,257	30.9	65,257	-----	1,741,417	41.8
California.....	842,642	37.7	891,736	49,094	17,712,416	26.6	188,719	8.4	188,719	-----	13,860,696	20.1

¹ Includes overlap.

SUMMARY FOR THE UNITED STATES

STATE TABLE VI.—LAND IN DRAINAGE ENTERPRISES AND CAPITAL INVESTED, BY DATE OF ORGANIZATION, BY DIVISIONS AND STATES, 1930—Continued

DIVISION AND STATE	1920-1924						1925-1929					
	Land		Area		Capital invested to Jan. 1, 1930		Land		Area		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Acres ¹	Overlapped acres	Dollars	Per cent	Acres	Per cent	Acres ¹	Overlapped acres	Dollars	Per cent
Total (35 States).....	7,428,179	8.8	12,735,739	5,307,560	102,978,838	15.1	3,288,426	3.9	8,410,084	5,121,658	42,012,361	6.2
GEOGRAPHIC DIVISIONS:												
East North Central.....	1,352,636	4.0	4,519,423	3,106,787	18,912,121	9.0	1,248,343	3.7	5,174,768	3,026,425	19,097,220	9.1
West North Central.....	1,925,517	8.1	3,120,111	1,194,594	33,880,288	16.4	438,571	1.9	750,625	311,054	6,162,571	3.0
South Atlantic.....	510,979	7.4	1,113,937	500,958	9,872,482	18.4	325,222	4.7	620,590	301,368	4,035,883	7.6
East South Central.....	1,153,618	27.7	1,273,185	119,567	12,342,025	34.0	210,212	5.3	255,824	36,612	1,534,059	4.3
West South Central.....	1,535,798	13.5	1,740,941	214,143	12,343,313	17.0	747,842	6.6	1,288,170	540,328	7,021,818	10.0
Mountain.....	375,385	19.0	375,385	-----	5,495,501	10.7	231,204	11.7	234,467	3,253	2,430,621	8.7
Pacific.....	568,246	20.2	583,757	15,511	10,131,105	13.4	78,032	2.8	79,750	1,718	824,180	1.1
EAST NORTH CENTRAL:												
Ohio.....	165,237	2.0	1,184,100	1,018,863	2,776,758	7.5	215,271	2.7	1,485,442	1,270,171	2,859,464	7.8
Indiana.....	288,584	2.8	1,541,896	1,253,312	5,865,225	10.8	309,921	3.6	2,209,873	1,029,052	6,850,604	12.7
Illinois.....	253,399	5.0	271,873	18,474	4,403,242	5.0	331,095	6.6	511,093	179,068	4,564,127	6.1
Michigan.....	523,342	5.8	1,403,500	878,218	4,879,909	13.0	316,428	3.4	863,062	546,634	4,563,168	12.1
Wisconsin.....	117,074	13.1	117,904	920	986,930	15.0	14,728	1.7	14,728	-----	259,866	4.2
WEST NORTH CENTRAL:												
Minnesota.....	721,220	6.3	1,461,130	730,910	14,678,162	22.0	88,297	0.7	200,285	111,088	1,036,813	1.6
Iowa.....	487,778	7.9	711,035	223,857	10,250,699	13.2	132,830	2.2	195,104	62,355	1,097,730	2.0
Missouri.....	410,541	13.3	642,098	222,467	6,909,483	14.6	54,400	1.7	175,171	120,711	1,982,692	4.0
North Dakota.....	6,950	0.6	15,160	8,200	60,473	1.9	22,760	2.1	33,789	11,020	177,840	6.7
South Dakota.....	185,008	20.5	185,008	-----	1,154,211	25.4	76,085	10.9	76,085	-----	431,650	9.5
Nebraska.....	75,900	8.0	70,000	100	696,230	10.1	50,488	5.7	50,368	5,880	458,945	6.7
Kansas.....	20,120	11.3	20,120	-----	125,030	4.6	13,633	5.3	13,633	-----	177,011	6.0
SOUTH ATLANTIC:												
Virginia.....	9,538	63.4	9,538	-----	190,000	78.7	2,200	14.6	2,200	-----	45,000	18.6
North Carolina.....	117,045	17.2	117,045	-----	773,001	16.4	55,034	8.1	55,034	-----	346,122	7.3
South Carolina.....	83,043	42.3	83,043	-----	468,261	37.0	43,735	21.0	43,735	-----	159,756	12.6
Georgia.....	9,458	11.2	9,458	-----	389,324	20.3	700	0.8	700	-----	50,000	2.6
Florida.....	292,895	4.0	889,853	500,068	8,051,896	17.7	223,553	3.7	524,921	301,368	3,435,011	7.5
EAST SOUTH CENTRAL:												
Kentucky.....	117,238	20.0	180,588	13,350	1,224,120	22.8	35,232	6.0	40,063	4,801	234,094	4.3
Tennessee.....	100,254	16.9	100,254	-----	1,510,207	23.7	6,476	1.1	6,476	-----	45,680	0.7
Mississippi.....	936,126	31.3	1,042,343	106,217	6,607,698	40.7	177,564	5.9	209,255	31,751	1,254,379	5.3
WEST SOUTH CENTRAL:												
Arkansas.....	643,724	13.0	790,251	146,527	4,704,800	12.5	98,020	2.1	505,197	407,177	3,727,780	9.9
Louisiana.....	561,158	15.3	628,214	67,056	5,446,650	26.2	303,250	10.8	526,407	133,151	2,174,202	10.6
Oklahoma.....	41,156	24.2	41,716	560	528,143	23.0	29,094	17.5	29,694	-----	410,356	18.0
Texas.....	289,760	10.0	289,760	-----	1,055,720	13.9	226,872	7.6	226,872	-----	1,609,480	13.4
MOUNTAIN:												
Montana.....	88,508	52.8	88,508	-----	1,104,900	68.3	44,713	26.7	44,713	-----	393,016	21.0
Idaho.....	26,572	7.1	26,572	-----	552,231	10.8	43,863	11.7	43,863	-----	1,474,027	23.8
Wyoming.....	94,009	38.3	94,009	-----	1,587,876	20.8	14,540	5.9	17,153	2,613	198,000	3.8
Colorado.....	118,451	32.3	118,451	-----	1,587,218	36.4	72,782	19.8	73,422	640	256,578	5.9
New Mexico.....	3,400	1.0	3,400	-----	43,980	1.3	1,340	0.8	1,340	-----	1,000	(*)
Arizona.....	24,891	7.8	24,891	-----	171,100	9.1	-----	-----	-----	-----	-----	-----
Utah.....	19,554	12.5	19,554	-----	463,100	9.8	6,010	3.9	6,010	-----	38,400	0.8
Nevada.....	-----	-----	-----	-----	-----	-----	47,956	29.4	47,956	-----	75,000	8.6
PACIFIC:												
Washington.....	38,022	10.3	45,273	7,251	1,054,271	22.7	40,621	11.1	42,339	1,718	120,599	2.6
Oregon.....	71,208	33.7	71,208	-----	1,420,900	34.3	16,473	7.8	16,473	-----	166,822	4.0
California.....	459,016	20.6	467,276	8,200	7,046,934	11.5	20,938	0.9	20,938	-----	536,750	0.8

* Includes overlap.

* Less than one-tenth of 1 per cent.

DRAINAGE

41

STATE TABLE VII.—LAND IN DRAINAGE ENTERPRISES SERVED BY PUMPS; CAPACITY OF ENGINES OR MOTORS, AND PUMPS; AVERAGE LIFT OF WATER; AND PLANT RATIO; BY DIVISIONS AND STATES, 1930

DIVISION AND STATE	Land served	Engine or motor capacity	PUMP CAPACITY			Average lift of water	Plant ratio ¹
			Total	Per acre	Depth per 24 hours		
	<i>Acres</i>	<i>Horsepower</i>	<i>Gallons per minute</i>	<i>Gallons per minute</i>	<i>Inches</i>	<i>Feet</i>	
Total	2, 174, 803	99, 747	17, 854, 824	7. 64	0. 40	10. 8	2. 06
GEOGRAPHIC DIVISIONS:							
East North Central.....	342, 870	10, 164	3, 251, 040	9. 48	0. 50	10. 9	2. 14
West North Central.....	159, 620	7, 423	1, 515, 830	9. 50	0. 50	8. 0	2. 18
South Atlantic.....	230, 072	8, 125	2, 084, 790	12. 07	0. 60	5. 2	2. 07
East South Central.....	8, 040	370	103, 000	12. 81	0. 68	5. 2	2. 74
West South Central.....	102, 503	7, 520	3, 146, 950	19. 37	1. 02	6. 4	1. 48
Mountain.....	170, 484	12, 242	631, 325	1. 90	0. 10	43. 5	1. 76
Pacific.....	1, 101, 305	44, 903	6, 221, 900	5. 65	0. 30	12. 0	2. 22
EAST NORTH CENTRAL:							
Ohio.....	348	25	5, 000	14. 37	0. 70	4. 0	4. 95
Indiana.....	2, 763	166	48, 000	17. 37	0. 92	10. 9	1. 26
Illinois.....	331, 448	18, 658	3, 156, 700	9. 52	0. 80	10. 9	2. 15
Michigan.....	8, 270	275	36, 340	4. 39	0. 23	14. 3	2. 09
Wisconsin.....	50	40	5, 000	100. 00	5. 20	4. 0	7. 02
WEST NORTH CENTRAL:							
Minnesota.....	815	75	12, 700	15. 58	0. 82	12. 0	1. 95
Iowa.....	84, 801	4, 625	881, 500	10. 30	0. 55	8. 4	2. 47
Missouri.....	71, 004	2, 533	607, 430	8. 48	0. 45	6. 7	1. 70
Nebraska.....	300	70	2, 200	7. 33	0. 30	20. 0	0. 30
Kansas.....	2, 000	120	12, 000	6. 00	0. 32	15. 0	2. 64
SOUTH ATLANTIC:							
North Carolina.....	100, 000	3, 000	1, 000, 000	10. 00	0. 53	6. 0	1. 98
Georgia.....	200	00	4, 000	20. 00	1. 00	12. 0	4. 95
Florida.....	129, 872	5, 005	1, 980, 790	15. 25	0. 81	4. 8	2. 11
EAST SOUTH CENTRAL:							
Mississippi.....	8, 040	370	103, 000	12. 81	0. 68	5. 2	2. 73
WEST SOUTH CENTRAL:							
Arkansas.....	18, 261	515	156, 500	8. 57	0. 45	5. 4	2. 41
Louisiana.....	123, 163	6, 495	2, 056, 500	24. 00	1. 27	6. 3	1. 38
Texas.....	21, 070	510	33, 930	1. 61	0. 69	23. 0	2. 53
MOUNTAIN:							
Idaho.....	40, 434	1, 435	171, 675	4. 25	0. 22	15. 6	2. 12
Arizona.....	130, 000	10, 789	468, 750	1. 57	0. 08	54. 1	1. 72
Nevada.....	50	18	900	18. 00	0. 95	0. 0	8. 82
PACIFIC:							
Washington.....	19, 857	982	184, 500	9. 29	0. 40	9. 8	2. 15
Oregon.....	59, 386	2, 173	488, 800	8. 23	0. 43	12. 1	1. 45
California.....	1, 022, 062	41, 748	5, 548, 000	5. 43	0. 29	13. 1	2. 27

¹ Engine or motor capacity, divided by the product of the total pump capacity and average lift reduced to horsepower.

² No pumping reported for Colorado, Kentucky, Montana, New Mexico, North Dakota, Oklahoma, South Carolina, South Dakota, Tennessee, Utah, Virginia, and Wyoming.

SUMMARY FOR THE UNITED STATES

STATE TABLE VIII.—LAND IN DRAINAGE ENTERPRISES AND CAPITAL INVESTED, BY COMPLETION OF WORKS, REGULARITY OF MAINTENANCE, AND OWNERSHIP OF POWER EQUIPMENT USED PRINCIPALLY FOR MAINTENANCE, BY DIVISIONS AND STATES, 1930

DIVISION AND STATE	ALL ENTERPRISES		ENTERPRISES COMPLETED		ENTERPRISES UNDER CONSTRUCTION		
	Land	Capital invested to Jan. 1, 1930	Land	Capital invested to Jan. 1, 1930	Land	Capital	
						Invested to Jan. 1, 1930	Additional required for completion
	Acres	Dollars	Acres	Dollars	Acres	Dollars	Dollars
Total (35 States).....	84,408,093	680,732,860	81,577,229	638,625,164	2,830,864	42,107,716	9,346,099
GEOGRAPHIC DIVISIONS:							
East North Central.....	33,485,754	200,880,213	33,053,509	203,993,483	432,245	5,886,730	1,369,012
West North Central.....	23,600,882	200,100,547	23,281,595	201,131,500	409,287	5,058,957	1,152,592
South Atlantic.....	6,941,716	53,632,283	6,711,420	47,187,700	230,287	6,444,583	3,117,403
East South Central.....	4,167,681	35,325,823	3,955,378	34,173,128	212,303	1,152,605	351,065
West South Central.....	11,340,152	72,571,707	10,813,230	67,086,026	526,013	4,884,841	723,079
Mountain.....	1,909,770	27,877,424	1,355,124	18,503,706	614,646	9,368,718	1,136,750
Pacific.....	2,812,138	75,254,823	2,409,955	65,943,631	405,183	9,311,102	1,494,698
EAST NORTH CENTRAL:							
Ohio.....	8,105,494	36,836,449	8,105,494	36,836,449			
Indiana.....	10,214,014	54,110,854	10,208,742	54,021,422	5,272	80,432	92,492
Illinois.....	5,032,682	75,048,518	4,756,136	70,380,020	276,546	4,068,528	1,162,524
Michigan.....	9,180,851	37,077,084	9,065,864	36,883,894	111,987	788,190	101,476
Wisconsin.....	892,713	6,207,278	854,273	5,860,098	38,440	340,580	13,120
WEST NORTH CENTRAL:							
Minnesota.....	11,474,683	64,139,641	11,466,921	64,014,346	7,762	95,295	10,000
Iowa.....	6,137,640	77,478,893	6,096,819	76,653,396	40,830	925,497	211,392
Missouri.....	3,150,022	47,340,174	2,999,893	44,493,090	150,210	2,847,114	562,340
North Dakota.....	1,094,142	3,148,919	1,004,142	3,148,919			
South Dakota.....	697,758	4,534,768	625,758	4,134,768	72,000	400,000	250,000
Nebraska.....	879,450	6,847,070	753,783	6,102,019	125,676	745,051	98,950
Kansas.....	257,190	2,701,082	244,369	2,655,082	12,800	46,000	20,000
SOUTH ATLANTIC:							
Virginia.....	15,012	241,608	15,012	241,608			
North Carolina.....	670,236	4,719,070	636,749	4,608,018	33,487	111,061	129,659
South Carolina.....	208,249	1,265,276	194,685	1,122,276	13,564	143,000	68,000
Georgia.....	84,255	1,918,525	84,255	1,918,525			
Florida.....	5,954,934	45,487,795	5,780,698	39,207,273	174,236	6,190,522	2,019,741
EAST SOUTH CENTRAL:							
Kentucky.....	585,625	5,357,633	585,625	5,357,633			
Tennessee.....	593,500	6,360,747	561,512	6,040,547	32,018	326,200	50,065
Mississippi.....	2,988,490	23,601,443	2,803,241	22,774,048	186,255	826,495	304,000
WEST SOUTH CENTRAL:							
Arkansas.....	4,631,155	37,532,575	4,000,347	37,350,775	30,808	181,800	206,200
Louisiana.....	3,655,483	20,752,045	3,409,329	18,031,023	246,154	2,721,022	223,000
Oklahoma.....	170,158	2,283,598	165,778	2,233,198	4,380	50,400	20,300
Texas.....	2,883,356	12,002,049	2,637,785	10,071,930	245,571	1,931,010	183,679
MOUNTAIN:							
Montana.....	167,620	1,879,296	128,632	1,599,525	38,997	279,771	110,131
Idaho.....	375,404	5,112,444	265,812	3,708,874	109,592	1,343,570	233,500
Wyoming.....	245,793	5,250,573	112,286	2,131,843	133,417	3,118,730	348,459
Colorado.....	366,719	4,358,866	293,489	3,214,298	73,230	1,144,568	37,000
New Mexico.....	176,292	3,279,371	86,952	1,450,775	89,340	1,828,596	195,260
Arizona.....	318,931	1,875,100	268,931	1,255,100	50,000	620,000	130,000
Utah.....	156,052	4,772,000	147,432	4,733,200	8,620	38,800	32,000
Nevada.....	162,980	1,349,774	51,599	355,091	111,390	994,683	59,400
PACIFIC:							
Washington.....	367,242	4,637,576	273,287	4,029,444	93,955	608,132	17,500
Oregon.....	211,182	4,165,549	88,732	2,268,717	122,450	1,006,832	678,698
California.....	2,233,714	66,451,698	2,044,936	59,656,470	188,778	6,796,228	799,499

DRAINAGE

43

STATE TABLE VIII.—LAND IN DRAINAGE ENTERPRISES AND CAPITAL INVESTED, BY COMPLETION OF WORKS, REGULARITY OF MAINTENANCE, AND OWNERSHIP OF POWER EQUIPMENT USED PRINCIPALLY FOR MAINTENANCE, BY DIVISIONS AND STATES, 1930—Continued

DIVISION AND STATE	ENTERPRISES WITH SYSTEM- ATIC MAINTENANCE		ENTERPRISES WITH NONSYS- TEMATIC MAINTENANCE		ENTERPRISES OWNING POWER EQUIPMENT USED PRINCIPALLY FOR MAIN- TENANCE		ENTERPRISES NOT OWNING POWER EQUIPMENT USED PRINCIPALLY FOR MAIN- TENANCE	
	Land	Capital invested	Land	Capital invested	Land	Capital invested	Land	Capital invested
	<i>Acres</i>	<i>Dollars</i>	<i>Acres</i>	<i>Dollars</i>	<i>Acres</i>	<i>Dollars</i>	<i>Acres</i>	<i>Dollars</i>
Total (35 States).....	44, 089, 707	435, 066, 646	39, 718, 386	244, 706, 334	11, 619, 679	127, 034, 621	72, 738, 414	553, 648, 359
GEOGRAPHIC DIVISIONS:								
East North Central.....	16, 970, 082	125, 302, 222	10, 509, 672	84, 577, 991	537, 814	9, 082, 647	32, 947, 940	200, 707, 566
West North Central.....	10, 401, 223	130, 852, 109	13, 220, 059	75, 338, 438	1, 726, 170	20, 102, 546	21, 004, 712	186, 088, 001
South Atlantic.....	5, 500, 174	34, 710, 402	1, 441, 542	18, 012, 881	4, 587, 083	26, 481, 756	2, 354, 633	27, 150, 527
East South Central.....	2, 823, 138	23, 048, 197	1, 344, 543	12, 277, 620	968, 489	0, 000, 217	3, 190, 192	28, 725, 606
West South Central.....	5, 270, 600	33, 251, 515	6, 099, 486	39, 320, 252	1, 286, 756	18, 415, 032	10, 053, 396	54, 156, 705
Mountain.....	1, 788, 417	23, 662, 277	181, 353	4, 215, 147	859, 154	14, 863, 701	1, 110, 616	13, 023, 723
Pacific.....	1, 870, 007	65, 130, 824	942, 131	10, 123, 999	1, 654, 213	31, 548, 592	1, 157, 925	43, 706, 231
EAST NORTH CENTRAL:								
Ohio.....	2, 204, 640	8, 953, 317	5, 900, 854	27, 883, 132	212, 473	1, 075, 882	7, 953, 021	35, 700, 567
Indiana.....	6, 306, 327	33, 835, 052	3, 817, 087	20, 275, 202	109, 360	567, 207	10, 104, 654	53, 543, 047
Illinois.....	3, 826, 216	60, 180, 707	1, 203, 460	14, 867, 751	200, 568	7, 020, 898	4, 832, 114	68, 018, 650
Michigan.....	4, 205, 622	19, 429, 852	4, 975, 229	18, 247, 232	12, 113	401, 100	9, 168, 738	37, 275, 924
Wisconsin.....	340, 277	2, 502, 004	552, 430	3, 304, 074	3, 309	8, 500	880, 413	6, 198, 778
WEST NORTH CENTRAL:								
Minnesota.....	2, 559, 768	31, 050, 222	8, 914, 915	33, 089, 419	290, 800	1, 244, 573	11, 177, 823	62, 895, 068
Iowa.....	3, 981, 778	49, 302, 509	2, 155, 871	28, 176, 384	863, 305	11, 750, 728	5, 274, 344	65, 722, 165
Missouri.....	2, 698, 326	41, 700, 354	451, 696	5, 639, 820	158, 931	3, 500, 592	2, 991, 091	43, 833, 672
North Dakota.....	254, 490	445, 927	839, 742	2, 702, 092	3, 400	1, 540	1, 000, 742	3, 147, 379
South Dakota.....	179, 095	1, 543, 103	518, 753	2, 991, 065	104, 599	979, 776	563, 258	3, 554, 992
Nebraska.....	574, 933	4, 754, 375	304, 526	2, 092, 695	282, 529	2, 462, 239	599, 933	4, 384, 831
Kansas.....	213, 013	2, 055, 610	44, 156	645, 493	10, 648	151, 188	240, 521	2, 549, 894
SOUTH ATLANTIC:								
Virginia.....	2, 500	45, 000	12, 842	199, 008	-----	-----	15, 012	241, 608
North Carolina.....	258, 519	1, 751, 776	429, 717	2, 967, 303	12, 940	21, 253	666, 296	4, 697, 820
South Carolina.....	26, 064	379, 011	181, 585	886, 265	11, 200	259, 750	197, 049	1, 005, 526
Georgia.....	12, 117	263, 876	72, 138	1, 664, 640	933	24, 807	83, 622	1, 893, 058
Florida.....	5, 200, 674	32, 289, 730	754, 299	13, 198, 956	4, 592, 310	20, 175, 886	1, 392, 624	10, 311, 999
EAST SOUTH CENTRAL:								
Kentucky.....	494, 630	4, 416, 747	99, 086	940, 886	218, 025	1, 621, 797	307, 000	3, 735, 836
Tennessee.....	169, 338	2, 068, 458	424, 222	4, 298, 289	-----	-----	593, 560	6, 396, 747
Mississippi.....	2, 159, 161	10, 592, 092	829, 335	7, 038, 451	749, 864	4, 078, 420	2, 238, 632	18, 023, 023
WEST SOUTH CENTRAL:								
Arkansas.....	1, 400, 651	8, 806, 521	3, 170, 594	28, 726, 054	370, 652	9, 539, 050	4, 254, 593	27, 951, 925
Louisiana.....	2, 218, 360	14, 934, 752	1, 437, 183	5, 817, 893	416, 262	5, 240, 030	3, 239, 221	15, 512, 615
Oklahoma.....	103, 712	1, 630, 843	96, 440	643, 755	2, 900	28, 000	167, 198	2, 255, 598
Texas.....	1, 488, 003	7, 870, 399	1, 395, 353	4, 132, 550	499, 882	3, 596, 382	2, 392, 474	8, 436, 567
MOUNTAIN:								
Montana.....	158, 659	1, 842, 296	8, 970	37, 000	43, 170	797, 300	124, 459	1, 081, 990
Idaho.....	348, 448	4, 687, 121	27, 010	425, 323	245, 806	3, 393, 196	129, 658	1, 710, 248
Wyoming.....	217, 221	4, 684, 749	28, 482	565, 824	141, 323	3, 194, 847	104, 380	2, 055, 729
Colorado.....	350, 945	4, 105, 466	15, 774	253, 400	73, 980	1, 238, 748	292, 739	3, 120, 118
New Mexico.....	179, 292	3, 279, 371	-----	-----	113, 055	1, 972, 836	63, 237	1, 309, 535
Arizona.....	295, 523	1, 759, 599	23, 498	115, 999	70, 699	979, 000	248, 331	1, 295, 190
Utah.....	78, 349	1, 954, 000	77, 793	2, 818, 999	75, 146	2, 539, 000	89, 996	2, 242, 000
Nevada.....	162, 980	1, 349, 774	-----	-----	96, 074	1, 056, 774	69, 996	293, 000
PACIFIC:								
Washington.....	392, 631	3, 985, 795	64, 611	651, 781	97, 920	753, 699	269, 322	3, 883, 997
Oregon.....	168, 730	3, 049, 598	42, 452	515, 951	139, 679	2, 346, 593	89, 593	1, 815, 956
California.....	1, 398, 646	57, 496, 431	885, 968	8, 956, 297	1, 425, 014	28, 448, 330	898, 100	38, 093, 368

SUMMARY FOR THE UNITED STATES

STATE TABLE IX.—LAND IN DRAINAGE ENTERPRISES, LENGTH AND ACREAGE PER MILE OF DRAIN, BY TYPE OF DRAIN, BY DIVISIONS AND STATES, 1930

DIVISION AND STATE	ALL TYPES			DITCHES ONLY			TILE ONLY			DITCHES AND TILE		
	Land	Length of drains ¹	Average acreage per mile of drains	Land	Length of drains ¹	Average acreage per mile of drains	Land	Length of drains ¹	Average acreage per mile of drains	Land	Length of drains ¹	Average acreage per mile of drains
	Acres	Miles	Acres	Acres	Miles	Acres	Acres	Miles	Acres	Acres	Miles	Acres
Total (35 States).....	84,408,093	187,332.0	427	62,849,056	119,894.6	524	8,333,549	20,782.4	280	13,225,488	47,655.0	278
GEOGRAPHIC DIVISIONS:												
East North Central.....	33,485,754	90,006.4	338	21,567,210	58,513.2	308	5,087,855	15,659.1	324	6,860,080	24,834.1	276
West North Central.....	23,090,882	52,068.3	447	10,490,748	23,180.3	712	3,130,074	13,077.8	250	4,051,460	16,140.2	251
South Atlantic.....	6,941,716	8,291.7	837	6,936,076	8,046.2	802	-----	-----	-----	5,640	245.5	22
East South Central.....	4,167,851	6,799.9	612	4,137,550	6,598.8	627	2,517	22.0	111	27,614	178.5	154
West South Central.....	11,340,152	16,833.1	673	11,090,062	16,595.5	668	-----	-----	-----	240,400	237.6	1,050
Mountain.....	1,960,770	6,654.2	296	873,453	1,678.6	441	72,204	325.5	222	1,024,023	4,360.1	235
Pacific.....	2,812,138	6,748.4	416	1,774,348	4,982.0	356	31,209	97.4	320	1,006,581	1,660.0	603
EAST NORTH CENTRAL:												
Ohio.....	8,165,494	34,410.8	237	5,017,549	21,835.6	229	1,694,156	5,820.8	291	1,453,789	6,763.4	214
Indiana.....	10,214,014	31,274.4	326	6,085,654	16,712.1	364	2,088,780	6,563.8	318	2,030,580	7,098.5	255
Illinois.....	5,032,682	9,972.3	504	2,300,188	3,440.4	600	701,261	1,381.9	507	2,031,233	5,150.0	394
Michigan.....	9,180,851	21,041.4	436	7,552,840	16,156.1	498	586,050	1,815.4	322	1,041,955	4,060.9	256
Wisconsin.....	802,713	2,298.5	388	580,982	1,360.0	424	17,608	77.2	228	294,123	852.3	345
WEST NORTH CENTRAL:												
Minnesota.....	11,474,083	23,020.4	470	9,163,707	12,700.4	721	736,118	3,343.1	220	1,574,858	7,885.0	199
Iowa.....	6,137,649	20,608.8	306	1,666,614	2,672.0	624	2,322,828	10,042.3	231	2,148,207	7,294.5	294
Missouri.....	3,166,022	5,144.2	612	3,027,770	4,781.4	633	6,951	21.1	329	115,205	341.7	337
North Dakota.....	1,064,142	827.2	1,322	1,077,163	810.3	1,329	2,000	4.5	444	14,979	12.4	1,207
South Dakota.....	697,758	1,220.7	507	604,130	836.0	721	68,877	221.3	311	24,742	171.5	144
Nebraska.....	879,450	1,316.7	637	710,007	1,061.0	660	2,900	45.5	63	105,952	210.2	789
Kansas.....	257,169	542.3	474	249,742	318.3	784	-----	-----	-----	7,427	224.0	33
SOUTH ATLANTIC:												
Virginia.....	15,042	40.0	376	15,042	40.0	376	-----	-----	-----	-----	-----	-----
North Carolina.....	679,236	1,532.1	443	677,790	1,510.6	446	-----	-----	-----	1,440	12.5	115
South Carolina.....	208,249	609.5	341	207,040	441.5	488	-----	-----	-----	1,200	168.0	7
Georgia.....	84,255	530.9	156	81,255	471.9	172	-----	-----	-----	3,000	65.0	46
Florida.....	5,954,034	5,673.2	1,098	5,954,034	5,573.2	1,068	-----	-----	-----	-----	-----	-----
EAST SOUTH CENTRAL:												
Kentucky.....	585,625	1,275.8	459	563,025	1,148.7	490	117	2.6	45	22,483	124.5	180
Tennessee.....	593,560	1,410.5	419	593,560	1,410.5	419	-----	-----	-----	-----	-----	-----
Mississippi.....	2,988,496	4,167.6	727	2,980,065	4,033.6	730	2,400	20.0	120	6,131	54.0	95
WEST SOUTH CENTRAL:												
Arkansas.....	4,631,155	5,038.4	919	4,622,265	5,023.3	920	-----	-----	-----	8,890	15.1	588
Louisiana.....	3,655,483	7,746.9	471	3,650,483	7,742.0	471	-----	-----	-----	5,000	4.0	1,250
Oklahoma.....	170,158	369.5	549	170,158	369.5	549	-----	-----	-----	-----	-----	-----
Texas.....	2,883,356	3,738.3	771	2,047,756	3,519.8	752	-----	-----	-----	235,600	218.5	1,073
MOUNTAIN:												
Montana.....	167,620	385.0	434	73,005	188.2	528	3,817	10.3	370	90,717	237.4	382
Idaho.....	375,464	691.6	542	291,929	481.5	600	220	3.7	61	83,306	200.4	404
Wyoming.....	245,703	798.1	307	125,043	341.1	366	14,740	17.2	856	105,920	439.8	240
Colorado.....	366,719	1,100.9	307	112,143	525.9	213	12,518	85.3	146	242,058	579.7	417
New Mexico.....	176,292	617.8	285	92,740	281.8	329	25,972	130.0	199	57,580	206.0	279
Arizona.....	318,931	363.7	870	73,483	67.8	1,084	2,808	7.5	374	242,040	288.4	841
Utah.....	156,652	2,255.6	69	10,324	48.5	398	12,210	71.5	170	124,518	2,135.6	58
Nevada.....	162,080	350.6	464	85,696	93.8	913	-----	-----	-----	77,284	256.8	300
PACIFIC:												
Washington.....	367,242	952.4	385	262,301	552.2	475	26,414	71.3	370	78,437	328.9	238
Oregon.....	211,182	595.6	354	144,486	382.5	378	500	2.0	250	66,196	211.1	314
California.....	2,233,714	5,200.4	420	1,367,471	4,047.3	338	4,295	24.1	178	801,948	1,120.0	763

¹ When works under construction have been completed.

STATE TABLE X.—IDLE LAND IN DRAINAGE ENTERPRISES, BY ARREARAGE, BY DIVISIONS AND STATES, 1930

DIVISION AND STATE	ALL ENTERPRISES			ENTERPRISES IN ARREARS			ENTERPRISES NOT IN ARREARS		
	Land in enter- prises	Idle land	Propor- tion idle	Land in enter- prises	Idle land	Propor- tion idle	Land in enter- prises	Idle land	Propor- tion idle
	Acres	Acres	Per cent	Acres	Acres	Per cent	Acres	Acres	Per cent
Total (35 States).....	84,408,093	20,003,315	23.7	9,812,578	4,267,085	43.5	74,595,515	15,736,232	21.1
GEOGRAPHIC DIVISIONS:									
East North Central.....	33,485,754	2,408,332	7.5	1,416,835	301,545	21.3	32,068,919	2,106,787	6.9
West North Central.....	23,600,882	4,910,444	20.7	3,634,244	1,452,353	40.0	20,056,638	3,458,091	17.2
South Atlantic.....	6,941,710	6,040,396	87.0	1,482,760	952,537	64.2	5,458,950	5,087,859	93.2
East South Central.....	4,167,081	1,523,603	36.0	787,700	403,830	51.3	3,379,381	1,119,773	33.1
West South Central.....	11,340,152	4,226,453	37.3	1,851,788	1,013,818	54.7	9,488,364	3,212,635	33.9
Mountain.....	1,989,770	357,668	18.2	259,350	104,735	40.4	1,710,420	252,933	14.8
Pacific.....	2,812,138	446,019	15.9	370,001	38,205	10.1	2,442,237	408,354	16.8
EAST NORTH CENTRAL:									
Ohio.....	8,165,494	359,758	4.4	11,008			8,154,420	359,758	4.4
Indiana.....	10,214,014	486,000	4.8	287,066	4,028	1.4	9,926,958	482,032	4.9
Illinois.....	5,032,682	232,052	4.6	160,300	23,203	14.5	4,872,382	208,849	4.3
Michigan.....	9,180,851	1,041,456	11.3	630,095	40,765	6.5	8,550,756	1,000,691	11.7
Wisconsin.....	892,713	378,400	42.4	327,416	233,549	71.3	565,297	144,857	26.0
WEST NORTH CENTRAL:									
Minnesota.....	11,474,683	3,747,812	32.7	1,857,637	989,960	53.3	9,617,046	2,757,846	28.7
Iowa.....	6,137,649	78,303	1.3	318,037	680	0.2	5,819,612	77,623	1.3
Missouri.....	3,150,022	879,897	27.9	1,350,734	447,792	33.1	1,799,288	432,105	24.0
North Dakota.....	1,694,142	103,641	6.5	9,412	3,135	33.3	1,684,730	100,506	6.3
South Dakota.....	697,758	51,905	7.4	63,800	4,570	7.2	633,958	47,335	7.5
Nebraska.....	879,459	45,755	5.2	31,024	6,000	19.3	848,435	39,755	4.7
Kansas.....	257,169	3,131	1.2	3,000	300	10.0	254,169	2,831	1.1
SOUTH ATLANTIC:									
Virginia.....	15,042	9,500	63.2				15,042	9,500	63.2
North Carolina.....	679,236	363,415	53.5	122,131	78,398	64.2	557,105	285,017	51.2
South Carolina.....	203,240	120,396	60.7	63,493	46,232	72.9	144,840	80,164	55.3
Georgia.....	84,255	35,640	42.3	57,058	24,526	43.0	27,197	11,114	40.9
Florida.....	5,954,934	5,505,445	92.5	1,240,168	893,411	64.8	4,714,766	4,702,034	99.7
EAST SOUTH CENTRAL:									
Kentucky.....	585,025	223,004	38.1	209,821	67,027	31.9	375,804	156,037	41.5
Tennessee.....	693,500	324,409	46.8	303,002	229,282	75.6	199,658	95,187	47.7
Mississippi.....	2,983,490	975,070	32.7	183,977	107,521	58.4	2,804,510	868,440	31.0
WEST SOUTH CENTRAL:									
Arkansas.....	4,631,155	2,035,463	44.0	1,465,002	708,465	48.4	3,166,153	1,266,988	40.0
Louisiana.....	3,655,483	1,348,437	36.9	351,578	228,978	65.1	3,303,905	1,119,459	33.9
Oklahoma.....	170,158	26,002	15.3	8,270	1,000	12.1	161,888	25,002	15.5
Texas.....	2,883,356	816,461	28.3	26,938	15,375	57.1	2,856,418	801,086	28.0
MOUNTAIN:									
Montana.....	167,620	18,170	10.8	7,070	500	7.1	160,550	17,670	11.0
Idaho.....	375,464	28,673	7.6	10,721	870	8.1	364,743	27,803	7.6
Wyoming.....	245,793	64,478	26.2	32,021	10,720	33.5	213,682	53,758	25.2
Colorado.....	366,719	69,780	19.0	53,195	22,012	41.4	313,524	47,768	15.2
New Mexico.....	176,292	30,999	17.6	69,899	21,068	30.1	125,483	9,928	7.9
Arizona.....	318,931	39,219	12.3	2,883	1,519	52.7	316,048	37,700	11.9
Utah.....	166,652	69,946	41.9	102,651	48,046	46.7	53,401	12,900	24.2
Nevada.....	162,980	45,300	27.8				162,980	45,300	27.8
PACIFIC:									
Washington.....	307,242	33,764	11.0	59,616	4,320	7.3	307,626	29,444	9.6
Oregon.....	211,182	52,563	24.9	72,663	15,466	21.5	139,119	37,097	26.7
California.....	2,233,714	369,292	16.5	248,222	18,473	7.4	1,985,492	341,810	17.2

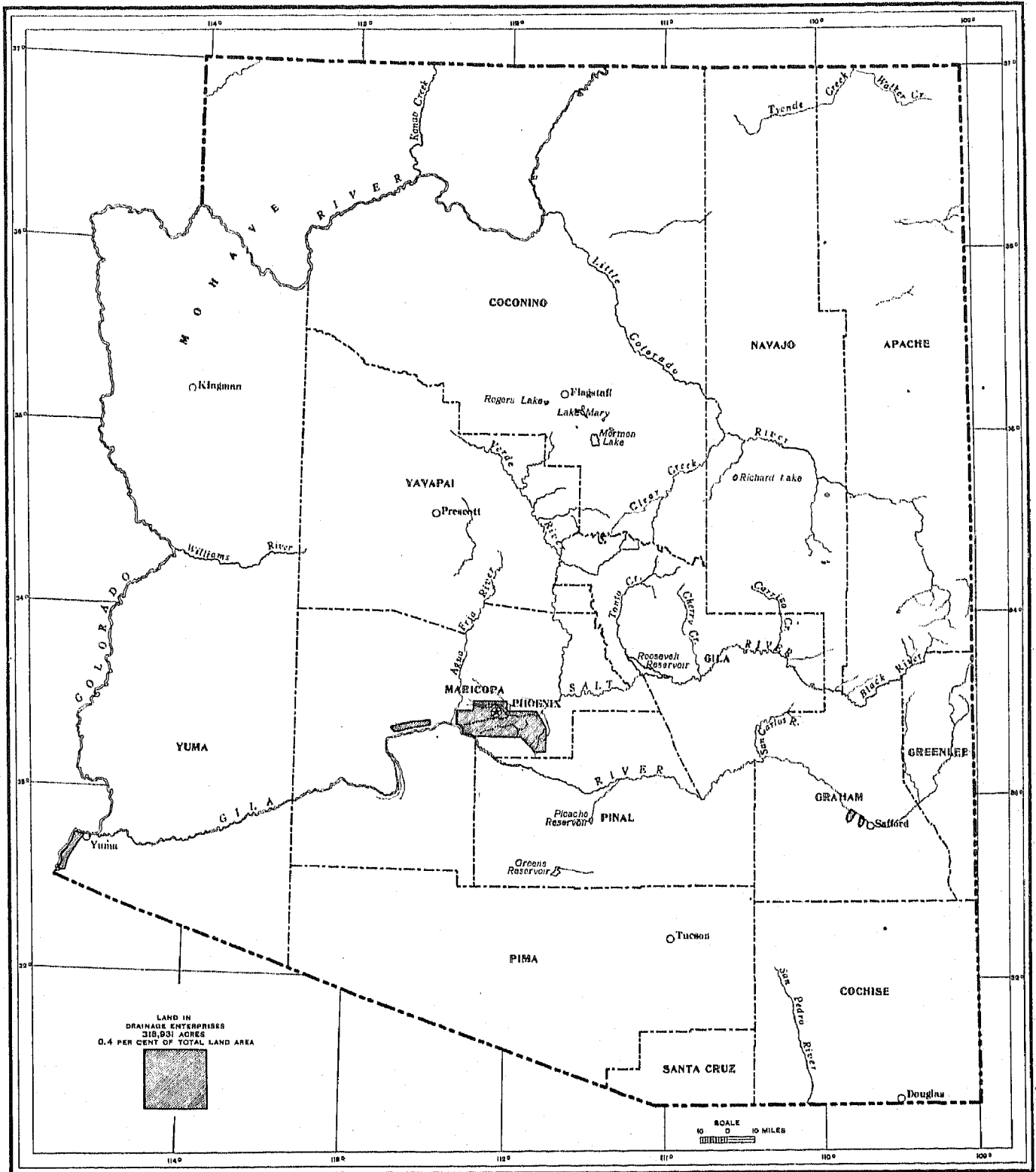
SUMMARY FOR THE UNITED STATES

STATE TABLE XI.—FARMS REPORTING DRAINAGE AND FARM LAND DRAINED, 1930 AND 1920; FARMS, ALL LAND IN FARMS, AND APPROXIMATE LAND AREA, 1930; BY DIVISIONS AND STATES

DIVISION AND STATE	FARMS REPORTING DRAINAGE		FARM LAND PROVIDED WITH DRAINAGE		All farms, 1930	FARM LAND, 1930			Approximate land area, 1930
	1930	1920	1930	1920		All land in farms	Crop land	Woodland	
	Number	Number	Acres	Acres	Number	Acres	Acres	Acres	Acres
United States.....	651, 172	924, 815	44, 523, 685	53, 024, 975	6, 288, 648	986, 771, 016	413, 235, 800	140, 045, 725	1, 903, 216, 040
GEOGRAPHIC DIVISIONS:									
New England.....	4, 172	9, 083	74, 831	120, 790	124, 925	14, 283, 107	4, 014, 862	6, 400, 151	30, 604, 640
Middle Atlantic.....	34, 227	61, 549	1, 004, 138	1, 073, 638	357, 603	35, 047, 145	16, 955, 456	7, 276, 446	64, 000, 000
East North Central.....	302, 255	420, 584	24, 921, 373	30, 737, 056	966, 502	110, 891, 170	63, 432, 020	17, 074, 905	157, 160, 960
West North Central.....	133, 158	163, 714	11, 450, 057	11, 758, 039	1, 112, 755	265, 487, 007	150, 284, 838	17, 758, 831	320, 914, 560
South Atlantic.....	61, 302	114, 983	1, 497, 817	2, 805, 072	1, 058, 468	86, 362, 715	34, 066, 185	33, 734, 730	172, 200, 720
East South Central.....	45, 335	69, 697	1, 133, 517	1, 720, 517	1, 062, 214	72, 817, 357	30, 246, 565	22, 020, 203	114, 885, 760
West South Central.....	38, 845	44, 835	2, 229, 772	2, 305, 701	1, 103, 134	183, 906, 346	64, 747, 063	27, 851, 344	275, 037, 440
Mountain.....	12, 722	9, 754	870, 470	456, 015	241, 314	157, 450, 133	30, 651, 224	7, 429, 755	549, 705, 760
Pacific.....	19, 156	21, 716	1, 335, 110	1, 318, 238	261, 733	60, 525, 037	18, 837, 671	0, 400, 210	203, 580, 800
NEW ENGLAND:									
Maine.....	752	2, 068	10, 068	26, 302	36, 006	4, 630, 938	1, 401, 765	2, 240, 910	19, 132, 800
New Hampshire.....	304	1, 013	5, 412	11, 777	14, 006	1, 060, 061	422, 182	1, 071, 997	5, 770, 840
Vermont.....	734	1, 728	20, 530	35, 049	24, 808	3, 890, 067	1, 128, 017	1, 503, 681	5, 830, 360
Massachusetts.....	1, 554	2, 655	20, 741	30, 022	25, 598	2, 005, 461	862, 560	802, 560	5, 144, 060
Rhode Island.....	83	116	1, 043	2, 403	3, 322	279, 361	68, 256	121, 580	682, 880
Connecticut.....	605	1, 203	17, 037	14, 646	17, 105	1, 502, 270	430, 588	590, 405	3, 084, 800
MIDDLE ATLANTIC:									
New York.....	20, 540	33, 806	743, 823	1, 180, 423	150, 806	17, 070, 633	8, 154, 315	3, 634, 230	30, 498, 560
New Jersey.....	2, 610	4, 903	89, 806	174, 260	25, 378	1, 758, 027	987, 315	278, 802	4, 808, 060
Pennsylvania.....	11, 068	22, 750	170, 410	318, 955	172, 410	15, 300, 485	7, 813, 826	3, 363, 315	28, 692, 450
EAST NORTH CENTRAL:									
Ohio.....	95, 121	130, 117	6, 203, 870	7, 365, 632	219, 296	21, 514, 050	11, 269, 395	2, 773, 629	26, 073, 600
Indiana.....	80, 058	111, 435	6, 800, 417	8, 308, 844	181, 570	10, 088, 075	11, 722, 236	2, 619, 450	23, 068, 800
Illinois.....	71, 839	90, 246	9, 331, 153	11, 247, 637	214, 497	30, 095, 330	21, 130, 007	2, 741, 756	35, 867, 520
Michigan.....	42, 246	60, 948	2, 156, 013	3, 156, 632	169, 372	17, 118, 951	9, 094, 033	3, 234, 738	36, 787, 200
Wisconsin.....	12, 091	21, 838	423, 800	658, 411	181, 707	21, 874, 155	10, 206, 455	5, 705, 392	35, 363, 840
WEST NORTH CENTRAL:									
Minnesota.....	35, 383	53, 011	2, 495, 059	2, 903, 034	185, 255	30, 913, 367	19, 490, 692	4, 746, 303	51, 749, 120
Iowa.....	73, 429	88, 865	7, 210, 240	7, 334, 404	214, 928	34, 019, 332	22, 738, 377	2, 213, 504	35, 675, 640
Missouri.....	17, 408	11, 917	1, 156, 880	859, 063	255, 040	33, 743, 010	15, 616, 272	7, 700, 000	43, 085, 280
North Dakota.....	715	682	150, 025	89, 054	77, 975	38, 657, 894	24, 528, 120	557, 742	44, 017, 120
South Dakota.....	1, 774	4, 077	126, 251	101, 871	83, 157	36, 470, 083	19, 002, 711	400, 557	40, 195, 520
Nebraska.....	2, 340	2, 356	207, 042	214, 428	120, 458	44, 708, 505	22, 943, 012	941, 219	40, 157, 120
Kansas.....	2, 100	2, 806	109, 051	106, 985	106, 042	46, 975, 047	26, 635, 054	1, 109, 506	52, 335, 360
SOUTH ATLANTIC:									
Delaware.....	909	4, 246	40, 076	185, 831	9, 707	900, 815	504, 250	203, 008	1, 257, 600
Maryland.....	2, 687	6, 911	89, 307	249, 790	43, 203	4, 374, 308	2, 120, 264	1, 213, 103	6, 362, 240
District of Columbia.....	9	21	251	407	104	3, 071	2, 621	39, 680	39, 680
Virginia.....	4, 291	9, 899	120, 284	225, 068	170, 610	16, 728, 620	5, 058, 317	6, 695, 156	25, 767, 680
West Virginia.....	1, 126	1, 049	23, 276	38, 464	82, 041	8, 802, 348	1, 907, 294	3, 128, 550	15, 374, 080
North Carolina.....	30, 018	45, 246	645, 670	1, 066, 933	279, 708	18, 055, 103	7, 012, 291	8, 320, 434	31, 193, 600
South Carolina.....	14, 324	26, 993	372, 956	676, 152	157, 931	10, 303, 113	5, 036, 998	3, 902, 535	19, 516, 800
Georgia.....	4, 974	15, 121	100, 634	274, 088	255, 598	22, 078, 630	10, 440, 597	8, 372, 937	37, 584, 000
Florida.....	2, 904	4, 507	108, 354	147, 940	68, 060	5, 026, 617	1, 069, 204	1, 801, 838	35, 111, 040
EAST SOUTH CENTRAL:									
Kentucky.....	3, 796	5, 817	105, 274	225, 228	246, 490	10, 927, 280	6, 920, 915	4, 796, 626	25, 715, 840
Tennessee.....	4, 927	8, 887	156, 162	254, 118	245, 657	18, 003, 241	7, 665, 776	5, 413, 347	26, 679, 680
Alabama.....	7, 515	10, 067	153, 230	415, 293	247, 395	17, 554, 635	8, 190, 039	6, 485, 981	32, 818, 560
Mississippi.....	20, 097	34, 926	628, 851	825, 878	312, 603	17, 332, 195	7, 454, 835	6, 224, 309	20, 671, 680
WEST SOUTH CENTRAL:									
Arkansas.....	13, 654	13, 426	564, 371	497, 480	242, 334	16, 052, 062	7, 907, 328	5, 443, 255	33, 616, 000
Louisiana.....	14, 262	21, 271	786, 292	1, 004, 035	161, 445	9, 355, 437	4, 740, 395	2, 659, 113	20, 061, 760
Oklahoma.....	1, 857	2, 032	91, 649	107, 014	203, 866	33, 790, 817	17, 333, 174	4, 059, 493	44, 424, 960
Texas.....	9, 072	8, 106	787, 400	756, 263	405, 489	124, 707, 130	34, 760, 166	15, 680, 483	167, 934, 720
MOUNTAIN:									
Montana.....	596	756	59, 005	51, 140	47, 495	44, 650, 152	11, 398, 921	1, 819, 900	93, 523, 840
Idaho.....	2, 609	1, 167	143, 421	64, 648	41, 674	9, 316, 908	4, 073, 265	850, 908	53, 346, 560
Wyoming.....	926	433	97, 834	35, 654	16, 011	23, 525, 234	2, 292, 008	515, 643	62, 430, 720
Colorado.....	3, 253	2, 749	230, 281	127, 037	59, 956	28, 876, 171	8, 448, 084	1, 541, 463	66, 341, 120
New Mexico.....	1, 871	1, 204	107, 352	47, 311	31, 404	30, 822, 034	1, 790, 190	1, 818, 134	78, 401, 920
Arizona.....	79	241	6, 737	9, 651	14, 173	10, 526, 627	648, 692	616, 992	72, 838, 400
Utah.....	2, 716	2, 729	118, 801	74, 316	27, 159	5, 613, 101	1, 495, 497	191, 336	52, 597, 750
Nevada.....	672	385	107, 039	46, 252	3, 442	4, 080, 906	494, 307	66, 373	70, 285, 440
PACIFIC:									
Washington.....	7, 812	10, 020	232, 471	274, 606	70, 904	13, 533, 778	6, 275, 350	1, 874, 240	42, 775, 040
Oregon.....	6, 092	6, 618	245, 339	220, 582	55, 153	16, 548, 678	4, 172, 519	3, 122, 215	61, 188, 480
California.....	5, 252	5, 078	857, 303	813, 000	135, 676	30, 442, 581	8, 380, 802	4, 502, 755	99, 617, 280

ARIZONA

APPROXIMATE LOCATION OF LAND IN DRAINAGE ENTERPRISES



ARIZONA

Introduction.—Statistics concerning the drainage of lands for agricultural purposes are presented in the following pages. The data relate to drainage conditions as of January 1, 1930, and the crop year 1929. The first drainage census for the United States was that of 1920 and statistics from that census are shown for purposes of comparison.

An organized drainage enterprise may include timbered and other unimproved land not yet in farms. The statistics for drainage on farms were collected in 1930 on the general farm schedule and are shown in the first section of State Table 1 and in County Table I; while those for drainage enterprises were obtained on a special drainage schedule.

Since farm lands provided with drains may be either within or without an organized enterprise, and since these drains may be either supplemental to or independent of the works installed by an enterprise, the figures for the two parts of the drainage census are shown separately.

Summary and condition of land in enterprises.—All drainage enterprises in Arizona are located in three counties in the southern part of the State and most of

the drained land is located within the Yuma and the Salt River irrigation projects, both of which were constructed by the United States Bureau of Reclamation. Approximately 96 per cent of the land was reported as in occupied farms in 1930.

When the drainage work is done directly by an irrigation enterprise, the drainage enterprise has been considered as identical with the irrigation enterprise as all irrigable lands are usually assessed for the necessary drainage work. Of the 292,000 acres located in such enterprises in 1930, approximately 130,000 acres are served by drainage works and probably much of the remainder will ultimately require drainage.

The usual purpose of an organized drainage enterprise is to provide adequate outlets into which the farms of the district may be drained, and to afford relief from overflow for the district as a unit. Therefore, the fact that an enterprise which has completed its drainage works contains land still unfit to raise any crop, or land fit only for a partial crop, does not necessarily show that the works are inadequate. State Table 1 includes a summary of the condition of lands in drainage enterprises.

STATE TABLE 1.—SUMMARY FOR THE STATE: 1930 AND 1920

ITEM (See definitions in Introduction)	CENSUS OF—		INCREASE ¹	
	1930	1920	Amount	Per cent
FARMS AND DRAINAGE ON FARMS				
All farms.....number.....	14,173	9,975	4,198	42.1
Farms reporting drainage.....number.....	79	241	-162	-67.2
All land in farms.....acres.....	10,526,627	5,802,126	4,724,501	81.4
Farm land provided with drainage.....acres.....	6,737	9,651	-2,914	-30.2
AREA, DRAINS, AND INVESTMENT IN ENTERPRISES				
Approximate land area of State.....acres.....	72,838,400	72,838,400		
Land in drainage enterprises.....acres.....	318,031	39,640	279,291	704.6
Improved land.....acres.....	309,112	36,880	272,232	738.2
Unimproved land:				
Woodland.....acres.....	75		75	
Other.....acres.....	9,744	2,760	6,984	253.0
Land unfit to raise any crop for lack of drainage.....acres.....	4,125	² 2,100	1,065	91.0
Land drained, fit to raise normal crop.....acres.....	313,112	³		
Land partly drained, fit for partial crop.....acres.....	1,694	⁴ 2,100	-466	-21.6
Land in occupied farms.....acres.....	304,802	³		
Land in planted crops.....acres.....	278,066	³		
Land idle.....acres.....	30,219	³		
Ditches, completed.....miles.....	349.4	32.6	316.8	971.8
Tile drains, completed.....miles.....	14.3	1.0	13.3	
Capital invested in enterprises.....dollars.....	1,875,100	414,425	1,460,675	352.5
Average, per acre.....dollars.....	5.88	10.45	-4.57	-43.7

¹ A minus sign (-) denotes decrease. Per cent not shown when more than 1,000.
² "Swampy, subject to overflow, seeped, or alkali."

³ Not called for on schedule.
⁴ "Suffering a loss of crops from defective drainage."

AREA AND CAPITAL

Area of enterprises.—Statistics by counties require that an enterprise located in more than one county be divided, and the part in each county be considered as a separate enterprise. In this way, there are 7 drain-

age enterprises in Arizona with an average area of 45,562 acres. There are 4 such enterprises of between 500 and 5,000 acres, and 3 of 5,000 acres or more, 1 of which contains 242,000 acres.

The area of enterprises equals the land in enterprises, as there is no overlap.

STATE TABLE 2.—AREA OF ENTERPRISES, BY SIZE: 1930 AND 1920

SIZE GROUP	AREA OF ENTERPRISES ¹				Land in enterprises, 1930
	1930		1920		
	Acres	Per cent	Acres	Per cent	
All enterprises.....	318,931	100.0	30,640	100.0	318,931
500 to 999 acres.....	640	0.2	640	1.0	640
1,000 to 4,999 acres.....	5,691	1.8			5,691
5,000 to 9,999 acres.....			9,000	22.7	
10,000 to 49,999 acres.....	20,600	6.4	30,000	75.7	20,600
50,000 to 99,999 acres.....	50,000	15.7			50,000
100,000 to 499,999 acres.....	242,000	75.9			242,000

¹ No overlap.

Character of enterprise.—Organized drainage enterprises having executive officers exclusively their own, chosen according to the State drainage laws, are classed as *drainage districts*.

Drainage projects under the control of the officers of an irrigation organization are classed as *irrigation enterprises*. In such cases the drainage is incidental to land reclamation by irrigation, and both the drainage and irrigation operations are functions of the one enterprise.

All enterprises in Arizona are located on irrigated land. The greater part of the drainage was done directly by irrigation enterprises and only a small part by drainage districts.

STATE TABLE 3.—LAND AND CAPITAL, BY CHARACTER OF ENTERPRISE, 1930

CHARACTER OF ENTERPRISE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	318,931	100.0	1,875,100	100.0
Drainage districts.....	26,931	8.4	218,100	11.6
Irrigation enterprises.....	292,000	91.6	1,657,000	88.4

Type of drainage.—There were 6 enterprises, covering 268,931 acres of land, with an invested capital of \$1,255,100, that reported their works as completed.

There was 1 enterprise, covering 50,000 acres of land, with an invested capital of \$620,000, which estimated that \$130,000 would be required to complete the drainage works under construction.

The works completed to January 1, 1930, included approximately 349 miles of ditches, 14 miles of tile drains, and 3 miles of levees. These figures do not include drains or levees installed by individual farmers supplemental to the works of an enterprise. There were 2 enterprises that reported land served by pumps and 1 enterprise that reported 172 wells pumped for drainage.

STATE TABLE 4.—LAND AND CAPITAL, BY TYPE OF DRAINAGE, 1930

TYPE OF DRAINAGE (See definitions in Introduction)	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	318,931	100.0	1,875,100	100.0
Gravity drainage only.....	26,931	8.4	218,100	11.6
Ditches.....	23,483	7.3	145,500	7.8
Tile drains.....	2,808	0.9	65,600	3.5
Ditches and tile drains.....	640	0.2	7,000	0.3
Drainage, all or part by pumping.....	292,000	91.6	1,657,000	88.4
All drainage by pumping.....	50,000	15.7	620,000	33.1
Part gravity and part pumping.....	242,000	75.9	1,037,000	55.3

Pumping plants.—There were 2 enterprises that reported 130,000 acres served by pumps with a total capacity of 458,750 gallons per minute. Of the 175 pumps, 1 was driven by an oil engine and the remainder by electric motors.

There was 1 enterprise that reported 172 drainage wells from which water was pumped and again used for irrigation. The value of this water for irrigation purposes exceeded the cost of pumping.

STATE TABLE 5.—PUMPING PLANTS AND LAND SERVED, BY KIND OF POWER: 1930 AND 1920

KIND OF POWER	Enterprises	Engine or motor capacity		Pump capacity	Land served
		H. p.	Per cent		
All enterprises.....	1930.....	2	10,789	458,750	130,000
	1920.....	1	175	33,660	25,000
Electric.....	1930.....	1	10,264	380,000	80,000
Internal combustion.....	1920.....	1	175	33,660	25,000
Electric and internal combustion.....	1930.....	1	525	78,750	50,000

STATE TABLE 6.—PUMPING PLANTS AND LAND SERVED, BY KIND OF PUMP, 1930

KIND OF PUMP	Pumps	Pump capacity		Engine or motor capacity	Land served
		G. p. m.	Per cent		
All enterprises.....	175	458,750	100.0	10,789	130,000
Screw.....	3	78,750	17.2	625	50,000
Screw, centrifugal, and turbine.....	172	380,000	82.8	10,264	80,000

Arrears and delinquency.—Only 1 enterprise, with approximately 5 per cent of the invested capital and 1 per cent of the land in organized districts, was reported as in arrears in payment of principal or interest on bonds or other obligations; while 6 enterprises reported no arrearage. There were 2 enterprises, covering 23,483 acres, which reported a total of 3,640 acres delinquent in drainage taxes, and 5 enterprises, covering 295,448 acres, that reported no delinquency.

STATE TABLE 7.—LAND, CAPITAL INVESTED, AND AREA DELINQUENT IN DRAINAGE TAXES, ACCORDING TO ARREARAGE IN PAYMENT OF PRINCIPAL OR INTEREST ON BONDS OR OTHER OBLIGATIONS, 1930

FINANCIAL STATUS	Land		Capital invested to Jan. 1, 1930		Area delinquent
	Acres	Per cent	Dollars	Per cent	
All enterprises.....	318,931	100.0	1,875,100	100.0	3,640
Enterprises in arrears.....	2,883	0.9	95,500	5.1	1,140
With some delinquent land..	2,883	0.9	95,500	5.1	1,140
Enterprises not in arrears.....	316,048	99.1	1,779,600	94.9	2,500
With some delinquent land..	20,600	6.5	50,000	2.7	2,500
With no delinquent land....	295,448	92.6	1,729,600	92.2	

Purpose of drainage.—In some cases the drainage development accomplished two or more purposes, as an enterprise may contain land in farms, land damaged by alkali or seepage from irrigation, and land subject to overflow, all of which are benefited. However, the land is classified according to the principal purpose reported. All drainage enterprises in Arizona are located on irrigated lands, and therefore, the purpose of drainage was primarily the removal of alkali or seepage resulting from irrigation.

STATE TABLE 8.—LAND AND CAPITAL, BY PURPOSE OF DRAINAGE, 1930

PURPOSE OF DRAINAGE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0	Dollars	Per cent 100.0
All enterprises.....	318,931	100.0	1,875,100	100.0
Improvement of land already in farms.....	51,408	16.1	645,600	34.4
Removal of alkali or seepage from irrigation.....	267,523	83.9	1,229,500	65.6

Date of organization.—A period of one or more years may elapse between the date of organization and the beginning of actual construction, and in large enterprises the work may extend over a period of several years. For these reasons the original drainage was accomplished somewhat later than the dates shown. It was not feasible to secure dates of beginning and ending of construction work, so the date of establishment of each enterprise was used. Where the drainage work was done directly by an irrigation enterprise, the year in which drainage was undertaken is used instead of the year of organization of the irrigation project.

STATE TABLE 9.—LAND AND CAPITAL, BY DATE OF ORGANIZATION, 1930

DATE OF ORGANIZATION	Land		Area of enterprises ¹	Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0		Dollars	Per cent 100.0
All enterprises.....	318,931	100.0	318,931	1,875,100	100.0
1910-1914.....	50,000	15.7	50,000	620,000	33.1
1915-1919.....	244,040	76.5	244,040	1,084,000	57.8
1920-1924.....	24,891	7.8	24,891	171,100	9.1

¹ No overlap.

STATE TABLE 10.—CONDITION OF LAND AND LAND AVAILABLE FOR SETTLEMENT, BY DATE OF ORGANIZATION, 1930

DATE OF ORGANIZATION	LAND IN ENTERPRISES					
	Total	Condition of land			Land available for settlement	
		Improved land	Woodland	Other unimproved land		
All enterprises.....	Acres 318,931	Acres 309,112	Per cent 96.9	Acres 75	Acres 9,744	Acres 1,519
1910-1914.....	50,000	47,900	95.8	75	2,100	-----
1915-1919.....	244,040	241,890	99.1	75	2,075	-----
1920-1924.....	24,891	19,322	77.6	-----	5,569	1,519

COUNTY TABLE I.—FARMS REPORTING DRAINAGE AND FARM LAND DRAINED, 1930 AND 1920; FARMS, ALL LAND IN FARMS, AND APPROXIMATE LAND AREA, 1930

STATE AND COUNTY	FARMS REPORTING DRAINAGE ¹		FARM LAND PROVIDED WITH DRAINAGE		All farms, 1930	FARM LAND, 1930			Approximate land area, 1930
	1930	1920	1930	1920		All land in farms	Crop land	Woodland	
	Number 70	Number 241	Acres 0,737	Acres 9,051	Number 14,173	Acres 10,526,627	Acres 648,092	Acres 616,092	Acres 72,838,400
The State.....	28	54	1,143	2,320	749	468,607	35,217	44,615	2,908,200
Graham.....	21	29	2,778	3,328	4,607	578,350	324,171	8,668	5,600,240
Maricopa.....	7	73	2,300	840	757	949,409	33,978	139,101	6,083,200
Pima.....	23	86	507	3,154	8,070	8,530,261	255,326	424,548	58,101,760

¹ No drainage on farms reported in Apache, Greenlee, Mohave, and Navajo Counties in 1930; nor in Apache and Greenlee Counties for 1920.

Method of maintenance.—Some enterprises reported more than one method of maintenance, but in such cases the principal method is shown.

Systematic maintenance was reported by 4 enterprises, covering 295,523 acres of land, and having an invested capital of \$1,759,500. There were 3 enterprises, with an invested capital of \$115,600, covering 23,403 acres of land, that did not have systematic maintenance.

There were 2 enterprises, with an invested capital of \$670,000, covering 70,600 acres of land, that reported ownership of excavators or other power equipment used principally for maintenance. There were 5 enterprises, with an invested capital of \$1,205,100, covering 248,331 acres of land, that did not report any such equipment.

STATE TABLE 11.—LAND AND CAPITAL, BY METHOD OF MAINTENANCE, 1930

METHOD OF MAINTENANCE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0	Dollars	Per cent 100.0
All enterprises.....	318,931	100.0	1,875,100	100.0
By district forces.....	267,531	83.9	1,215,100	64.8
By contract.....	50,000	15.7	620,000	33.1
By work apportioned to landowners.....	1,400	0.4	40,000	2.1

Cost of operation and maintenance.—All enterprises in Arizona reported some cost of operation and maintenance in 1929. The average cost per acre was \$1.88. This high average cost per acre is due to the fact that, approximately, 92 per cent of the land is in enterprises served by pumps. However, when water was pumped from drainage wells this cost was more than offset by use of the water for irrigation purposes. Expenditures for operation and maintenance vary greatly from year to year.

STATE TABLE 12.—LAND AND COST OF OPERATION AND MAINTENANCE, 1929, BY TYPE OF DRAINAGE

TYPE OF DRAINAGE (See definitions in Introduction)	Land reporting on cost	COST REPORTED	
		Total	Per acre
	Acres	Dollars	Dollars
All enterprises reporting.....	318,931	598,600	1.88
Gravity drainage only.....	26,931	3,450	0.13
Ditches.....	23,483	2,500	0.11
Tile drains.....	2,808	800	0.28
Ditches and tile drains.....	640	150	0.23
Drainage, all or part by pumping.....	292,000	595,210	2.04

DRAINAGE—ARIZONA

COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER ACRE, AND CONDITION AND USE OF LAND, 1930 AND 1920; AND DRAINAGE WORKS, 1930

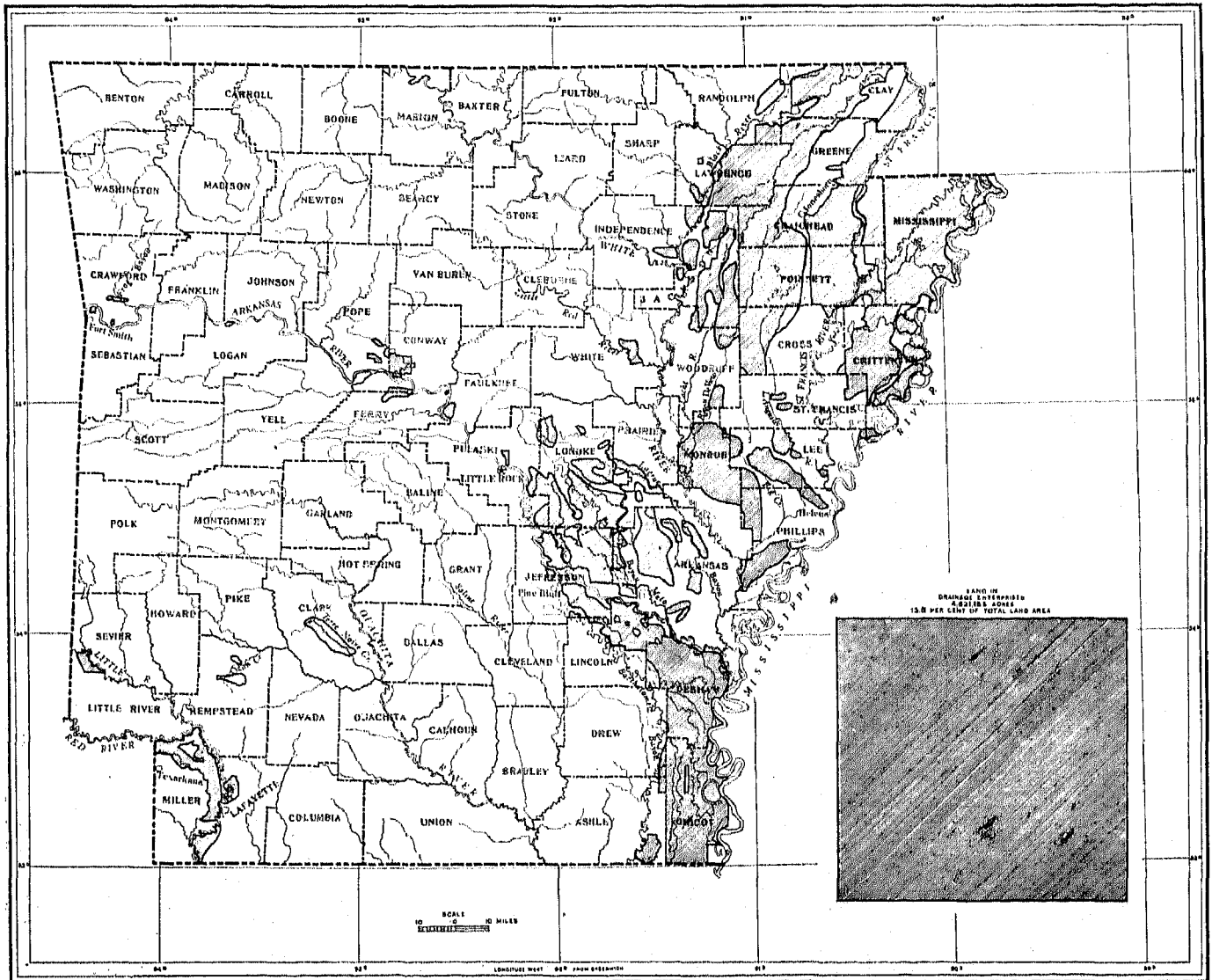
ITEM (See definitions in Introduction)		THE STATE	Graham	Maricopa	Yuma
LAND AREA					
1	Approximate land area.....1930.....acres.....	72,838,400	2,063,200	5,000,240	6,301,680
2	Land in enterprises.....1930.....acres.....	318,031	3,448	265,483	50,000
3	.....1920.....acres.....	30,040	040	0,000	30,000
4	Increase, ¹ 1920-1930.....per cent.....	704.6	438.8	-----	66.7
5	Area of all enterprises ².....1930.....acres.....	318,031	3,448	265,483	50,000
CONDITION AND USE OF LAND					
6	Land unfit to raise any crop.....1930.....acres.....	4,125	125	4,000	-----
7	Land unfit to raise any crop prior to drainage.....1930.....acres.....	103,051	1,278	67,903	34,500
8	Decrease since drainage.....per cent.....	90.0	90.2	94.1	100.0
9	Land fit to raise a normal crop.....1930.....acres.....	313,112	3,148	250,964	50,000
10	Land fit to raise a normal crop prior to drainage.....1930.....acres.....	214,050	1,870	107,580	15,500
11	Increase since drainage.....per cent.....	45.7	68.3	31.6	222.6
12	Land fit to raise a partial crop.....1930.....acres.....	1,004	175	1,519	-----
13	Land fit to raise a partial crop prior to drainage.....1930.....acres.....	300	300	-----	-----
14	Increase since drainage ¹.....per cent.....	464.7	-41.7	-----	-----
15	Improved land.....1930.....acres.....	300,112	3,248	257,964	47,000
16	.....1920.....acres.....	36,880	040	7,740	28,500
17	Increase, ¹ 1920-1930.....per cent.....	738.2	407.5	-----	68.1
Unimproved land—					
18	Woodland.....1930.....acres.....	75	75	-----	-----
19	Other.....1930.....acres.....	0,744	125	7,519	2,100
20	Land in occupied farms.....1930.....acres.....	304,802	3,448	257,914	43,440
21	Land in planted crops.....1930.....acres.....	278,006	3,218	232,400	42,448
22	Land idle.....1930.....acres.....	39,210	200	32,519	6,500
23	Land available for settlement.....1930.....acres.....	1,510	-----	1,519	-----
DRAINAGE WORKS, 1930					
Ditches—					
24	Completed.....miles.....	340.4	0.2	304.4	44.8
Tile drains—					
25	Completed.....miles.....	14.3	0.0	5.3	-----
Levees and dikes—					
26	Completed.....miles.....	2.5	-----	-----	2.5
Pumping plants—					
27	Engine or motor capacity.....horsepower.....	10,780	-----	10,261	525
28	Pump capacity.....gals. per min.....	468,760	-----	380,000	78,750
29	Land served by pumps.....acres.....	130,000	-----	80,000	50,000
Wells—					
30	Pumped for drainage.....number.....	172	-----	172	-----
31	Land drained by ditches only.....acres.....	23,483	-----	23,483	-----
32	Length of ditches.....miles.....	23.0	-----	23.0	-----
33	Land drained by tile only.....acres.....	2,808	2,808	-----	-----
34	Length of tile.....miles.....	7.5	7.5	-----	-----
35	Land drained by ditches and tile.....acres.....	640	640	-----	-----
36	Length of ditches.....miles.....	0.2	0.2	-----	-----
37	Length of tile.....miles.....	1.5	1.5	-----	-----
38	Land drained by pumps and other drainage works ³.....acres.....	202,000	-----	242,000	50,000
39	Length of ditches.....miles.....	326.2	-----	281.4	44.8
40	Length of tile.....miles.....	5.3	-----	5.3	-----
41	Length of levees.....miles.....	2.5	-----	-----	2.5
42	Land protected by levees of an outside agency.....acres.....	15,000	-----	15,000	-----
CAPITAL INVESTED AND COST PER ACRE					
43	Capital invested in enterprises to Jan. 1, 1930.....dollars.....	1,875,100	72,000	1,182,500	620,000
44	.....1920.....dollars.....	414,425	7,000	94,425	313,000
45	Increase, ¹ 1920-1930.....per cent.....	352.5	937.1	-----	98.1
46	Estimated cost of enterprises when completed ⁴.....1930.....dollars.....	2,005,100	72,000	1,182,500	760,000
47	.....1920.....dollars.....	1,020,425	7,000	94,425	925,000
48	Average, per acre when completed.....1930.....dollars.....	6.29	21.00	4.45	15.00
49	.....1920.....dollars.....	26.89	10.94	10.40	30.83
Invested in and required for completion of—					
50	Enterprises having ditches only.....1930.....dollars.....	145,500	-----	145,500	-----
51	Average, per acre.....dollars.....	6.20	-----	6.20	-----
52	Enterprises having tile drains only.....1930.....dollars.....	65,000	65,000	-----	-----
53	Average, per acre.....dollars.....	23.36	23.36	-----	-----
54	Enterprises having ditches and tile drains.....1930.....dollars.....	7,000	7,000	-----	-----
55	Average, per acre.....dollars.....	10.94	10.94	-----	-----
56	Enterprises having pumps and other drainage works.....1930.....dollars.....	1,787,000	-----	1,037,000	750,000
57	Average, per acre.....dollars.....	6.12	-----	4.28	15.00

¹ A minus sign (-) denotes decrease. Per cent not shown when more than 1,000.
² No overlap.

³ Area of enterprises having some land served by pumps.
⁴ Type of work under construction not reported.

ARKANSAS

APPROXIMATE LOCATION OF LAND IN DRAINAGE ENTERPRISES



ARKANSAS

Introduction.—Statistics concerning the drainage of lands for agricultural purposes are presented in the following pages. The data relate to drainage conditions as of January 1, 1930, and the crop year 1929. The first drainage census for the United States was that of 1920 and statistics from that census are shown for purposes of comparison.

An organized drainage enterprise may include timbered and other unimproved land not yet in farms. The statistics for drainage on farms were collected in 1930 on the general farm schedule and are shown in the first section of State Table 1 and in County Table I; while those for drainage enterprises were obtained on a special drainage schedule.

Summary and condition of land in enterprises.—By far the greater portion of land in drainage enterprises in Arkansas is located in the eastern part of the State. During the past 10 years a considerable area along the Red River in the southwestern part of the State has been included in drainage projects.

Most of the land in enterprises lies in the alluvial plain of the Mississippi and Arkansas Rivers and is located in areas which, prior to drainage, were largely swampy and covered with either virgin or cut-over timber. Much of this land is also protected from overflow by levees along the Mississippi River and its tributaries. These levees were constructed either by the Federal Government or by local levee districts.

The drainage channels are principally large ditches, many of which were constructed by floating dipper dredges. These ditches are usually located about a mile apart and follow section lines or the channels of bayous. The slope of alluvial lands along the Mississippi River will approximate a foot per mile.

Extending north from Helena to the Missouri line is Crowley's Ridge which separates the basins of the St.

Francis and White Rivers. The erosion from this ridge and consequent filling of near-by portions of drainage ditches constitute a serious problem in maintenance.

Most of the drainage enterprises in the St. Francis Basin in Arkansas have been rather expensive, due to the necessity of providing works sufficient to take care of water originating above the Missouri State line as well as local water. These enterprises have been extended about as far down the St. Francis Basin as gravity drainage will permit. Back water from the Mississippi River occasionally floods a considerable area in the lower portion of this basin.

Approximately 56 per cent of all land in enterprises was reported as improved; 13 per cent was unfit to raise any crop for lack of drainage; 38 per cent was woodland; and 44 per cent was idle in 1929.

A large acreage of cut-over land was included in drainage districts organized during and shortly after the World War when prices for farm products were high, but the subsequent fall in prices discouraged the expected settlement of much of this land; hence, large areas provided with drainage are now idle.

The total precipitation at stations of record for 1929 varied from approximately 32.6 to 59.5 inches, and averaged 46.1 inches, which is 1.6 inches less than normal.

The usual purpose of an organized drainage enterprise is to provide adequate outlets into which the farms of the district may be drained, and to afford relief for the district as a unit. Therefore, the fact that an enterprise which has completed its drainage works contains land still unfit to raise any crop, or land fit only for a partial crop, does not necessarily show that the works are inadequate. State Table 1 includes a summary of the condition of lands in drainage enterprises.

STATE TABLE 1.—SUMMARY FOR THE STATE: 1930 AND 1920

ITEM (See definitions in Introduction)	CENSUS OF—		INCREASE ¹	
	1930	1920	Amount	Per cent
FARMS AND DRAINAGE ON FARMS				
All farms.....	242,334	232,004	0,730	4.2
Farms reporting drainage.....	13,054	13,426	228	1.7
All land in farms.....	16,052,062	17,456,750	-1,403,788	-8.0
Farm land provided with drainage.....	564,371	497,480	66,882	13.4
AREA, DRAINS, AND INVESTMENT IN ENTERPRISES				
Approximate land area of State.....	33,616,000	33,616,000		
Land in drainage enterprises.....	4,031,155	3,470,591	1,151,564	33.1
Improved land.....	2,614,427	1,491,777	1,122,650	75.3
Unimproved land:				
Woodland.....	1,752,958	1,923,382	-170,424	-8.9
Other.....	203,770	64,432	100,338	369.4
Land unfit to raise any crop for lack of drainage.....	586,064	² 807,547	-310,883	-34.0
Land drained, fit to raise normal crop.....	3,435,280	(3)		
Land partly drained, fit for partial crop.....	609,211	⁴ 153,957	455,254	205.7
Land in occupied farms.....	2,040,035	(3)		
Land in planted crops.....	2,425,632	(3)		
Land idle.....	2,035,463	(3)		
Ditches, completed.....	4,974.3	3,154.1	1,820.2	57.7
Tile drains, completed.....	0.1	² 20.4		
Capital invested in enterprises.....	37,532,675	14,147,174	23,385,401	165.3
Average, per acre.....	8.10	4.07	4.03	99.0

¹ A minus sign (-) denotes decrease. ² "Swampy or subject to overflow." ³ Not called for on schedule. ⁴ "Suffering a loss of crops from defective drainage."

AREA AND CAPITAL

Area of enterprises.—Statistics by counties require that an enterprise located in more than one county be divided, and the part in each county be considered as a separate enterprise. In this way, 316 drainage enterprises are shown for Arkansas with an average area of 18,243 acres. There are 204 such enterprises of 5,000 acres or more, 108 of between 500 and 5,000 acres, and 4 of less than 500 acres.

The area of enterprises exceeds the land in enterprises by 1,133,653 acres, which is the amount of overlap.

STATE TABLE 2.—AREA OF ENTERPRISES, BY SIZE: 1930 AND 1920

SIZE GROUP	AREA OF ENTERPRISES ¹				Land in enterprises, 1930
	1930		1920		
	Acres	Per cent	Acres	Per cent	Acres
All enterprises.....	5,764,808	100.0	3,842,812	100.0	4,631,155
100 to 199 acres.....	110	(²)	1,140	(²)	110
200 to 499 acres.....	1,038	(²)	3,609	0.1	333
500 to 999 acres.....	12,060	0.2	274,227	7.1	7,700
1,000 to 4,999 acres.....	235,900	4.1	1,473,301	38.3	187,319
5,000 to 9,999 acres.....	493,382	8.6	1,162,120	30.2	357,089
10,000 to 49,999 acres.....	2,414,091	41.9	825,294	21.5	1,031,363
50,000 to 99,999 acres.....	1,228,710	21.3			1,006,019
100,000 acres and over.....	1,379,517	23.9			1,051,237

¹ The sum of the areas of individual enterprises, including overlap.
² Less than one-tenth of 1 per cent.

Character of enterprise.—Organized drainage enterprises having executive officers exclusively their own, chosen according to the State drainage laws, are classed as *drainage districts*.

Enterprises which, in common with others, are under the control of State, county, or township officials, are classed as *State projects*, *county drains*, or *township drains*, according to the public officials in control.

Enterprises without legal organization, as such, belonging to individuals, partnerships, or agricultural companies, are classed as *individually owned projects*. Projects of this type are included only when the area drained is 500 acres or more.

There are doubtless a few old enterprises in Arkansas which are *county drains* but the data available did not permit of an accurate separation of these projects, so all are here included in the classification "drainage districts."

STATE TABLE 3.—LAND AND CAPITAL, BY CHARACTER OF ENTERPRISE, 1930

CHARACTER OF ENTERPRISE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	4,631,155	100.0	37,532,575	100.0
Drainage districts.....	4,590,495	99.1	37,275,005	99.3
Individually owned projects.....	40,660	0.9	257,480	0.7

Type of drainage.—There were 309 enterprises, covering 4,600,347 acres of land and with an invested capital of \$37,350,775, which reported their works as completed; while 7 enterprises, covering 30,808 acres of land and with an invested capital of \$181,800, estimated that \$296,200 would be required to complete the drainage works under construction.

The works completed to January 1, 1930, included approximately 4,974 miles of ditches, one-tenth of a mile of tile drains, and 202 miles of levees. These figures do not include drains or levees installed by individual farmers supplemental to the works of an enterprise. There were 2 pumping plants reported.

STATE TABLE 4.—LAND AND CAPITAL, BY TYPE OF DRAINAGE, 1930

TYPE OF DRAINAGE (See definitions in Introduction)	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	4,631,155	100.0	37,532,575	100.0
Gravity drainage only.....	4,455,804	96.2	33,704,575	89.8
Ditches and levees.....	4,447,004	96.0	33,078,075	88.7
Ditches and tile drains.....	8,800	0.2	29,500	0.1
Drainage, all or part by pumping.....	175,261	3.8	3,828,000	10.2
All drainage by pumping.....	3,261	0.1	135,000	0.4
Part gravity and part pumping.....	172,000	3.7	3,693,000	9.8

Pumping plants.—Of the 2 pumping plants reported, 1 was located in Jefferson County and 1 in Mississippi County. The latter plant was not operated in 1929.

The total horsepower of these plants was 515 and the capacity of the pumps was 156,500 gallons per minute. These plants were designed to serve 18,261 acres.

STATE TABLE 5.—PUMPING PLANTS AND LAND SERVED, BY KIND OF POWER, 1930

KIND OF POWER	Enterprises	Engine or motor capacity		Pump capacity	Land served
		Number	H. p.			Per cent
All enterprises ¹	2	515	100.0	156,500	18,261
Electric.....	1	450	87.4	150,000	15,000
Internal combustion.....	1	65	12.6	6,500	3,261

¹ No pumping plants reported in 1929.

STATE TABLE 6.—PUMPING PLANTS AND LAND SERVED, BY KIND OF PUMP, 1930

KIND OF PUMP	Pumps	Pump capacity		Engine or motor capacity	Land served
		G. p. m.	Per cent		
All enterprises.....	5	156,500	100.0	515	18,261
Centrifugal.....	3	150,000	95.8	450	15,000
Rotary.....	2	6,500	4.2	65	3,261

Arrears and delinquency.—There were 49 enterprises, with approximately 43 per cent of the invested capital and covering about 32 per cent of the land in organized districts, reported as in arrears in payment of principal or interest on bonds or other obligations; while the remaining 267 enterprises were reported as not in arrears. Reports of 178 enterprises, covering 3,810,742 acres, show a total of 1,001,260 acres delinquent in drainage taxes; 126 enterprises, covering 734,131 acres, reported no delinquency; while 12 enterprises failed to report.

On account of the overlapping of enterprises, the area delinquent doubtless contains some land that has

been reported delinquent in 2 drainage projects, but the data available do not permit of an accurate determination of the acreage that has been twice reported. From a study of the reports, it is believed that this duplication could not exceed 5 per cent of the area shown delinquent.

STATE TABLE 7.—LAND, CAPITAL INVESTED, AND AREA DELINQUENT IN DRAINAGE TAXES, ACCORDING TO ARRANGEMENT IN PAYMENT OF PRINCIPAL OR INTEREST ON BONDS OR OTHER OBLIGATIONS, 1930

FINANCIAL STATUS	Land		Capital invested to Jan. 1, 1930		Area delinquent
	Acres	Per cent 100.0	Dollars	Per cent 100.0	
All enterprises.....	4,631,155		37,532,575		1,001,200
Enterprises in arrears.....	1,465,602	31.6	16,009,805	42.7	535,523
With some delinquent land.....	1,432,401	30.9	15,889,751	42.3	535,523
With no delinquent land.....	14,201	0.3	52,554	0.2	
With no report on delinquency.....	18,400	0.4	67,500	0.2	
Enterprises not in arrears.....	3,166,153	68.4	21,522,770	57.3	465,737
With some delinquent land.....	2,378,341	51.4	16,984,468	45.6	465,737
With no delinquent land.....	719,939	15.5	4,524,802	12.0	
With no report on delinquency.....	67,882	1.5	1,013,500	2.7	

Purpose of drainage.—In some cases the drainage development accomplished two or more purposes, as an enterprise may contain swamp land, land in farms, and land subject to overflow, all of which are benefited. However, the land is classified according to the principal purpose reported.

STATE TABLE 8.—LAND AND CAPITAL, BY PURPOSE OF DRAINAGE, 1930

PURPOSE OF DRAINAGE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0	Dollars	Per cent 100.0
All enterprises.....	4,631,155		37,532,575	
Reclamation of swamp land not previously in farms.....	2,371,276	51.2	18,035,205	48.1
Improvement of land already in farms.....	1,800,402	40.8	17,459,010	46.5
Protection against overflow.....	569,477	8.0	2,037,754	5.4

Date of organization.—A period of one or more years may elapse between the date of organization and the beginning of actual construction, and in large enterprises the work may extend over a period of several years. For these reasons the original drainage was accomplished somewhat later than the dates shown. It was not feasible to secure dates of beginning and ending of construction work, so the date of establishment of each enterprise was used.

STATE TABLE 9.—LAND AND CAPITAL, BY DATE OF ORGANIZATION, 1930

DATE OF ORGANIZATION	Land		Area of enterprises ¹		Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0	Acres	Over-lapped acres	Dollars	Per cent 100.0
All enterprises.....	4,631,155		5,794,808	1,133,653	37,532,575	
1890-1899.....	2,460	0.1	2,460		6,800	(2)
1905-1909.....	871,776	18.8	917,936	46,160	3,267,500	8.7
1910-1914.....	1,516,714	32.7	1,794,734	248,020	7,566,057	20.2
1915-1919.....	1,498,461	32.4	1,784,230	285,769	18,259,238	48.7
1920-1924.....	643,724	13.9	790,251	146,527	4,704,800	12.6
1925-1929.....	98,020	2.1	505,197	407,177	3,727,780	9.9

¹ Includes overlap.

² Less than one-tenth of 1 per cent.

STATE TABLE 10.—CONDITION OF LAND AND LAND AVAILABLE FOR SETTLEMENT, BY DATE OF ORGANIZATION, 1930

DATE OF ORGANIZATION	LAND IN ENTERPRISES					Land available for settlement
	Total	Condition of land			Acres	
		Improved land	Wood-land	Other unimproved land		
All enterprises.....	4,631,155	2,614,427	56.5	1,752,958	263,770	1,210,414
1890-1899.....	2,460	1,400	56.9	760	300	600
1905-1909.....	871,776	425,811	48.8	406,419	30,546	104,109
1910-1914.....	1,516,714	919,720	60.0	470,010	126,084	404,106
1915-1919.....	1,498,461	876,531	58.5	532,789	89,141	351,033
1920-1924.....	643,724	319,678	49.7	317,572	6,474	245,350
1925-1929.....	98,020	71,287	72.7	25,408	1,325	14,872

Method of maintenance.—Some enterprises reported more than one method of maintenance, but in such cases the principal method is shown.

Systematic maintenance was reported by 105 enterprises, covering 1,460,651 acres of land and having an invested capital of \$8,806,521; while 211 enterprises, with an invested capital of \$28,726,054 and covering 3,170,504 acres of land, did not have systematic maintenance.

There were 11 enterprises, with an invested capital of \$9,580,650 and covering 376,652 acres of land, that reported ownership of excavators or other power equipment used principally for maintenance; while 305 enterprises, with an invested capital of \$27,951,925 and covering 4,254,503 acres of land, did not report any such equipment.

STATE TABLE 11.—LAND AND CAPITAL, BY METHOD OF MAINTENANCE, 1930

METHOD OF MAINTENANCE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0	Dollars	Per cent 100.0
All enterprises.....	4,631,155		37,532,575	
By district forces.....	772,523	16.7	4,236,074	11.3
By contract.....	2,050,087	44.2	16,060,341	42.8
By work apportioned to landowners.....	100,391	2.2	400,680	1.1
Other, none, and not reported.....	1,708,154	36.9	15,890,480	42.3

Cost of operation and maintenance.—Since many enterprises do not have annual maintenance, it is necessary to include those that reported no cost as well as those that reported some cost for 1929, in order to determine a fair average cost of maintenance for the State. Approximately 29 per cent of the land reporting showed some cost, and 71 per cent showed no cost in 1929. The average cost for all enterprises was 4 cents per acre. This low figure is doubtless due to the fact that many enterprises were not financially able to pay for a normal amount of maintenance work in 1929. Expenditures for operation and maintenance vary greatly from year to year.

STATE TABLE 12.—LAND AND COST OF OPERATION AND MAINTENANCE, 1929, BY TYPE OF DRAINAGE

TYPE OF DRAINAGE (See definitions in Introduction)	Land reporting on cost	COST REPORTED	
		Total	Per acre
All enterprises reporting.....	4,404,151	Dollars 158,400	Dollars 0.04
Gravity drainage only.....	4,288,890	157,550	0.04
Ditches and levees.....	4,280,312	157,550	0.04
Ditches and tile drains.....	8,578		
Drainage, all or part by pumping.....	175,261	850	(1)

¹ Less than 1 cent per acre. Low cost due to inactivity of 3 pumps.

DRAINAGE—ARKANSAS

COUNTY TABLE I.—FARMS REPORTING DRAINAGE AND FARM LAND DRAINED, 1930 AND 1920; FARMS, ALL LAND IN FARMS, AND APPROXIMATE LAND AREA, 1930

STATE AND COUNTY	FARMS REPORTING DRAINAGE ¹		FARM LAND PROVIDED WITH DRAINAGE		All farms, 1930	FARM LAND, 1930			Approximate land area, 1930
	1930	1920	1930	1920		All land in farms	Crop land	Woodland	
	Number	Number	Acres	Acres		Acres	Acres	Acres	
The State.....	13,054	13,420	564,371	497,480	242,334	16,052,962	7,907,328	5,443,255	33,616,000
Arkansas.....	78	97	22,070	16,771	2,301	315,722	209,396	69,617	640,000
Ashley.....	23	100	703	3,534	3,841	164,207	99,731	47,466	601,000
Carroll.....	17		581		2,351	278,120	76,249	114,030	410,240
Chicot.....	1,437	359	40,330	14,557	4,143	148,567	105,036	28,679	388,480
Clark.....	203	285	4,074	6,930	3,114	234,557	95,772	88,675	664,480
Clay.....	1,180	840	62,153	38,438	3,435	234,411	143,595	49,878	418,560
Craighead.....	568	873	26,861	34,255	4,757	260,148	177,161	48,062	430,680
Crittenden.....	949	112	27,915	8,523	8,044	245,533	206,256	20,194	372,480
Cross.....	110	60	16,705	7,524	4,398	182,613	123,538	43,434	399,160
Desha.....	687	170	19,887	4,988	3,510	115,772	85,404	23,100	478,080
Greene.....	619	356	28,330	18,550	3,398	225,141	128,915	53,809	350,040
Hempstead.....	137	190	5,110	4,680	2,807	289,607	148,913	87,460	465,280
Jackson.....	604	380	29,002	17,457	3,708	230,848	151,483	65,343	465,700
Jefferson.....	829	2,615	27,501	83,017	8,000	279,720	199,230	60,404	677,920
Lafayette.....	184	(?)	7,507	(?)	2,954	120,030	81,497	33,883	336,000
Lawrence.....	513	285	32,289	8,801	2,851	225,249	118,844	60,770	378,880
Lee.....	280	334	9,537	10,129	5,500	224,432	158,270	40,834	384,640
Lincoln.....	283	1,105	7,141	37,958	4,720	187,442	118,626	40,980	305,440
Little River.....	114	17	3,213	3,071	2,625	140,370	81,730	33,481	349,440
Logan.....	25	137	1,547	2,461	3,074	281,770	119,006	98,293	464,640
Lonoke.....	1,373	338	62,103	14,253	6,180	321,873	202,241	60,028	510,480
Miller.....	543	23	17,310	3,230	3,616	180,508	104,139	54,474	398,720
Mississippi.....	570	1,498	18,082	65,471	10,583	335,034	307,012	15,333	609,880
Monroe.....	103	36	7,012	1,243	3,415	153,166	103,444	38,318	385,920
Phillips.....	385	146	19,980	3,744	5,878	224,070	170,316	28,154	442,880
Poinsett.....	376	102	17,127	10,997	3,676	182,761	124,677	35,989	461,440
Pope.....	43	99	1,128	2,502	3,246	256,600	129,423	84,001	520,920
Prairie.....	28	132	2,209	3,918	2,131	213,743	126,313	44,837	423,080
Pulaski.....	67	162	3,953	5,559	4,290	230,550	129,382	72,538	498,560
Randolph.....	70	120	5,131	6,773	2,682	266,831	169,591	102,325	418,560
St. Francis.....	442	53	0,044	5,100	0,507	258,824	170,540	54,428	401,920
Saline.....	43	62	840	2,118	1,670	132,166	48,881	64,157	475,520
Scott.....	50	107	1,488	2,728	1,630	150,760	61,089	60,781	620,800
Sebastian.....	51	158	1,448	4,073	2,694	198,825	87,679	52,061	339,840
Sevier.....	31	136	825	2,194	2,216	157,992	67,750	63,440	366,080
Union.....	40	104	2,520	696	3,464	238,182	95,424	110,288	670,720
Washington.....	90	194	2,431	5,726	4,836	463,855	182,734	190,721	611,200
White.....	20	61	1,040	3,300	5,113	368,583	187,558	125,673	603,680
Woodruff.....	70	98	1,430	2,206	3,432	172,819	114,389	46,662	369,280
Yell.....	35	311	802	9,024	3,133	236,113	116,340	71,420	611,200
All other counties.....	336	1,235	7,164	20,810	80,304	6,920,613	2,637,039	2,011,847	15,165,920

¹ No drainage on farms reported in Newton County in 1930; nor in Boone, Carroll, and Newton Counties for 1920.

² Included in "All other counties."

DRAINAGE—ARKANSAS

COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER

ITEM (See definitions in Introduction)		THE STATE	Arkansas	Ashley	Chicot	Clark	Clay	Conway	
LAND AREA									
1	Approximate land area.....	1930.....acres..	33,610,000	640,000	601,600	388,480	564,480	418,560	360,320
2	Land in enterprises.....	1930.....acres..	4,631,155	144,123	34,269	343,211	33,476	254,140	27,110
3		1920.....acres..	3,479,591	91,840	38,319	68,920	25,000	278,480	31,650
4	Increase, ¹ 1920-1930.....	per cent.....	33.1	56.9	-10.6	398.0	53.0	-8.7	-14.3
5	Area of all enterprises (overlapping areas included).....	1930.....acres..	5,764,803	144,926	34,269	348,013	33,476	352,150	27,110
6	Excess over land in enterprises (total areas overlapping).....	acres.....	1,133,653	800		4,802		98,010	
CONDITION AND USE OF LAND									
7	Land unfit to raise any crop.....	1930.....acres..	586,664	5,400	6,000	65,521		40,500	21,500
8	Land unfit to raise any crop prior to drainage.....	acres.....	2,418,369	43,690	12,545	140,777	8,476	123,800	22,500
9	Decrease since drainage.....	per cent.....	75.7	87.5	52.2	60.6	100.0	67.3	4.6
10	Land fit to raise a normal crop.....	1930.....acres..	3,435,280	126,844	28,269	246,000	38,476	182,460	4,220
11	Land fit to raise a normal crop prior to drainage.....	acres.....	1,868,111	38,333	6,544	167,269	15,000	60,800	3,220
12	Increase since drainage.....	per cent.....	148.0	240.1	332.0	56.4	150.5	103.2	31.1
13	Land fit to raise a partial crop.....	1930.....acres..	609,211	11,882		41,600		31,180	1,330
14	Land fit to raise a partial crop prior to drainage.....	acres.....	827,676	64,703	15,180	45,135	15,000	40,540	1,300
15	Decrease since drainage.....	per cent.....	25.4	81.0	100.0	7.6	100.0	23.1	-12.3
16	Improved land.....	1930.....acres..	2,614,427	124,662	21,047	126,650	30,000	125,050	5,560
17		1920.....acres..	1,491,777	82,401	20,000	32,204	12,500	147,007	15,825
18	Increase, ¹ 1920-1930.....	per cent.....	75.3	51.2	-21.1	293.3	140.0	-15.5	-64.9
Unimproved land—									
19	Woodland.....	1930.....acres..	1,752,958	14,582	12,812	212,400	4,476	114,375	18,050
20	Other.....	1930.....acres..	268,770	4,882	410	4,101	4,000	14,724	3,500
21	Land in occupied farms.....	1930.....acres..	2,040,035	125,026	21,047	126,325	38,476	220,425	4,560
22	Land in planted crops.....	1930.....acres..	2,425,032	90,730	21,047	126,380	30,000	100,800	3,550
23	Woodland cleared and cultivated since drainage.....	1930.....acres..	768,381	6,150	3,228	17,428		24,000	2,525
24	Land idle.....	1930.....acres..	2,035,463	44,612	13,222	215,650	8,000	121,015	23,550
52	Land available for settlement.....	1930.....acres..	1,210,414	14,634	7,142	177,934		15,000	1,000
DRAINAGE WORKS, 1930									
Ditches—									
26	Completed.....	miles.....	4,074.3	174.3	30.0	123.0	28.0	102.0	7.5
27	Additional under construction.....	miles.....	64.0						1.0
Tile drains—									
28	Completed.....	miles.....	0.1					0.1	
Levees and dikes—									
29	Completed.....	miles.....	201.9				28.0	42.1	0.1
30	Additional under construction.....	miles.....	1.0						0.5
Pumping plants—									
31	Engine or motor capacity.....	horsepower.....	515						
32	Pump capacity.....	gals. per min.....	150,500						
33	Land served by pumps.....	acres.....	18,261						
34	Land drained by ditches only ¹	acres.....	3,902,617	144,123	34,269	343,211		98,163	21,000
35	Length of ditches.....	miles.....	4,108.6	174.3	30.0	123.0		72.0	4.0
36	Land drained by ditches and tile.....	acres.....	3,590					8,800	
37	Length of ditches.....	miles.....	15.0					15.0	
38	Length of tile.....	miles.....	0.1					0.1	
39	Land having ditches and levees ²	acres.....	544,387				38,476	147,096	0,110
40	Length of ditches.....	miles.....	625.8				28.0	105.0	4.5
41	Length of levees.....	miles.....	108.0				28.0	42.1	0.6
42	Land drained by pumps and other drainage works ³	acres.....	175,261						
43	Length of ditches.....	miles.....	289.0						
44	Length of levees.....	miles.....	4.0						
45	Land protected by levees of an outside agency.....	acres.....	2,534,714	6,476	8,180	322,021			110
CAPITAL INVESTED AND COST PER ACRE									
46	Capital invested in enterprises to Jan. 1, 1930.....	dollars.....	37,532,575	542,580	80,240	1,854,251	200,000	2,100,000	71,000
47		1920.....dollars..	14,147,174	378,088	77,000	157,656	68,000	1,707,798	63,990
48	Increase, ¹ 1920-1930.....	per cent.....	165.3	43.2	4.2		320.5	23.3	12.7
49	Estimated cost of enterprises when completed.....	1930.....dollars..	37,828,775	542,580	80,240	1,854,251	200,000	2,100,000	76,000
50		1920.....dollars..	25,888,599	378,088	77,000	108,182	210,000	1,772,998	65,000
51	Average, per acre when completed.....	1930.....dollars..	8.17	3.76	2.34	5.40	7.64	8.20	2.80
52		1920.....dollars..	7.44	4.13	2.01	2.44	8.40	6.37	2.05
Invested in and required for completion of—									
53	Enterprises having ditches only.....	1930.....dollars..	25,250,957	542,580	80,240	1,854,251		950,000	45,000
54	Average, per acre.....	dollars.....	6.47	3.76	2.34	5.40		9.08	2.14
55	Enterprises having ditches and tile drains.....	1930.....dollars..	26,500					20,500	
56	Average, per acre.....	dollars.....	2.98					3.98	
57	Enterprises having ditches and levees.....	1930.....dollars..	8,723,318				200,000	1,120,500	31,000
58	Average, per acre.....	dollars.....	16.02				7.64	7.88	5.07
59	Enterprises having pumps and other drainage works.....	1930.....dollars..	3,828,000						
60	Average, per acre.....	dollars.....	21.84						

¹ A minus sign (-) denotes decrease. A plus sign (+) denotes increase. Per cent not shown when more than 1,000 or when less than one-tenth of 1 per cent.
² Ditches located in Ashley and Chicot Counties.
³ When works under construction have been completed.
⁴ Area of enterprises having some land served by pumps.

DRAINAGE—ARKANSAS

COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER ACRE, AND CONDITION AND USE OF LAND, 1930 AND 1920; AND DRAINAGE WORKS, 1930—Continued

ITEM (See definitions in Introduction)		Miller	Mississippi	Monroe	Perry	Phillips	Poinsett	Pope
LAND AREA								
1	Approximate land area.....1930.....acres..	308,720	506,880	385,020	353,280	442,880	461,440	529,020
2	Land in enterprises.....1930.....acres..	88,800	504,420	200,000	12,500	97,040	375,544	7,127
3	.....1920.....acres..	27,040	478,087	33,136	12,350	110,800	304,800	2,500
4	Increase, 1920-1930.....per cent..	221.3	5.4	503.6	1.2	-19.0	-4.0	185.1
5	Area of all enterprises (overlapping areas included).....1930.....acres..	89,500	923,261	200,000	12,500	97,040	434,084	7,127
6	Excess over land in enterprises (total areas overlapping).....acres..	700	418,841				59,140	
CONDITION AND USE OF LAND								
7	and unfit to raise any crop.....1930.....acres..	2,000	75,000	5,000	1,100	12,100	61,500	1,070
8	Land unfit to raise any crop prior to drainage.....acres..	29,400	340,620	90,000	3,100	46,000	215,739	4,000
9	Decrease since drainage.....per cent..	93.2	78.4	94.4	64.5	73.7	71.5	73.3
10	Land fit to raise a normal crop.....1930.....acres..	82,300	327,720	195,000	10,400	64,000	300,804	5,330
11	Land fit to raise a normal crop prior to drainage.....acres..	36,200	74,700	90,000	7,200	24,000	110,271	1,760
12	Increase since drainage.....per cent..	127.3	338.7	116.7	44.4	166.7	168.7	204.6
13	Land fit to raise a partial crop.....1930.....acres..	4,500	101,700		1,000	20,040	13,240	727
14	Land fit to raise a partial crop prior to drainage.....acres..	23,200	83,200	20,000	2,200	27,040	43,534	1,377
15	Decrease since drainage 1.....per cent..	80.6	+22.2	100.0	54.5	22.6	69.6	47.2
16	Improved land.....1930.....acres..	45,600	313,920	105,000	5,400	60,500	151,070	6,067
17	.....1920.....acres..	14,612	207,743	14,011	6,175	59,110	71,510	1,250
18	Increase, 1920-1930.....per cent..	214.2	51.1	604.2	-12.6	2.4	112.5	380.6
19	Unimproved land--							
20	Woodland.....1930.....acres..	43,200	129,500	95,000	7,100	27,000	217,425	1,120
21	Other.....1930.....acres..		61,000			9,540	6,140	
22	Land in occupied farms.....1930.....acres..	45,600	314,220	90,000	5,400	59,500	104,083	6,107
23	Land in planted crops.....1930.....acres..	45,100	313,920	80,000	5,400	59,500	143,759	6,067
24	Woodland cleared and cultivated since drainage.....1930.....acres..	17,500	85,400	13,000	2,100	15,500	79,850	1,330
25	Land idle.....1930.....acres..	42,200	108,800	90,000	7,000	25,960	133,021	1,120
DRAINAGE WORKS, 1930								
26	Ditches--							
27	Completed.....miles..	120.0	802.0	32.0	18.0	77.0	445.0	15.5
28	Additional under construction.....miles..	2.0	58.0		3.0			
29	Tile drains--							
30	Completed.....miles..							
31	Levees and dikes--							
32	Completed.....miles..	17.0			2.2		38.0	4.0
33	Additional under construction.....miles..				0.5			
34	Pumping plants--							
35	Engine or motor capacity.....horsepower..		450					
36	Pump capacity.....gals. per min..		150,000					
37	Land served by pumps.....acres..		15,000					
38	Land drained by ditches only 2.....acres..	57,040	332,420	200,000		97,040	232,737	4,627
39	Length of ditches.....miles..	93.0	635.0	32.0		77.0	188.2	11.5
40	Land drained by ditches and tile.....acres..							
41	Length of ditches.....miles..							
42	Length of tile.....miles..							
43	Land having ditches and levees 1.....acres..	31,700			12,500		142,807	2,500
44	Length of ditches.....miles..	35.0			21.0		257.7	4.0
45	Length of levees.....miles..	17.0			2.7		38.0	4.0
46	Land drained by pumps and other drainage works 1.....acres..		172,000					
47	Length of ditches.....miles..		285.0					
48	Length of levees.....miles..							
49	Land protected by levees of an outside agency.....acres..	88,800	404,420			97,040	227,083	1,067
CAPITAL INVESTED AND COST PER ACRE								
50	Capital invested in enterprises to Jan. 1, 1930.....dollars..	800,000	8,280,650	130,000	93,000	723,000	6,355,500	67,000
51	.....1920.....dollars..	110,000	2,040,636	16,000	52,000	230,000	1,101,125	12,000
52	Increase, 1920-1930.....per cent..	559.7	200.1	609.2	78.8	214.3	433.0	463.3
53	Estimated cost of enterprises when completed.....1930.....dollars..	812,000	8,565,650	130,000	93,000	723,000	6,355,500	69,000
54	.....1920.....dollars..	116,000	4,040,636	16,000	60,000	230,000	5,691,125	28,000
55	Average, per acre when completed.....1930.....dollars..	9.14	16.96	0.65	7.44	7.45	15.92	0.78
56	.....1920.....dollars..	4.20	10.32	0.61	4.80	1.92	14.42	11.20
57	Invested in and required for completion of--							
58	Enterprises having ditches only.....1930.....dollars..	362,000	4,862,650	130,000		723,000	1,015,500	44,000
59	Average, per acre.....dollars..	6.35	14.63	0.65		7.45	4.36	0.64
60	Enterprises having ditches and tile drains.....1930.....dollars..							
61	Average, per acre.....dollars..							
62	Enterprises having ditches and levees.....1930.....dollars..	450,000			93,000		5,340,000	25,000
63	Average, per acre.....dollars..	14.17			7.44		37.39	10.00
64	Enterprises having pumps and other drainage works.....1930.....dollars..		3,693,000					
65	Average, per acre.....dollars..		21.47					

1 A minus sign (-) denotes decrease. A plus sign (+) denotes increase.
2 When works under construction have been completed.
3 Area of enterprises having some land served by pumps.

DRAINAGE—ARKANSAS

COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER ACRE, AND CONDITION AND USE OF LAND, 1930 AND 1920; AND DRAINAGE WORKS, 1930—Continued

ITEM (See definitions in Introduction)		Prairie	Pulaski	Randolph	St. Francis	White	Wood-ruff	Other counties ¹
LAND AREA								
1	Approximate land area.....1930.....acres..	423,680	498,560	418,560	401,920	603,680	360,280	1,040,280
2	Land in enterprises.....1930.....acres..	39,025	27,027	53,020	27,246	17,569	44,446	14,832
3	.....1920.....acres..	7,250	16,000	48,320	20,563	17,598	13,180	9,400
4	Increase, ² 1920-1930.....per cent..	437.8	72.7	0.7	-7.8	-0.2	237.2	57.8
5	Area of all enterprises (overlapping areas included).....1930.....acres..	39,025	27,027	59,470	28,726	17,569	44,446	14,832
6	Excess over land in enterprises (total areas overlapping).....acres..			6,460	1,480			
CONDITION AND USE OF LAND								
7	Land unfit to raise any crop.....1930.....acres..	600	300		1,411	1,756	2,500	521
8	Land unfit to raise any crop prior to drainage.....acres..	4,480	8,110	25,840	14,800	9,069	25,600	9,740
9	Decrease since drainage.....per cent..	86.6	96.3	100.0	90.5	80.6	90.2	92.3
10	Land fit to raise a normal crop.....1930.....acres..	30,711	26,627	40,020	18,535	15,813	41,046	12,560
11	Land fit to raise a normal crop prior to drainage.....acres..	10,511	9,755	18,180	6,010	8,500	18,946	3,228
12	Increase since drainage.....per cent..	192.2	173.0	109.6	208.4	86.0	121.4	289.1
13	Land fit to raise a partial crop.....1930.....acres..	7,714	700	4,000	7,300			1,751
14	Land fit to raise a partial crop prior to drainage.....acres..	24,034	9,762	9,000	6,436			4,804
15	Decrease since drainage ².....per cent..	67.9	92.8	55.6	+13.4			64.0
16	Improved land.....1930.....acres..	20,411	25,205	36,318	18,350	3,569	26,000	13,890
17	.....1920.....acres..	6,108	16,000	31,800	13,863	5,270	10,544	6,652
18	Increase, ² 1920-1930.....per cent..	379.8	57.9	14.0	32.5	-32.4	146.6	60.5
Unimproved land—								
19	Woodland.....1930.....acres..	9,214	1,432	10,302	7,460	14,000	18,440	226
20	Other.....1930.....acres..	400	930	400	1,436			716
21	Land in occupied farms.....1930.....acres..	31,311	24,827	45,020	22,360	3,569	26,000	13,860
22	Land in planted crops.....1930.....acres..	21,660	23,105	31,118	18,350	3,569	21,000	13,100
23	Woodland cleared and cultivated since drainage.....1930.....acres..	5,101	5,860	19,000	8,050		6,000	4,306
24	Land idle.....1930.....acres..	16,191	3,352	19,002	8,896	14,000	21,946	1,031
25	Land available for settlement.....1930.....acres..	7,000	2,200	8,000	3,400	12,244	15,946	587
DRAINAGE WORKS, 1930								
26	Ditches—							
27	Completed.....miles..	35.7	32.0	72.5	49.3	16.5	28.0	24.3
	Additional under construction.....miles..							
28	Tile drains—							
	Completed.....miles..							
29	Levees and dikes—							
30	Completed.....miles..		2.0					
	Additional under construction.....miles..							
31	Pumping plants—							
32	Engine or motor capacity.....horsepower..							
33	Pump capacity.....gals. per min..							
	Land served by pumps.....acres..							
34	Land drained by ditches only ³.....acres..	30,025	20,512	53,020	27,246	17,569	44,446	14,832
35	Length of ditches.....miles..	35.7	31.1	72.5	49.3	16.5	28.0	24.3
36	Land drained by ditches and tile.....acres..							
37	Length of ditches.....miles..							
38	Length of tile.....miles..							
39	Land having ditches and levees ³.....acres..		7,115					
40	Length of ditches.....miles..		1.5					
41	Length of levees.....miles..		2.0					
42	Land drained by pumps and other drainage works.....acres..							
43	Length of ditches.....miles..							
44	Length of levees.....miles..							
45	Land protected by levees of an outside agency.....acres..		15,592	6,450	27,246	17,569		3,100
CAPITAL INVESTED AND COST PER ACRE								
46	Capital invested in enterprises to Jan. 1, 1930.....dollars..	96,800	465,560	265,000	213,520	120,000	301,000	137,700
47	.....1920.....dollars..	24,000	125,000	149,025	206,627	120,000	68,000	66,000
48	Increase, 1920-1930.....per cent..	303.7	272.4	79.8	3.3		342.0	111.8
49	Estimated cost of enterprises when completed.....1930.....dollars..	96,800	465,560	265,000	213,520	120,000	301,000	137,900
50	.....1920.....dollars..	24,000	125,000	149,025	206,627	120,000	68,000	66,000
51	Average, per acre when completed.....1930.....dollars..	2.48	16.86	6.00	7.84	6.83	6.77	9.30
52	.....1920.....dollars..	3.31	7.81	3.10	6.00	8.62	5.10	6.91
53	Invested in and required for completion of—							
54	Enterprises having ditches only.....1930.....dollars..	96,800	430,000	205,000	213,520	120,000	301,000	137,900
55	Average, per acre.....dollars..	2.48	20.96	6.00	7.84	6.83	6.77	9.30
56	Enterprises having ditches and tile drains.....1930.....dollars..							
57	Average, per acre.....dollars..							
58	Enterprises having ditches and levees.....1930.....dollars..		35,500					
59	Average, per acre.....dollars..		4.99					
60	Enterprises having pumps and other drainage works.....1930.....dollars..							
	Average, per acre.....dollars..							

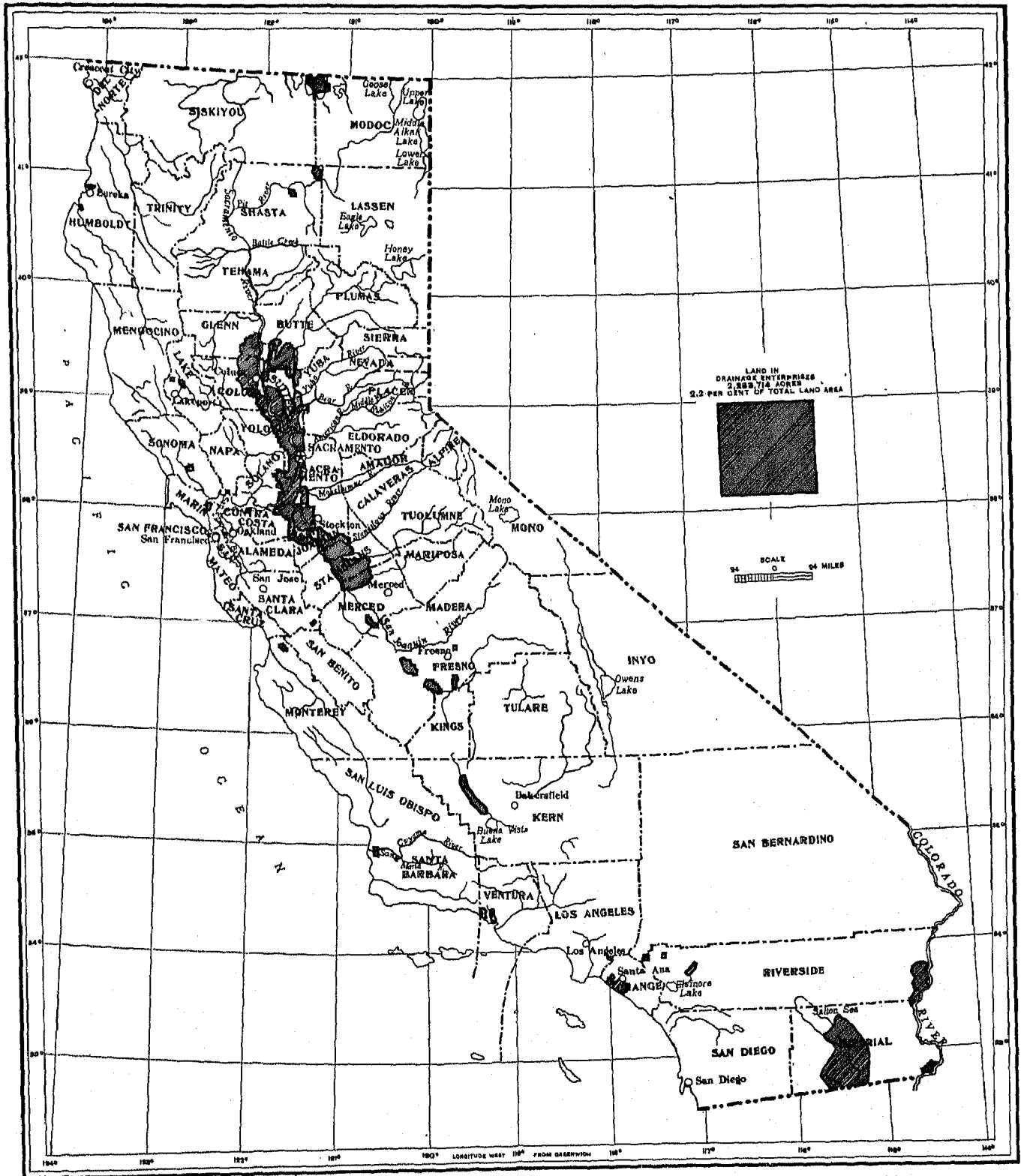
¹ Includes only Crawford, Hempstead, Logan, and Sebastian Counties in 1930; and Hempstead County for 1920.

² A minus sign (-) denotes decrease. A plus sign (+) denotes increase.

³ When works under construction have been completed.

CALIFORNIA

APPROXIMATE LOCATION OF LAND IN DRAINAGE ENTERPRISES



CALIFORNIA

Introduction.—Statistics concerning the drainage of lands for agricultural purposes are presented in the following pages. The data relate to drainage conditions as of January 1, 1930, and the crop year 1929. The first drainage census for the United States was that of 1920 and statistics from that census are shown for purposes of comparison.

An organized drainage enterprise may include timbered and other unimproved land not yet in farms. The statistics for drainage on farms were collected in 1930 on the general farm schedule and are shown in the first section of State Table 1 and in County Table I; while those for drainage enterprises were obtained on a special drainage schedule.

Since farm lands provided with drains may be either within or without an organized enterprise, and since these drains may be either supplemental to or independent of the works installed by an enterprise, the figures for the two parts of the drainage census are shown separately.

Summary and condition of land in enterprises.—The major portion of the land in drainage enterprises in California is located in the "Great Valley" of the San Joaquin and Sacramento Rivers. The enterprises of this valley cover fertile peat and alluvial lands, most of which are protected by levees and served by pumping plants. There is also a large area of drained land in the Imperial Valley. Much of this land has been damaged by alkali and seepage and while the present drainage works have been of value, these will require further extension before the drainage is entirely adequate.

It is estimated that fully 85 per cent of all land in drainage enterprises is also irrigated land, and there-

fore in some cases it was difficult to accurately divide the total cost of reclamation between that spent for drainage and that spent for irrigation.

Approximately 90 per cent of the land in drainage enterprises was reported as improved; less than 1 per cent was woodland; and approximately 10 per cent was other unimproved land. Less than 1 per cent was unfit to raise any crop for lack of drainage and about 16 per cent was idle in 1929.

The annual rainfall for 1929 varied from none in Death Valley to 61.5 inches in Butte County in the northern part of the State and averaged 15 inches, which was 10.5 inches below normal.

Where the drainage work is done directly by an irrigation enterprise, the drainage enterprise has been considered as identical with the irrigation enterprise as all irrigable lands are usually assessed for the necessary work; however, in the census of 1920, only the lands then served by drainage works were included. Of the 1,016,191 acres located in such enterprises in 1930, 648,600 acres are served by drainage works, and about 123,000 acres are in need of drainage. About one-half of the 1,016,191 acres is located in the Imperial Valley in the southern part of the State.

The usual purpose of an organized drainage enterprise is to provide adequate outlets into which the farms of the district may be drained, and to afford relief from overflow for the district as a unit. Therefore, the fact that an enterprise which has completed its drainage works contains land still unfit to raise any crop, or land fit only for a partial crop, does not necessarily show that the works are inadequate. State Table 1 includes a summary of the condition of lands in drainage enterprises.

STATE TABLE 1.—SUMMARY FOR THE STATE: 1930 AND 1920

ITEM (See definitions in Introduction)	CENSUS OF—		INCREASE ¹	
	1930	1920	Amount	Per cent
FARMS AND DRAINAGE ON FARMS				
All farms.....number..	135,678	117,670	18,006	15.3
Farms reporting drainage.....number..	5,252	5,078	174	3.4
All land in farms.....acres..	30,442,581	20,365,067	1,076,914	3.7
Farm land provided with drainage.....acres..	857,303	813,060	43,343	6.3
AREA, DRAINS, AND INVESTMENT IN ENTERPRISES				
Approximate land area of State.....acres..	90,617,280	90,617,280		
Land in drainage enterprises.....acres..	2,233,714	1,108,310	1,125,305	101.5
Improved land.....acres..	2,007,987	1,038,835	969,152	93.3
Unimproved land:				
Woodland.....acres..	8,500	12,263	-3,763	-30.7
Other.....acres..	217,227	57,221	160,006	279.6
Land unfit to raise any crop for lack of drainage.....acres..	12,619	² 45,163	-32,544	-72.1
Land drained, fit to raise normal crop.....acres..	2,011,189	⁽³⁾		
Land partly drained, fit for partial crop.....acres..	209,006	⁴ 42,200	167,607	397.3
Land in occupied farms.....acres..	2,024,446	⁽³⁾		
Land in planted crops.....acres..	1,794,813	⁽³⁾		
Land idle.....acres..	360,292	⁽³⁾		
Ditches, completed.....miles..	4,605.9	3,000.8	1,596.1	53.0
Tile drains, completed.....miles..	486.2	85.6	400.6	488.0
Capital invested in enterprises.....dollars..	66,451,698	47,087,153	18,704,545	39.3
Average, per acre.....dollars..	20.75	43.03	-13.28	-30.9

¹ A minus sign (-) denotes decrease.
² "Swampy, subject to overflow, seeped, or alkali."

³ Not called for on schedule.
⁴ "Suffering a loss of crops from defective drainage."

AREA AND CAPITAL

Area of enterprises.—Statistics by counties require that an enterprise located in more than one county be divided, and the part in each county be considered as a separate enterprise. In this way, 162 drainage enterprises are shown for California with an average area of 14,161 acres. There are 8 such enterprises of 50,000 acres or more, 66 of between 5,000 and 50,000 acres, 84 of between 500 and 5,000 acres, and 4 of less than 500 acres.

The area of enterprises exceeds the land in enterprises by 60,354 acres, which is the amount of overlap.

STATE TABLE 2.—AREA OF ENTERPRISES, BY SIZE: 1930 AND 1920

SIZE GROUP	AREA OF ENTERPRISES ¹				Land in enterprises, 1930 Acres
	1930		1920		
	Acres 2,294,068	Per cent 100.0	Acres 1,108,319	Per cent 100.0	
All enterprises.....					2,233,714
100 to 100 acres.....			341	(²)	1,816
200 to 499 acres.....	1,816	0.1	1,350	0.1	10,359
500 to 999 acres.....	10,359	0.5	10,059	0.9	176,016
1,000 to 4,999 acres.....	178,776	7.8	155,747	14.1	211,910
5,000 to 9,999 acres.....	220,410	9.6	203,656	18.4	658,215
10,000 to 49,999 acres.....	707,309	30.8	672,181	60.6	235,642
50,000 to 99,999 acres.....	285,642	12.4	65,600	5.9	889,356
100,000 acres and over.....	889,356	38.8			

¹ The sum of the areas of individual enterprises, including overlap.
² Less than one-tenth of 1 per cent.

Character of enterprise.—Organized drainage enterprises having executive officers exclusively their own, chosen according to the State drainage laws, are classed as *drainage districts*.

Enterprises which, in common with others, are under the control of State, county, or township officials, are classed as *State projects*, *county drains*, or *township drains*, according to the public officials in control.

Drainage projects under the control of the officers of an irrigation organization are classed as *irrigation enterprises*. In such cases the drainage is incidental to land reclamation by irrigation, and both the drainage and irrigation operations are functions of the one enterprise.

Enterprises under the control of individuals or organizations engaged in the draining of land for purposes of development, subdivision, and sale, are classed as *commercial developments*.

Enterprises without legal organization, as such, belonging to individuals, partnerships, or agricultural companies, are classed as *individually owned projects*. Projects of this type are included only when the area drained is 500 acres or more.

"Reclamation districts" are classed as "Drainage districts" in the accompanying table and include about 87 per cent of the land shown in this class. Those reclamation districts having levees but no pumps, ditches, or tile drains are not considered drainage enterprises and were not included in the drainage canvass. The "Reclamation districts" classed as drainage enterprises reported an area of 1,002,848 acres of land with an investment of \$54,922,926, an average of nearly \$55 per acre.

STATE TABLE 3.—LAND AND CAPITAL, BY CHARACTER OF ENTERPRISE, 1930

CHARACTER OF ENTERPRISE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	2,233,714	100.0	66,451,698	100.0
Drainage districts.....	1,153,830	51.9	57,596,480	86.7
County drains.....	8,300	0.4	123,221	0.2
Irrigation enterprises.....	1,016,101	45.5	6,627,096	10.0
Commercial developments.....	2,550	0.1	215,000	0.3
Individually owned projects.....	47,834	2.1	1,889,901	2.8

Type of drainage.—There were 151 enterprises, covering 2,044,936 acres of land, with an invested capital of \$59,655,470, that reported their works as completed; while 11 enterprises, covering 188,778 acres of land, with an invested capital of \$6,796,228, estimated that \$799,400 would be required to complete the drainage works under construction.

The works completed to January 1, 1930, included approximately 4,606 miles of ditches, 486 miles of tile drains, and 1,390 miles of levees. These figures do not include drains or levees installed by individual farmers supplemental to the works of an enterprise. Included in the above totals are 3,402 miles of ditches, 3.5 miles of tile drains, and 1,182 miles of levees, constructed by "Reclamation districts."

There were 105 enterprises with drainage pumps of which 5 reported a total of 218 wells pumped for drainage.

STATE TABLE 4.—LAND AND CAPITAL, BY TYPE OF DRAINAGE, 1930

TYPE OF DRAINAGE (See definitions in Introduction)	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	2,233,714	100.0	66,451,698	100.0
Gravity drainage only.....	942,875	42.2	12,237,059	18.4
Ditches and levees.....	384,333	17.2	8,255,050	12.4
Tile drains.....	4,295	0.2	222,362	0.3
Ditches, tile drains, and levees.....	554,247	24.8	3,758,747	5.7
Drainage, all or part by pumping.....	1,200,830	57.8	54,214,030	81.6
All drainage by pumping.....	844,175	37.8	40,071,843	73.9
Part gravity and part pumping.....	446,654	20.0	5,142,790	7.7

Pumping plants.—Of the 105 enterprises with drainage pumps, 7 serve land in 2 counties and 1 of these, situated on the Klamath Project, also serves land in the adjoining State of Oregon.

All but 9 of these enterprises are located in the "Great Valley" of the San Joaquin and Sacramento Rivers and over 90 per cent of the land served is in this basin.

There are 5 of these enterprises which pump from drainage wells in order to lower the water table and thus prevent damage from seepage or alkali. Most of the water from these wells is again used for irrigation purposes. The number of wells so pumped totals 218. The static lift of the water varies from 29 to 45 feet, and the average area served per well is about 530 acres.

The total capacity of all pumps is 5,548,600 gallons per minute, and the area served, 1,022,062 acres. The total capacity of engines and motors is 41,748 horsepower.

STATE TABLE 5.—PUMPING PLANTS AND LAND SERVED, BY KIND OF POWER: 1930 AND 1920

KIND OF POWER	Enterprises	Engine or motor capacity		Pump capacity	Land served	
		Number	H. p.	Per cent	G. p. m.	Acres
All enterprises.....	1930.....	105	41,748	100.0	5,548,600	1,022,062
	1920.....	94	28,526	100.0	4,690,042	604,446
Electric.....	1930.....	90	38,970	93.3	5,235,100	977,458
	1920.....	62	23,547	82.5	3,790,090	490,152
Internal combustion.....	1930.....	5	248	0.6	37,900	17,289
	1920.....	14	703	2.8	121,852	46,937
Steam.....	1930.....	3	161	0.6	33,000	7,840
Steam and electric.....	1930.....	5	1,700	4.1	169,600	17,606
	1920.....	9	3,135	11.0	504,000	45,200
Electric and internal combustion.....	1930.....	5	830	2.0	116,000	9,869
	1920.....	5	890	3.1	189,500	14,723
Water wheel.....	1920.....	1				594

STATE TABLE 6.—PUMPING PLANTS AND LAND SERVED, BY KIND OF PUMP, 1930

KIND OF PUMP	Pumps	Pump capacity		Engine or motor capacity	Land served
		Number	G. p. m.	Per cent	H. p.	Acres
All enterprises.....	426	5,548,600	100.0	41,748	1,022,062
Centrifugal.....	201	5,184,750	93.4	37,138	868,600
Screw.....	10	119,850	2.2	560	35,350
Turbine.....	156	164,000	2.9	3,095	69,500
Centrifugal and—					
Rotary.....	3	20,000	0.4	115	500
Turbine.....	56	60,000	1.1	850	28,112

Arrears and delinquency.—There were 22 enterprises, with approximately 17 per cent of the invested capital and covering approximately 11 per cent of the land in organized districts, reported as in arrears in payment of principal or interest on bonds or other obligations; while the remaining 140 enterprises reported no arrearage. There were 38 enterprises, covering 650,296 acres, that reported a total of 191,997 acres delinquent in drainage taxes; 119 enterprises, covering 1,420,512 acres, that reported no delinquency; while 5 enterprises failed to report.

STATE TABLE 7.—LAND, CAPITAL INVESTED, AND AREA DELINQUENT IN DRAINAGE TAXES, ACCORDING TO ARREARAGE IN PAYMENT OF PRINCIPAL OR INTEREST ON BONDS OR OTHER OBLIGATIONS, 1930

FINANCIAL STATUS	Land		Capital invested to Jan. 1, 1930		Area delinquent
	Acres	Per cent	Dollars	Per cent	Acres
All enterprises.....	2,233,714	100.0	66,451,698	100.0	191,997
Enterprises in arrears.....	248,222	11.1	11,260,400	16.9	120,012
With some delinquent land.....	217,076	9.7	9,321,000	14.0	120,012
With no delinquent land.....	13,096	0.6	1,289,400	1.9	
With no report on delinquency.....	18,050	0.8	650,000	1.0	
Enterprises not in arrears.....	1,985,492	88.9	55,191,298	83.1	71,985
With some delinquent land.....	433,220	19.4	17,386,405	26.2	71,985
With no delinquent land.....	1,407,410	63.0	39,761,064	55.3	
With no report on delinquency.....	144,860	6.5	1,053,829	1.6	

Purpose of drainage.—In some cases the drainage development accomplished two or more purposes. An enterprise, prior to drainage, may contain swamp land, improved land in farms, land damaged by alkali or seepage from irrigation, and land subject to overflow. The object in drainage may be to reclaim or benefit all such lands. However, the land is classified according to the principal purpose reported.

STATE TABLE 8.—LAND AND CAPITAL, BY PURPOSE OF DRAINAGE, 1930

PURPOSE OF DRAINAGE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	2,233,714	100.0	66,451,698	100.0
Reclamation of swamp land not previously in farms.....	622,160	27.8	35,066,651	52.8
Improvement of land already in farms.....	200,332	9.0	9,208,501	13.9
Removal of alkali or seepage from irrigation.....	1,051,449	47.1	6,325,902	9.5
Protection against overflow.....	359,764	16.1	12,850,524	19.3

Date of organization.—A period of one or more years may elapse between the date of organization and the beginning of actual construction, and in large enterprises the work may extend over a period of several years. For these reasons the original drainage was accomplished somewhat later than the dates shown. It was not feasible to secure dates of beginning and ending of construction work, so the date of establishment of each enterprise was used. Where the drainage work was done directly by an irrigation enterprise, the year in which drainage was undertaken is used instead of the year of organization of the irrigation project.

STATE TABLE 9.—LAND AND CAPITAL, BY DATE OF ORGANIZATION, 1930

DATE OF ORGANIZATION	Land		Area of enterprises ¹		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Acres	Over-lapped acres	Dollars	Per cent
All enterprises.....	2,233,714	100.0	2,204,068	60,354	66,451,698	100.0
1870-1879.....	68,263	3.1	68,263		6,697,600	10.1
1880-1889.....	279,086	12.5	279,086		3,698,635	5.5
1890-1899.....	102,175	4.6	102,175		7,880,308	11.9
1900-1904.....	38,273	1.7	38,273		2,103,105	3.2
1905-1909.....	234,613	10.5	237,613	3,000	6,846,255	10.3
1910-1914.....	842,642	37.7	801,739	40,904	17,712,416	26.6
1915-1919.....	188,719	8.4	188,719		13,300,696	20.1
1920-1924.....	459,016	20.6	467,270	8,260	7,646,934	11.5
1925-1929.....	20,938	0.9	20,938		836,759	1.2

¹ Includes overlap.

STATE TABLE 10.—CONDITION OF LAND AND LAND AVAILABLE FOR SETTLEMENT, BY DATE OF ORGANIZATION, 1930

DATE OF ORGANIZATION	LAND IN ENTERPRISES					
	Total	Condition of land			Land available for settlement	
		Improved land	Wood-land	Other unimproved land		
All enterprises.....	2,233,714	2,007,987	80.9	3,500	217,227	52,706
1870-1879.....	68,263	67,653	99.1		600	
1880-1889.....	279,086	261,829	93.8		17,256	16,850
1890-1899.....	102,175	95,021	93.0	5	7,149	
1900-1904.....	38,273	36,239	94.7		2,034	
1905-1909.....	234,613	201,449	85.9	5,075	28,089	7,850
1910-1914.....	842,642	710,841	84.4	2,420	129,381	
1915-1919.....	188,719	182,473	96.7	1,000	5,246	
1920-1924.....	459,016	431,744	94.1		27,272	28,000
1925-1929.....	20,938	20,738	99.0		200	

Method of maintenance.—Some enterprises reported more than one method of maintenance, but in such cases the principal method is shown.

Systematic maintenance was reported by 137 enterprises, covering 1,398,646 acres of land and having an

invested capital of \$57,495,431; while 25 enterprises, with an invested capital of \$8,956,267, covering 835,068 acres of land, did not have systematic maintenance.

There were 48 enterprises, with an invested capital of \$28,448,330, covering 1,425,614 acres of land, that reported ownership of excavators or other power equipment used principally for maintenance; while 114 enterprises, with an invested capital of \$38,003,368, covering 808,100 acres of land, did not report any such equipment.

STATE TABLE 11.—LAND AND CAPITAL, BY METHOD OF MAINTENANCE, 1930

METHOD OF MAINTENANCE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0	Dollars	Per cent 100.0
All enterprises.....	2,233,714	100.0	68,451,608	100.0
By district forces.....	1,710,783	76.6	42,302,414	63.8
By contract.....	452,880	20.3	18,506,488	27.9
By work apportioned to landowners.....	55,416	2.5	4,946,073	7.5
Other, none, and not reported.....	14,635	0.6	546,723	0.8

Cost of operation and maintenance.—Since many enterprises do not have annual maintenance, it is

necessary to include those that reported no cost as well as those that reported some cost for 1929, in order to determine a fair average cost of maintenance for the State. Approximately 97 per cent of the land reporting showed some cost, and 3 per cent showed no cost in 1929. The average cost for all enterprises was 52 cents per acre, while that for enterprises drained all or part by pumping was 77 cents per acre. This latter figure is probably lower than normal as the rainfall in 1929 was much below the average. Expenditures for operation and maintenance vary greatly from year to year.

STATE TABLE 12.—LAND AND COST OF OPERATION AND MAINTENANCE, 1929, BY TYPE OF DRAINAGE

TYPE OF DRAINAGE (See definitions in Introduction)	Land reporting on cost	COST REPORTED	
		Total	Per acre
All enterprises reporting.....	2,201,514	Dollars 1,148,832	Dollars 0.52
Gravity drainage only.....	915,875	155,410	0.17
Ditches and levees.....	357,333	72,245	0.20
Tile drains.....	4,295	3,262	0.76
Ditches, tile drains, and levees.....	554,247	79,010	0.14
Drainage, all or part by pumping.....	1,285,639	903,416	0.77

COUNTY TABLE I.—FARMS REPORTING DRAINAGE AND FARM LAND DRAINED, 1930 AND 1920; FARMS, ALL LAND IN FARMS, AND APPROXIMATE LAND AREA, 1930

STATE AND COUNTY	FARMS REPORTING DRAINAGE ¹		FARM LAND PROVIDED WITH DRAINAGE		All farms, 1930	FARM LAND, 1930			Approximate land area, 1930
	1930	1920	1930	1920		All land in farms	Crop land	Woodland	
	Number 5,252	Number 5,078	Acres 867,303	Acres 813,960		Number 135,070	Acres 80,442,681	Acres 8,389,802		Acres 4,502,755
The State.....	5,252	5,078	867,303	813,960	135,070	80,442,681	8,389,802	4,502,755	90,617,280
Alameda.....	0	30	563	3,010	2,027	315,848	95,800	27,573	468,480
Alpine.....	11	(2)	910	(2)	19	11,630	1,825	1,774	490,040
Amador.....	3	(2)	1,133	(2)	371	313,719	14,005	150,071	384,040
Butte.....	500	280	72,253	18,266	2,003	610,684	217,474	103,200	1,080,720
Colusa.....	152	162	59,593	59,876	804	481,004	210,500	90,700	729,000
Contra Costa.....	64	78	31,879	18,915	1,800	370,338	144,718	10,971	456,000
Fresno.....	98	326	4,004	64,297	10,334	1,493,477	541,888	73,114	3,808,000
Glenn.....	39	80	14,713	19,770	1,403	580,411	216,833	102,411	865,080
Humboldt.....	150	103	5,516	5,082	2,045	797,160	45,031	278,420	2,288,000
Imperial.....	731	405	110,072	96,601	3,170	403,663	335,934	2,132	2,610,000
Kern.....	4	85	591	17,605	2,397	1,700,625	180,683	106,325	5,121,920
Lake.....	30	50	1,733	1,783	1,057	240,445	34,614	04,670	792,320
Lassen.....	11	31	8,602	9,962	472	473,268	86,312	05,123	2,890,840
Los Angeles.....	75	91	3,340	5,067	12,653	527,124	207,090	12,070	2,633,600
Marin.....	18	21	7,310	7,517	690	264,550	25,238	46,434	338,560
Mendocino.....	68	91	2,022	2,342	1,672	930,221	61,537	330,100	2,264,960
Merced.....	346	105	24,563	32,008	3,830	820,377	320,475	0,233	1,276,800
Modoc.....	20	27	4,824	6,083	621	450,130	118,532	56,270	2,446,720
Monterey.....	30	31	1,321	1,237	1,891	1,305,001	286,447	378,010	2,131,200
Napa.....	66	53	2,495	2,100	1,686	823,963	04,628	123,231	501,120
Orange.....	170	182	22,010	14,240	4,090	287,967	108,590	1,071	508,800
Placer.....	107	(2)	1,773	(2)	1,628	350,718	74,459	50,591	903,040
Plumas.....	16	14	1,248	1,138	178	167,446	20,025	37,486	1,059,520
Riverside.....	253	46	48,986	1,884	4,746	633,932	293,386	12,068	4,622,720
Sacramento.....	364	479	63,122	92,053	3,882	578,025	257,075	23,348	620,120
San Bernardino.....	28	101	5,594	3,850	7,032	295,748	149,885	11,066	12,912,000
San Diego.....	60	26	1,216	1,448	3,902	833,336	144,043	54,287	2,701,440
San Joaquin.....	330	352	114,995	117,202	5,730	697,740	495,807	13,850	926,720
San Mateo.....	7	11	2,470	1,242	841	186,523	34,624	15,772	256,080
Santa Barbara.....	22	29	1,112	865	1,408	1,060,756	145,506	92,430	1,753,000
Santa Clara.....	45	200	2,201	8,453	6,237	516,074	172,100	80,418	849,920
Santa Cruz.....	40	92	1,304	1,007	1,855	124,481	43,092	28,382	278,400
Shasta.....	15	22	4,659	13,209	1,213	607,833	59,704	184,836	2,400,120
Siskiyou.....	195	17	12,810	927	1,155	627,704	138,057	143,997	4,003,840
Solano.....	49	56	26,854	32,301	1,479	431,401	173,980	24,084	526,080
Sonoma.....	150	110	16,488	6,552	6,562	775,121	152,699	219,139	1,012,480
Stanislaus.....	275	286	18,852	18,887	5,743	772,625	359,781	36,442	928,000
Sutter.....	225	330	68,026	66,514	1,758	343,654	221,691	50,700	380,120
Tehama.....	12	3	2,329	1,718	1,805	1,195,796	100,056	273,506	1,872,000
Trinity.....	13	31	703	529	325	184,523	9,042	70,090	1,981,440
Tulare.....	25	(2)	3,682	(2)	7,154	1,102,432	453,863	96,917	3,107,840
Ventura.....	100	47	15,262	2,920	1,650	444,136	101,179	28,250	1,180,120
Yolo.....	140	128	55,336	28,246	1,641	488,252	281,170	46,326	648,000
Yuba.....	22	(2)	3,044	(2)	548	260,186	60,139	65,080	404,480
All other counties.....	68	341	9,171	23,692	9,817	4,922,216	939,494	784,707	19,454,720

¹ No drainage on farms was reported in Inyo, Madera, and Mono Counties in 1930; drainage on farms was reported in all counties for 1920.
² Included in "All other counties."

DRAINAGE—CALIFORNIA

COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER

ITEM (See definitions in Introduction)	THE STATE	Butte	Colusa	Contra Costa	Fresno	Glenn	Imperial	Kern	
LAND AREA									
1	Approximate land area.....1930.....acres..	90,617,280	1,086,720	729,600	456,960	3,808,000	855,680	2,616,960	5,121,920
2	Land in enterprises.....1930.....acres..	2,233,714	94,250	190,630	40,545	36,822	124,880	530,000	43,000
3	.....1920.....acres..	1,108,319	29,175	60,200	40,236	10,979	8,000	(?)	
4	Increase, ¹ 1920-1930.....per cent..	101.5	223.1	216.7	0.8	116.9			
5	Area of all enterprises (overlapping areas included).....1930.....acres..	2,294,068	99,750	204,249	40,545	36,822	124,880	532,760	43,000
6	Excess over land in enterprises (total areas overlapping).....acres..	60,354	5,500	13,619				2,760	
CONDITION AND USE OF LAND									
7	Land unfit to raise any crop.....1930.....acres..	12,019	1,000		569				
8	Land unfit to raise any crop prior to drainage.....acres..	1,084,124	8,800	41,410	35,576	1,300	15,100	400,000	
9	Decrease since drainage.....per cent..	98.8	88.6	100.0	98.4	100.0	100.0	100.0	
10	Land fit to raise a normal crop.....1930.....acres..	2,011,189	93,250	170,630	39,676	35,988	104,880	415,000	43,000
11	Land fit to raise a normal crop prior to drainage.....acres..	933,025	60,800	80,000	500	33,892	94,300	7,500	
12	Increase since drainage ¹.....per cent..	217.7	53.4	113.3		6.2	11.2		
13	Land fit to raise a partial crop.....1930.....acres..	200,000		20,000	300	834	20,000	115,000	
14	Land fit to raise a partial crop prior to drainage.....acres..	516,565	24,650	69,220	4,409	1,630	15,480	122,500	43,000
15	Decrease since drainage ¹.....per cent..	59.4	100.0	71.1	93.3	48.8	+20.2	6.1	100.0
16	Improved land.....1930.....acres..	2,007,087	91,250	190,480	38,920	36,322	124,880	414,200	17,000
17	.....1920.....acres..	1,038,335	20,175	60,200	40,036	15,994	8,000		(?)
18	Increase, ¹ 1920-1930.....per cent..	93.3	212.8	216.4	-2.8	127.1			
19	Unimproved land—								
20	Woodland.....1930.....acres..	8,500		150	350	500			
21	Other.....1930.....acres..	217,227	3,000		1,275			115,800	26,000
22	Land in occupied farms.....1930.....acres..	2,024,446	91,250	185,630	38,976	36,822	119,880	431,000	17,000
23	Land in planted crops.....1930.....acres..	1,704,813	66,620	135,006	35,286	34,766	77,784	410,000	17,000
24	Woodland cleared and cultivated since drainage.....1930.....acres..	15,364		1,260					
25	Land idle.....1930.....acres..	300,292	21,530	50,384	3,200		42,096	119,100	26,000
26	Land available for settlement.....1930.....acres..	52,700		2,000	550				26,000
DRAINAGE WORKS, 1930									
27	Ditches—								
28	Completed.....miles..	4,605.0	308.0	208.4	352.0	32.7	55.5	248.3	50.0
29	Additional under construction.....miles..	108.1		2.1					
30	Tile drains—								
31	Completed.....miles..	486.2	1.0			1.5		6.5	
32	Additional under construction.....miles..	0.2							
33	Levees and dikes—								
34	Completed.....miles..	1,389.5	0.5	38.5	123.1	37.0	17.5	28.5	26.0
35	Additional under construction.....miles..	5.0							
36	Pumping plants—								
37	Engine or motor capacity.....horsepower..	41,748		2,000	1,735	25	(?)	130	
38	Pump capacity.....gals. per min..	5,548,600		360,000	330,500	3,700		25,200	
39	Land served by pumps.....acres..	1,022,002		152,710	39,576	1,700	110,000	15,000	
40	Wells—								
41	Pumped for drainage.....number..	218							
42	Land drained by ditches only.....acres..	99,490	82,782			4,829			
43	Length of ditches.....miles..	272.7	245.0			0.5			
44	Land drained by tile only.....acres..	4,205							
45	Length of tile.....miles..	24.1							
46	Land drained by ditches and tile ¹.....acres..	546,617	5,670			1,200		512,268	
47	Length of ditches.....miles..	342.2	32.0			4.0		233.3	
48	Length of tile.....miles..	313.7	1.0			1.5		2.5	
49	Land having ditches and levees ².....acres..	284,804	5,798	37,920	550	10,033	14,880	2,732	43,000
50	Length of ditches.....miles..	347.0	31.0	30.0	2.0	10.0	5.5	3.0	50.0
51	Length of levees.....miles..	211.0	0.5	10.0	3.0	25.0	2.5	0.5	26.0
52	Land having ditches, tile drains, and levees.....acres..	7,690							
53	Length of ditches.....miles..	18.3							
54	Length of levees.....miles..	5.1							
55	Land drained by pumps and other drainage works ³.....acres..	8.5							
56	Length of ditches.....miles..	1,200,839		152,710	39,995	11,760	110,000	15,000	
57	Length of tile.....miles..	3,733.8		171.5	350.0	0.2	50.0	12.0	
58	Length of levees.....miles..	143.5						4.0	
59	Land protected by levees of an outside agency.....acres..	1,174.4		28.5	120.1	12.0	15.0	19.0	
60	.....1920.....acres..	391,274	44,000	48,710		1,500			33,000
CAPITAL INVESTED AND COST PER ACRE									
61	Capital invested in enterprises to Jan. 1, 1930.....dollars..	60,461,698	1,950,000	5,779,788	3,529,883	325,710	1,326,700	2,687,500	745,000
62	.....1920.....dollars..	47,687,153	355,000	1,927,000	3,480,272	254,000	140,000	140,000	(?)
63	Increase, ¹ 1920-1930.....per cent..	39.3	449.3	199.9	1.3	28.2			
64	Estimated cost of enterprises when completed.....1930.....dollars..	67,281,098	1,950,000	5,790,288	3,529,883	330,397	1,326,700	2,687,500	745,000
65	.....1920.....dollars..	54,021,627	355,000	2,077,000	3,528,272	254,000	140,000	140,000	(?)
66	Average, per acre when completed.....1930.....dollars..	30.11	20.69	30.37	87.06	8.97	10.02	5.07	17.33
67	.....1920.....dollars..	48.74	12.17	34.50	87.60	14.96		18.25	(?)
68	Invested in and required for completion of—								
69	Enterprises having ditches only.....1930.....dollars..	1,759,000	1,630,500			54,000			
70	Average, per acre.....dollars..	17.69	19.70			11.18			
71	Enterprises having tile drains only.....1930.....dollars..	222,362							
72	Average, per acre.....dollars..	51.77							
73	Enterprises having ditches and tile drains.....1930.....dollars..	3,614,071	175,000			5,000		2,500,000	
74	Average, per acre.....dollars..	6.61	30.86			4.17		4.88	
75	Enterprises having ditches and levees.....1930.....dollars..	6,572,950	144,500	944,388	15,000	208,000	46,700	40,000	745,000
76	Average, per acre.....dollars..	23.07	24.92	24.90	27.27	10.93	3.14	14.64	17.33
77	Enterprises having ditches, tile drains, and levees.....1930.....dollars..	145,276							
78	Average, per acre.....dollars..	19.04							
79	Enterprises having pumps and other drainage works.....1930.....dollars..	54,937,439		4,845,900	3,514,883	63,397	1,280,000	147,500	
80	Average, per acre.....dollars..	42.66		31.73	87.88	5.30	11.04	9.83	

¹ Includes only Humboldt, Kings, Lake, Los Angeles, Marin, Napa, Placer, San Bernardino, Santa Barbara, Santa Clara, Shasta, and Sonoma Counties in 1930; and Humboldt, Kern, Kings, Lake, Los Angeles, Marin, Modoc, Napa, Placer, San Bernardino, Santa Barbara, Santa Clara, Shasta, Sierra, and Sonoma Counties for 1920.
² Included in "Other counties."
³ A minus sign (-) denotes decrease. A plus sign (+) denotes increase. Per cent not shown when more than 1,000.
⁴ Pumps located in Colusa County.
⁵ Pumps located in Siskiyou County.
⁶ When works under construction have been completed.
⁷ Area of enterprises having some land served by pumps.

DRAINAGE—CALIFORNIA

ACRE, AND CONDITION AND USE OF LAND, 1930 AND 1920; AND DRAINAGE WORKS, 1930

Merced	Modoc	Monterey	Orange	Riverside	Sacramento	San Joaquin	Siskiyou	Solano	Stanislaus	Sutter	Ventura	Yolo	Yuba	Other counties		
1,276,800	2,446,720	2,131,200	508,800	4,022,720	620,120	920,720	4,003,840	526,080	928,000	389,120	1,180,120	648,660	404,480	27,105,520	1	
44,700	18,792	4,700	41,950	80,132	125,187	202,144	13,000	42,895	219,856	161,054	11,800	126,213	38,338	41,920	2	
24,247	(?)	4,700	35,600	50,600	104,770	104,410		43,745	65,000	180,283		153,755	32,750	93,860	3	
84.4			17.8	58.4	10.5	23.0		-1.9	238.2	-10.2		-17.9	17.1	-53.3	4	
44,700	18,792	4,700	44,650	80,132	125,187	202,144	13,000	42,895	219,856	161,054	11,800	161,688	38,338	41,920	5	
			3,000									35,475			6	
															7	
100	100	200		2,936	265	1,700			400	353		61		4,035	8	
20,000	18,658	3,000	13,700	6,800	102,888	106,139	13,000	33,975	76,800	60,362	800	65,591	1,160	20,556	9	
99.5	99.5	93.3	100.0	56.8	99.7	98.4	100.0	100.0	99.5	99.5	100.0	99.9	100.0	76.0	10	
40,134	1,810	4,000	41,450	77,196	120,632	108,163	10,703	42,775	218,256	152,071	11,800	120,276	38,338	31,131	11	
18,870	134		14,195	66,178	4,506	88,185		1,120	141,856	332	8,200	6,200	21,169	5,088	12	
112.7			192.0	16.6		100.7			53.9		43.9		81.1	511.0	13	
4,466	16,882	500	500		4,290	2,261	2,207	120	1,200	9,530		5,870		5,800	14	
5,830		1,700	14,055	7,154	17,793	27,820		7,800	1,200	92,200	3,500	24,422	16,000	10,282	15	
23.4		70.0	90.4		75.0	91.9		98.5		89.7	100.0	75.9	100.0	64.0	16	
44,600	2,110	4,500	39,950	77,196	120,562	104,443	10,703	42,075	203,000	152,525	11,800	122,402	33,338	33,731	17	
24,207	(?)	4,700	35,000	42,000	104,591	104,350		43,490	64,000	173,561		130,930	25,375	07,526	18	
84.2		-4.3	14.1	83.8	15.3	19.5		-3.3	217.2	-12.1		-10.4	31.4	-60.0	19	
100	16,682	200	2,000	2,936	100	50				1,550		800	5,000		20	
44,700	1,934	4,500	39,850	77,196	4,525	4,651	2,207	820	10,856	7,879		3,011	8,195		21	
37,500	1,734	4,000	38,000	68,877	121,362	106,993	0,100	42,075	203,000	153,275	11,800	122,818	33,338	41,851	22	
4,700	16,781	500	2,300	11,255	110,732	184,642	8,021	38,455	203,000	149,415	10,700	104,328	31,338	21,980	23	
					300	1,970			10,856	1,100		1,775	9,000	3,715	24	
					865	0,207	2,300		10,856	7,700		10,704	5,000		25	
							2,300						5,000			
12.6	22.0	35.5	104.1	82.0	209.1	1,202.5	50.0	224.0	95.0	631.5	41.0	420.0	23.0	108.7	26	
	80.0			7.0	6.0		4.0			4.0		5.0			27	
2.0		0.5	308.6	3.1		2.0		47.0	16.8		85.0	1.0		11.2	28	
											0.2				20	
		5.0	2.0	20.0	239.5	308.5	12.0	67.1		106.8		190.2	30.8	54.5	30	
															31	
865	(9)	30	45		7,393	6,290	265	1,120	2,360	0,400	10	0,395	695	695	32	
46,000		6,000	3,000		810,600	1,112,500	59,400	206,050	128,000	1,027,000	500	1,204,250	130,000	7,280	33	
28,600	2,110	600	0,500		121,887	143,394	10,600	40,704	68,112	148,087	6,000	116,793			34	
46						48			124						35	
														11,828	36	
														18.2	37	
															38	
			3,500	795											39	
			21.0	3.1										2,563	40	
			10,176											7.1	41	
			55.8									5,800		4.7	42	
			283.8									10.0		42.0	43	
												20.2		31.0	44	
														30.8	45	
														1,350	46	
														5.0	47	
														1.8	48	
			0,274											4.0	49	
			13.3											7,520	50	
44,700	18,792	4,700	13,000		121,887	202,144	13,000	42,895	219,856	148,087	6,000	118,793		36.4	51	
12.6	102.0	35.5	35.0		301.1	1,202.5	54.0	224.0	95.0	598.0	31.0	414.0		4.7	52	
2.0		0.5	0.5			2.0		47.0	16.8		05.0	1.0		17.0	53	
	5.0				233.5	308.5	12.0	67.1		160.5		176.2			54	
8,500	17,858		22,300		13,208	27,169	13,000	4,709		67,899		87,481		2,000		
367,354	38,061	100,000	1,225,968	865,473	10,427,171	9,335,061	317,000	2,836,859	1,331,259	8,593,593	345,000	11,508,782	1,562,789	1,192,747	55	
389,091	(?)	140,000	295,000	149,384	8,402,309	7,050,593		1,339,492	433,457	10,974,409		8,988,969	1,037,600	1,700,716	56	
-5.6		35.7	315.6	479.4	24.1	21.0		111.8	207.1	-22.0		28.0	50.6	-30.2	57	
387,667	514,721	100,000	1,225,968	935,473	10,577,171	9,335,061	371,900	2,836,859	1,331,259	8,599,593	345,000	11,514,522	1,562,789	1,192,747	58	
652,548	(?)	100,000	295,000	1,140,384	8,452,309	8,161,593		1,421,992	1,413,829	13,331,045		9,526,469	1,037,600	2,020,716	59	
8.67	27.39	40.43	29.22	11.07	84.49	46.18	28.61	66.13	0.06	62.01	20.20	61.23	40.70	28.45	60	
20.91	(?)	40.43	8.20	22.72	80.67	49.64		32.51	21.75	73.95		61.99	31.68	21.02	61	
														74,500	62	
														0.30	63	
			181,639	40,723											64	
			51.99	51.22											65	
			550,900											238,471	66	
			28.68									145,600		95.27	67	
												25.10			68	
														456,000	69	
														24.36	70	
			125,000	894,750	660,000							277,711	578,112	1,662,780	20,270	71
			19.92	11.28	200.00						20.03	77.91	40.70	14.95		
387,667	514,721	100,000	369,320		9,017,171	9,335,061	371,900	2,836,859	1,331,259	8,291,852	200,000	10,936,410		403,600	72	
8.67	27.39	40.43	23.41		81.36	46.18	28.61	66.13	0.06	55.99	33.33	92.06		53.66	73	

COLORADO

APPROXIMATE LOCATION OF LAND IN DRAINAGE ENTERPRISES



COLORADO

Introduction.—Statistics concerning the drainage of lands for agricultural purposes are presented in the following pages. The data relate to drainage conditions as of January 1, 1930, and the crop year 1929. The first drainage census for the United States was that of 1920 and statistics from that census are shown for purposes of comparison.

An organized drainage enterprise may include timbered and other unimproved land not yet in farms. The statistics for drainage on farms were collected in 1930 on the general farm schedule and are shown in the first section of State Table 1 and in County Table I; while those for drainage enterprises were obtained on a special drainage schedule.

Since farm lands provided with drains may be either within or without an organized enterprise, and since these drains may be either supplemental to or independent of the works installed by an enterprise, the figures for the two parts of the drainage census are shown separately.

Summary and condition of land in enterprises.—Approximately 46 per cent of the land in drainage enterprises in Colorado is located in the San Luis Valley of the Rio Grande Basin; 31 per cent lies in the Arkansas Basin below Pueblo; 20 per cent lies in the Colorado Basin in Mesa County; and the remaining 3 per cent lies in the South Platte Basin east of Greeley. All enterprises cover irrigated lands and the object of drainage was either the prevention or removal of alkali and seepage due to irrigation. In a

number of cases the water collected by the drains was again used for irrigation.

The mean annual precipitation at the stations of record varies from approximately 6 to 31 inches and averages about 18 inches for the State. The State average for 1929 was 1 inch above normal.

Approximately 82 per cent of the land in drainage enterprises was reported as improved, while 18 per cent was unimproved. Less than 2 per cent was unfit to raise any crop for lack of drainage and 19 per cent was idle in 1929.

Where the drainage work is done directly by an irrigation enterprise, the drainage enterprise has been considered as identical with the irrigation enterprise, as all irrigable lands are usually assessed for the necessary drainage works. Of the 99,130 acres located in such enterprises, 58,000 acres are now served by drainage works, while over 20,000 acres are in need of drainage. The greater portion of this land is located in 1 irrigation district in the San Luis Valley.

The usual purpose of an organized drainage enterprise is to provide adequate outlets into which the farms of the district may be drained, and to afford relief for the district as a unit. Therefore, the fact that an enterprise which has completed its drainage works contains some land still unfit to raise any crop, or land fit only for a partial crop, does not necessarily show that the drainage works are inadequate. State Table 1 includes a summary of the condition of lands in drainage enterprises.

STATE TABLE 1.—SUMMARY FOR THE STATE: 1930 AND 1920

ITEM (See definitions in Introduction)	CENSUS OF—		INCREASE ¹	
	1930	1920	Amount	Per cent
FARMS AND DRAINAGE ON FARMS				
All farms..... number.....	59,950	59,934	22	.....
Farms reporting drainage..... number.....	3,253	2,740	504	18.3
All land in farms..... acres.....	28,876,171	24,402,014	4,414,157	18.0
Farm land provided with drainage..... acres.....	230,281	127,037	103,244	81.3
AREA, DRAINS, AND INVESTMENT IN ENTERPRISES				
Approximate land area of State..... acres.....	60,341,120	60,341,120	.....	.....
Land in drainage enterprises..... acres.....	366,719	171,656	195,063	113.6
Improved land..... acres.....	302,023	123,031	178,992	145.5
Unimproved land ² acres.....	64,696	48,625	16,071	33.1
Land unfit to raise any crop for lack of drainage..... acres.....	5,504	³ 20,440	—20,042	—79.2
Land drained, fit to raise normal crop..... acres.....	313,039	(⁴)	.....	.....
Land partly drained, fit for partial crop..... acres.....	48,176	⁴ 15,282	32,894	215.2
Land in occupied farms..... acres.....	305,966	(⁴)	.....	.....
Land in planted crops..... acres.....	274,922	(⁴)	.....	.....
Land idle..... acres.....	60,780	(⁴)	.....	.....
Ditches, completed..... miles.....	814.9	132.5	682.4	515.0
Tile drains, completed..... miles.....	369.5	195.2	174.3	80.3
Capital invested in enterprises..... dollars.....	4,358,866	1,081,875	3,276,991	302.9
Average, per acre..... dollars.....	11.89	6.30	5.59	88.7

¹ A minus sign (—) denotes decrease. Per cent not shown when less than one-tenth of 1 per cent.
² No timber or cut-over land reported.
³ "Seeped or alkali."

⁴ Not called for on schedule.
⁵ "Suffering a loss of crops from defective drainage."

AREA AND CAPITAL

Area of enterprises.—Statistics by counties require that an enterprise located in more than one county be divided, and the part in each county be considered as a separate enterprise. In this way, there are 58 drainage enterprises in Colorado with an average area of 6,334 acres. There are 22 such enterprises of 5,000 acres or more, 34 of between 500 and 5,000 acres, and 2 of less than 500 acres.

The area of enterprises exceeds the land in enterprises by 640 acres, which is the amount of overlap.

STATE TABLE 2.—AREA OF ENTERPRISES, BY SIZE: 1930 AND 1920

SIZE GROUP	AREA OF ENTERPRISES ¹				Land in enterprises, 1930
	1930		1920		
	Acres	Per cent 100.0	Acres	Per cent 100.0	
All enterprises.....	367,359		171,656		366,710
200 to 499 acres.....	902	0.3			902
500 to 999 acres.....	5,986	1.6	3,396	2.0	5,346
1,000 to 4,999 acres.....	59,784	16.3	21,260	12.4	59,784
5,000 to 9,999 acres.....	73,941	20.1	20,000	11.6	73,941
10,000 to 49,999 acres.....	226,746	61.7	71,000	41.4	226,746
50,000 to 99,999 acres.....			50,000	29.1	

¹ The sum of the areas of individual enterprises, including overlap.

Character of enterprise.—Organized drainage enterprises having executive officers exclusively their own, chosen according to the State drainage laws, are classed as *drainage districts*.

Drainage projects under the control of the officers of an irrigation organization are classed as *irrigation enterprises*. In such cases the drainage is incidental to land reclamation by irrigation, and both the drainage and irrigation operations are functions of the one enterprise.

Enterprises without legal organization, as such, belonging to individuals, partnerships, or agricultural companies, are classed as *individually owned projects*. Projects of this type are included only when the area drained is 500 acres or more.

STATE TABLE 3.—LAND AND CAPITAL, BY CHARACTER OF ENTERPRISE, 1930

CHARACTER OF ENTERPRISE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0	Dollars	Per cent 100.0
All enterprises.....	366,710		4,358,866	100.0
Drainage districts.....	250,238	68.3	3,144,118	72.1
Irrigation enterprises.....	90,130	24.6	831,148	19.1
Individually owned projects.....	17,351	4.7	383,600	8.8

Type of drainage.—There were 55 enterprises, covering 293,489 acres of land, with an invested capital of \$3,214,298, that reported their works as completed; while 3 enterprises, covering 73,230 acres of land, with an invested capital of \$1,144,568, estimated that \$37,000 would be required to complete the drainage works under construction.

The works completed to January 1, 1930, included approximately 815 miles of ditches and 370 miles of tile drains. These figures do not include drains or levees installed by individual farmers supplemental to the works of an enterprise. No pumping plants were reported.

STATE TABLE 4.—LAND AND CAPITAL, BY TYPE OF DRAINAGE, 1930

TYPE OF DRAINAGE (See definitions in Introduction)	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0	Dollars	Per cent 100.0
All enterprises.....	366,710	100.0	4,358,866	100.0
Gravity drainage only.....	366,710	100.0	4,358,866	100.0
Ditches.....	112,143	30.6	1,354,000	31.1
Tile drains.....	12,518	3.4	292,700	6.7
Ditches and tile drains.....	242,058	66.0	2,712,166	62.2

Arrears and delinquency.—There were 8 enterprises, with approximately 17 per cent of the invested capital and covering about 14 per cent of the land in organized districts, reported as in arrears in payment of principal or interest on bonds or other obligations; while the remaining 50 enterprises were reported as not in arrears. Reports of 15 enterprises, covering 116,721 acres, show a total of 24,164 acres delinquent in drainage taxes; while 43 enterprises, covering 249,998 acres, reported no delinquency.

STATE TABLE 5.—LAND, CAPITAL INVESTED, AND AREA DELINQUENT IN DRAINAGE TAXES, ACCORDING TO ARREARAGE IN PAYMENT OF PRINCIPAL OR INTEREST ON BONDS OR OTHER OBLIGATIONS, 1930

FINANCIAL STATUS	Land		Capital invested to Jan. 1, 1930		Area delinquent
	Acres	Per cent 100.0	Dollars	Per cent 100.0	
All enterprises.....	366,710	100.0	4,358,866	100.0	24,164
Enterprises in arrears.....	53,105	14.5	731,938	16.8	18,411
With some delinquent land.....	46,695	12.7	717,238	16.5	18,411
With no delinquent land.....	6,500	1.8	14,700	0.3	
Enterprises not in arrears.....	313,604	85.5	3,626,928	83.2	5,753
With some delinquent land.....	70,026	19.1	1,329,850	30.5	5,753
With no delinquent land.....	243,498	66.4	2,297,078	52.7	

Purpose of drainage.—In some cases the drainage development accomplished two or more purposes, as an enterprise may contain land in farms, land damaged by alkali or seepage from irrigation, and land subject to overflow, all of which are benefited. However, the land is classified according to the principal purpose reported.

All the drainage enterprises reported in Colorado are located on irrigated land and the prevention or removal of alkali and seepage resulting from irrigation was the principal purpose of drainage.

STATE TABLE 6.—LAND AND CAPITAL, BY PURPOSE OF DRAINAGE, 1930

PURPOSE OF DRAINAGE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0	Dollars	Per cent 100.0
All enterprises.....	366,710	100.0	4,358,866	100.0
Removal of alkali and seepage from irrigation.....	366,710	100.0	4,358,866	100.0

Date of organization.—A period of one or more years may elapse between the date of organization and the beginning of actual construction, and in large enterprises the work may extend over a period of several years. For these reasons the original drainage was accomplished somewhat later than the dates shown. It was not feasible to secure dates of beginning and

ending of construction work, so the date of establishment of each enterprise was used. Where the drainage work was done directly by an irrigation enterprise, the year in which drainage was undertaken is used instead of the year of organization of the irrigation project.

STATE TABLE 7.—LAND AND CAPITAL, BY DATE OF ORGANIZATION, 1930

DATE OF ORGANIZATION	Land		Area of enterprises ¹		Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0	Acres	Over-lapped acres 640	Dollars 4,358,860	Per cent 100.0
All enterprises.....	366,719		367,359			
1910-1914.....	16,440	4.5	16,440		124,000	2.8
1915-1919.....	159,046	43.4	159,046		2,391,070	54.9
1920-1924.....	118,451	32.3	118,451		1,587,218	36.4
1925-1929.....	72,782	19.8	73,422	640	256,578	5.9

¹ Includes overlap.

STATE TABLE 8.—CONDITION OF LAND AND LAND AVAILABLE FOR SETTLEMENT, BY DATE OF ORGANIZATION, 1930

DATE OF ORGANIZATION	LAND IN ENTERPRISES				
	Total	Condition of land			Land available for settlement
		Improved land	Unimproved land		
Acres	Acres	Per cent	Acres	Acres	
All enterprises.....	366,719	302,023	82.4	64,696	53,513
1910-1914.....	16,440	10,140	61.7	6,300	6,000
1915-1919.....	160,040	138,405	87.1	20,561	17,253
1920-1924.....	118,451	98,450	83.1	19,902	15,020
1925-1929.....	72,782	54,929	75.5	17,853	15,240

Method of maintenance.—Some enterprises reported more than one method of maintenance, but in such cases the principal method is shown.

Systematic maintenance was reported by 48 enterprises, covering 350,945 acres of land and having an invested capital of \$4,105,466; while 10 enterprises, with an invested capital of \$253,400 and covering 15,774 acres of land, did not have systematic maintenance.

COUNTY TABLE I.—FARMS REPORTING DRAINAGE AND FARM LAND DRAINED, 1930 AND 1920; FARMS, ALL LAND IN FARMS, AND APPROXIMATE LAND AREA, 1930

STATE AND COUNTY	FARMS REPORTING DRAINAGE ¹		FARM LAND PROVIDED WITH DRAINAGE		All farms, 1930	FARM LAND, 1930			Approximate land area, 1930
	1930	1920	1930	1920		All land in farms	Crop land	Woodland	
	Number	Number	Acres	Acres		Number	Acres	Acres	
The State.....	3,253	2,749	230,281	127,037	59,956	28,876,171	8,448,084	1,641,403	66,341,120
Adams.....	32	40	729	994	1,912	557,501	305,979	1,484	807,715
Alamosa.....	64	47	13,214	8,291	581	225,192	66,367	1,021	465,280
Bent.....	93	69	10,887	4,725	882	540,038	93,504	1,335	975,360
Boulder.....	221	358	5,312	11,490	1,473	203,313	95,728	27,621	488,060
Conejos.....	154	24	26,402	14,478	1,407	252,552	107,051	15,605	801,280
Crowley.....	260	(?)	22,473	(?)	620	328,113	62,610	781	617,120
Delta.....	82	122	1,743	2,427	1,744	187,065	66,455	0,792	708,640
Gunnison.....	5	19	558	539	370	215,849	48,277	22,162	2,034,560
Jackson.....	3	13	800	203	203	321,277	90,304	30,700	1,044,430
Jefferson.....	135	160	1,438	1,516	1,817	259,690	63,823	80,651	617,120
Larimer.....	233	396	8,125	12,711	1,838	608,304	180,772	21,554	1,682,560
Logan.....	57	10	3,050	2,393	1,845	961,377	479,910	4,030	1,100,080
Mesa.....	683	137	30,206	2,407	2,665	345,098	87,924	35,647	2,024,320
Montrose.....	99	161	3,304	3,336	1,318	281,065	72,560	9,625	1,448,060
Otero.....	120	107	9,599	5,144	1,293	407,846	83,946	8,107	805,780
Prowers.....	217	109	22,753	6,442	1,382	564,644	197,159	1,784	1,043,200
Pueblo.....	15	20	618	541	1,473	1,245,441	135,270	40,091	1,557,120
Rio Grande.....	156	18	30,093	6,080	730	202,034	104,388	5,809	574,720
Saguache.....	16	17	4,475	7,835	557	104,726	109,208	14,810	2,005,120
Weld.....	485	575	20,987	19,683	5,457	1,977,783	926,045	8,445	2,574,080
All other counties.....	123	344	2,289	14,333	30,308	18,635,343	5,066,263	1,194,091	43,038,685

¹ No drainage on farms reported in Archuleta, Choyenne, Costilla, Dolores, Elbert, Hinsdale, Kiowa, Kit Carson, Lake, Lincoln, Park, Phillips, San Juan, Sedgwick, Washington, and Yuma Counties in 1930; nor in Baca, Cheyenne, Clear Creek, Dolores, Douglas, Elbert, Lincoln, Mineral, San Juan, and Sedgwick Counties for 1920.
² Included in "All other counties."

There were 8 enterprises, with an invested capital of \$1,238,748 and covering 73,980 acres of land, that reported ownership of excavators or other power equipment used principally for maintenance; while 50 enterprises, with an invested capital of \$3,120,118, covering 292,739 acres of land, did not report any such equipment.

STATE TABLE 9.—LAND AND CAPITAL, BY METHOD OF MAINTENANCE, 1930

METHOD OF MAINTENANCE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0	Dollars 4,358,860	Per cent 100.0
All enterprises.....	366,719			
By district forces.....	353,096	96.3	4,211,860	96.6
By contract.....	1,322	0.3	20,900	0.5
By work apportioned to landowners.....	11,280	3.1	61,600	1.4
Other, none, and not reported.....	1,021	0.3	64,500	1.5

Cost of operation and maintenance.—Since many enterprises do not have annual maintenance, it is necessary to include those that reported no cost as well as those that reported some cost for 1929, in order to determine a fair average cost of maintenance for the State. Approximately 91 per cent of the land reporting showed some cost, and 9 per cent showed no cost in 1929. The average cost was 17 cents per acre. Expenditures for operation and maintenance vary greatly from year to year.

STATE TABLE 10.—LAND AND COST OF OPERATION AND MAINTENANCE, 1929, BY TYPE OF DRAINAGE

TYPE OF DRAINAGE (See definitions in Introduction)	Land reporting on cost	COST REPORTED	
		Total	Per acre
	Acres	Dollars	Dollars
All enterprises reporting.....	310,810	54,388	0.17
Gravity drainage only.....	310,810	54,388	0.17
Ditches.....	112,143	25,450	0.23
Tile drains.....	12,518	5,176	0.41
Ditches and tile drains.....	186,158	23,762	0.13

DRAINAGE—COLORADO

75

COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER ACRE, AND CONDITION AND USE OF LAND, 1930 AND 1920; AND DRAINAGE WORKS, 1930

	ITEM (See definitions in Introduction)	THE STATE	Alamosa	Bent	Conejos	Crowley
LAND AREA						
1	Approximate land area.....1930.....acres..	66,341,120	465,280	975,360	801,280	517,120
2	Land in enterprises.....1930.....acres..	306,710	33,845	23,112	36,871	28,807
3	.....1920.....acres..	171,656	(¹)	11,550	17,100	(¹)
4	Increase, 1920-1930.....per cent..	113.6	-----	100.1	115.6	-----
5	Area of all enterprises (overlapping areas included).....1930.....acres..	307,350	34,485	23,112	36,871	28,807
6	Excess over land in enterprises (total areas overlapping).....acres..	640	640	-----	-----	-----
CONDITION AND USE OF LAND						
7	Land unfit to raise any crop.....1930.....acres..	5,504	128	380	-----	1,000
8	Land unfit to raise any crop prior to drainage.....acres..	103,536	17,442	5,950	23,000	5,921
9	Decrease since drainage.....per cent..	97.2	90.3	93.6	100.0	83.1
10	Land fit to raise a normal crop.....1930.....acres..	313,030	18,723	22,712	34,040	24,480
11	Land fit to raise a normal crop prior to drainage.....acres..	88,319	-----	11,502	3,000	15,328
12	Increase since drainage ².....per cent..	254.4	-----	97.6	-----	54.7
13	Land fit to raise a partial crop.....1930.....acres..	48,176	14,994	20	2,331	3,378
14	Land fit to raise a partial crop prior to drainage.....acres..	84,804	16,403	5,600	10,871	7,118
15	Decrease since drainage.....per cent..	43.2	8.6	99.7	74.0	52.5
16	Improved land.....1930.....acres..	302,023	19,443	22,772	21,540	28,282
17	.....1920.....acres..	123,031	(¹)	8,736	9,103	(¹)
18	Increase, 1920-1930.....per cent..	145.5	-----	160.7	135.1	-----
19	Unimproved land.....1930.....acres..	64,000	14,402	340	15,331	585
20	Land in occupied farms.....1930.....acres..	305,906	10,443	22,692	21,040	27,900
21	Land in planted crops.....1930.....acres..	274,922	18,443	21,002	20,040	25,919
22	Woodland cleared and cultivated since drainage.....1930.....acres..	4,280	-----	-----	3,000	-----
23	Land idle.....1930.....acres..	69,780	14,402	1,630	15,481	2,843
24	Land available for settlement.....1930.....acres..	53,513	13,122	80	15,131	-----
DRAINAGE WORKS, 1930						
25	Ditches—					
26	Completed.....miles..	814.9	41.5	18.5	36.0	73.2
27	Additional under construction.....miles..	0.5	-----	-----	-----	-----
28	Tile drains—					
29	Completed.....miles..	369.5	37.8	28.4	103.1	23.2
30	Land drained by ditches only ³.....acres..	112,143	-----	2,240	-----	10,705
31	Length of ditches.....miles..	526.0	-----	6.0	-----	53.2
32	Land drained by tile only.....acres..	12,518	-----	4,372	-----	4,226
33	Length of tile.....miles..	85.3	-----	13.5	-----	22.0
34	Land drained by ditches and tile ⁴.....acres..	242,058	33,845	16,500	36,871	7,846
35	Length of ditches.....miles..	205.5	41.5	12.5	36.0	20.0
36	Length of tile.....miles..	284.2	37.8	14.9	103.1	1.2
CAPITAL INVESTED AND COST PER ACRE						
37	Capital invested in enterprises to Jan. 1, 1930.....dollars..	4,358,806	308,404	250,150	581,400	510,000
38	.....1920.....dollars..	1,081,875	(¹)	90,500	253,907	(¹)
39	Increase, 1920-1930.....per cent..	302.9	-----	100.5	129.0	-----
40	Estimated cost of enterprises when completed.....1930.....dollars..	4,395,806	308,404	250,150	581,400	510,000
41	.....1920.....dollars..	1,285,070	(¹)	110,500	343,907	(¹)
42	Average, per acre when completed.....1930.....dollars..	11.99	9.11	11.21	15.77	17.98
43	.....1920.....dollars..	7.49	(¹)	9.57	29.11	(¹)
44	Invested in—					
45	Enterprises having ditches only, when completed.....1930.....dollars..	1,364,000	-----	32,000	-----	274,000
46	Average, per acre.....dollars..	12.10	-----	14.20	-----	16.31
47	Enterprises having tile drains only.....1930.....dollars..	292,700	-----	73,900	-----	100,000
48	Average, per acre.....dollars..	23.38	-----	16.90	-----	23.06
49	Enterprises having ditches and tile drains when completed.....1930.....dollars..	2,739,106	308,494	153,250	581,400	145,000
50	Average, per acre.....dollars..	11.32	9.11	9.29	15.77	13.48

¹ Included in "Other counties."

² Per cent not shown when more than 1,000.

³ When works under construction have been completed.

DRAINAGE—COLORADO

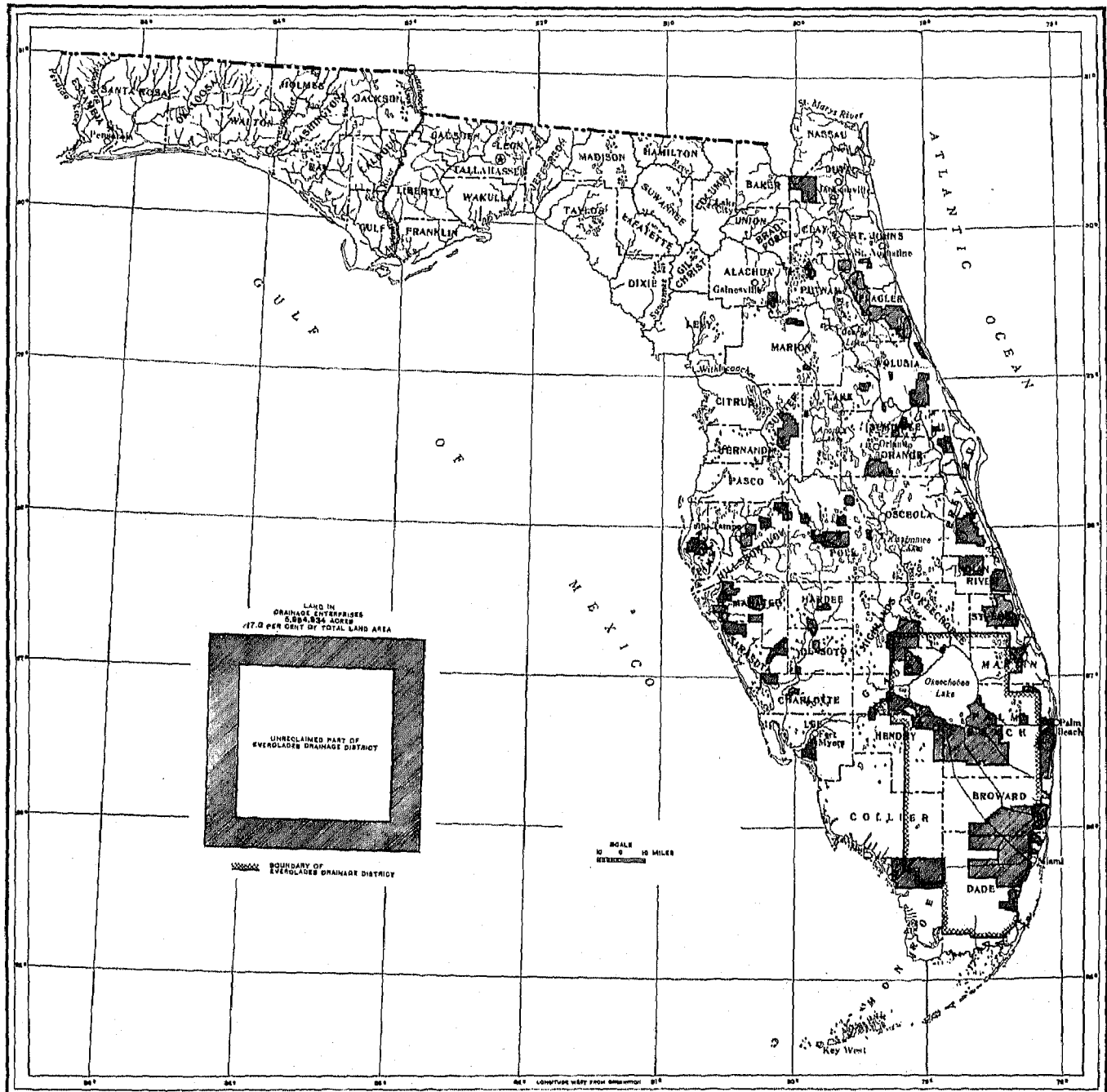
COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER ACRE, AND CONDITION AND USE OF LAND, 1930 AND 1920; AND DRAINAGE WORKS, 1930—Continued

ITEM (See definitions in Introduction)		Mesa	Otero	Prowers	Rio Grande	Saguache	Other counties ¹
LAND AREA							
1	Approximate land area.....1930.....acres..	2,024,320	805,700	1,043,200	574,720	2,005,120	4,563,200
2	Land in enterprises.....1930.....acres..	73,831	14,445	47,593	65,010	33,220	9,925
3	.....1920.....acres..	50,040	4,539	38,040	27,000	(?)	22,787
4	Increase, ² 1920-1930.....per cent..	46.8	218.2	25.1	140.8	-----	-56.4
5	Area of all enterprises (overlapping areas included).....1930.....acres..	73,831	14,445	47,593	65,010	33,220	9,925
6	Excess over land in enterprises (total areas overlapping).....acres..	-----	-----	-----	-----	-----	-----
CONDITION AND USE OF LAND							
7	Land unfit to raise any crop.....1930.....acres..	1,260	370	56	2,220	80	20
8	Land unfit to raise any crop prior to drainage.....acres..	32,000	7,011	46,582	34,220	15,080	5,730
9	Decrease since drainage.....per cent..	96.1	94.7	99.9	93.5	99.5	96.7
10	Land fit to raise a normal crop.....1930.....acres..	59,293	13,646	47,034	62,790	21,120	9,192
11	Land fit to raise a normal crop prior to drainage.....acres..	22,630	5,594	80	19,650	5,840	4,195
12	Increase since drainage ³.....per cent..	162.0	143.9	-----	210.5	261.6	110.1
13	Land fit to raise a partial crop.....1930.....acres..	13,288	429	503	-----	12,020	713
14	Land fit to raise a partial crop prior to drainage.....acres..	19,201	1,840	931	11,140	11,700	-----
15	Decrease since drainage ⁴.....per cent..	30.8	78.7	46.0	100.0	+2.7	-----
16	Improved land.....1930.....acres..	64,763	11,808	47,593	57,330	19,240	9,192
17	.....1920.....acres..	30,040	4,196	30,350	23,650	(?)	16,287
18	Increase, ² 1920-1930.....per cent..	111.4	182.8	56.8	142.4	-----	-43.6
19	Unimproved land.....1930.....acres..	9,068	2,577	-----	7,050	13,980	733
20	Land in occupied farms.....1930.....acres..	66,101	14,275	47,593	58,330	19,320	9,212
21	Land in planted crops.....1930.....acres..	52,624	11,818	46,824	51,580	17,480	9,192
22	Woodland cleared and cultivated since drainage.....1930.....acres..	-----	-----	-----	1,000	280	-----
23	Land idle.....1930.....acres..	6,338	2,627	769	9,430	15,740	929
24	Land available for settlement.....1930.....acres..	6,500	-----	-----	6,080	12,000	600
DRAINAGE WORKS, 1930							
25	Ditches—Completed.....miles..	452.4	44.7	65.5	40.0	25.0	17.2
26	Additional under construction.....miles..	6.5	-----	-----	-----	-----	-----
27	Tile drains—Completed.....miles..	5.7	39.0	22.6	92.7	4.5	12.5
28	Land drained by ditches only ⁴.....acres..	40,000	10,736	23,659	-----	10,000	8,713
29	Length of ditches.....miles..	352.0	38.2	41.5	-----	18.0	17.0
30	Land drained by tile only.....acres..	601	2,000	-----	-----	560	750
31	Length of tile.....miles..	5.0	38.0	-----	-----	1.8	5.0
32	Land drained by ditches and tile ⁴.....acres..	33,230	1,700	23,934	65,010	22,000	462
33	Length of ditches.....miles..	106.9	6.5	24.0	40.0	7.9	9.2
34	Length of tile.....miles..	0.7	1.0	22.6	92.7	2.7	7.5
CAPITAL INVESTED AND COST PER ACRE							
35	Capital invested in enterprises to Jan. 1, 1930.....dollars..	1,164,588	352,000	539,050	410,724	82,080	142,400
36	.....1920.....dollars..	224,805	141,000	120,000	108,200	(?)	128,463
37	Increase, 1920-1930.....per cent..	418.0	149.6	327.8	279.0	-----	10.8
38	Estimated cost of enterprises when completed.....1930.....dollars..	1,201,508	352,000	539,050	410,724	82,080	142,400
39	.....1920.....dollars..	312,000	156,000	120,000	108,200	(?)	128,463
40	Average, per acre when completed.....1930.....dollars..	16.27	24.37	11.33	6.32	2.47	14.35
41	.....1920.....dollars..	6.16	34.37	3.31	4.01	(?)	5.64
42	Invested in—Enterprises having ditches only, when completed.....1930.....dollars..	460,000	221,000	201,300	-----	36,000	79,700
43	Average, per acre.....dollars..	11.50	20.58	11.04	-----	3.60	9.15
44	Enterprises having tile drains only.....1930.....dollars..	20,000	68,000	-----	-----	20,800	10,000
45	Average, per acre.....dollars..	33.28	33.85	-----	-----	37.14	13.33
46	Enterprises having ditches and tile drains when completed.....1930.....dollars..	721,568	63,000	277,750	410,724	25,280	52,700
47	Average, per acre.....dollars..	21.71	37.06	11.60	6.32	1.12	114.07

¹ Includes Logan, Morgan, and Weld Counties in 1930; and Alamosa, Crowley, Morgan, and Saguache Counties for 1920.² Included in "Other counties."³ A minus sign (—) denotes decrease. A plus sign (+) denotes increase. Per cent not shown when more than 1,000.⁴ When works under construction have been completed.

FLORIDA

APPROXIMATE LOCATION OF LAND IN DRAINAGE ENTERPRISES



FLORIDA

Introduction.—Statistics concerning the drainage of lands for agricultural purposes are presented in the following pages. The data relate to drainage conditions as of January 1, 1930, and the crop year 1929. The first drainage census for the United States was that of 1920 and statistics from that census are shown for purposes of comparison.

An organized drainage enterprise may include timbered and other unimproved land not yet in farms. The statistics for drainage on farms were collected in 1930 on the general farm schedule and are shown in the first section of State Table 1 and in County Table I; while those for drainage enterprises were obtained on a special drainage schedule.

Summary and condition of land in enterprises.—The following State tables show statistics for all organized drainage enterprises, including the Everglades Drainage District in its entirety. The Okeechobee Flood Control District is not included, as this enterprise was organized primarily for the purpose of protecting lives and property around Lake Okeechobee from floods due to tropical hurricanes. This plan of protection contemplates the construction of a beach levee around a portion of the lake to a height of approximately 15 feet above the standard lake level and 30 feet above sea level.

In the census of 1920 the Everglades Drainage District as a whole was not included in the tabulation. Only those lands were included which were adjacent to canals constructed as main outlets and against which special assessments had been levied for improvement works. The items in the tables affected by this difference in the basis of treatment of the Everglades drainage area carry explanatory notes.

Four special tables for the Everglades Drainage Area are shown, on pages 82 and 83, so that the particular condition of enterprises covering that area may be presented in greater detail.

Most of the drained land in Florida is located in enterprises in the peninsular section of the State near the east coast. There is also a considerable area of land in enterprises located south of Tampa near the west coast. No enterprises were reported in the northwestern section of the State.

Approximately 13 per cent of all land in enterprises was reported as improved; 31 per cent was woodland; and 56 per cent was other unimproved land. About 33 per cent of the land was reported as fit to raise a normal crop; 44 per cent was fit to raise a partial crop; and 23 per cent was unfit to raise any crop for lack of drainage.

Approximately 7 per cent of all land in enterprises was in occupied farms; 4 per cent was in planted crops; and 92 per cent was idle. Most of this idle land was within the unreclaimed portion of the Everglades Drainage District. The average investment in all drainage enterprises was \$7.64 per acre, but if the undeveloped portion of the Everglades Drainage District were excluded, this amount would be about double.

The annual precipitation for 1929 varied from 31.7 inches at New Smyrna on the east coast to 96.3 inches at Cottage Hill in the extreme western part of the State and averaged 59 inches, which is 6.4 inches in excess of normal. The wettest year on record showed a State average of 64.9 inches and the driest year, 40.2 inches. Precipitation records have been kept continuously since 1891.

The usual purpose of an organized drainage enterprise is to provide adequate outlets into which the farms of the district may be drained, and to afford relief from overflow for the district as a unit. Therefore, the fact that an enterprise which has completed its drainage works contains land still unfit to raise any crop, or land fit only for a partial crop, does not necessarily show that the works are inadequate. State Table 1 includes a summary of the condition of lands in drainage enterprises.

STATE TABLE 1.—SUMMARY FOR THE STATE: 1930 AND 1920

ITEM (See definitions in Introduction)	CENSUS OF—		INCREASE ¹		
	1930	1920 ²	Amount	Per cent	
FARMS AND DRAINAGE ON FARMS					
All farms.....	number.....	58,000	54,005	4,061	9.2
Farms reporting drainage.....	number.....	2,904	4,607	-1,633	-35.5
All land in farms.....	acres.....	5,020,617	6,046,601	-1,020,074	-16.9
Farm land provided with drainage.....	acres.....	108,354	147,040	-39,586	-26.8
AREA, DRAINS, AND INVESTMENT IN ENTERPRISES					
Approximate land area of State.....	acres.....	35,111,040	35,111,040		
Land in drainage enterprises.....	acres.....	5,954,934	1,637,073	4,317,861	263.8
Improved land.....	acres.....	783,033	94,589	688,444	727.8
Unimproved land:					
Woodland.....	acres.....	1,839,512	542,648	1,296,864	230.0
Other.....	acres.....	3,382,389	990,830	2,332,553	233.3
Land unfit to raise any crop for lack of drainage.....	acres.....	1,380,583	³ 731,001	648,582	88.7
Land drained, fit to raise normal crop.....	acres.....	1,967,568	(⁴)		
Land partly drained, fit for partial crop.....	acres.....	2,006,783	⁵ 40,498	2,566,285	
Land in occupied farms.....	acres.....	308,200	(⁴)		
Land in planted crops.....	acres.....	216,536	(⁴)		
Land idle.....	acres.....	5,505,445	(⁴)		
Ditches, completed.....	miles.....	5,112.6	1,900.8	3,121.8	156.8
Capital invested in enterprises.....	dollars.....	45,487,795	13,846,807	31,640,988	228.5
Average, per acre.....	dollars.....	7.64	8.46	-0.82	-9.7

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

² Only that portion of the Everglades Drainage District assessed for drainage work then undertaken is included.

³ "Swammy or subject to overflow."

⁴ Not called for on schedule.

⁵ "Suffering a loss of crops from defective drainage."

AREA AND CAPITAL

Area of enterprises.—Statistics by counties require that an enterprise located in more than one county be divided, and the part in each county be considered as a separate enterprise. In this way, 146 drainage enterprises are shown for Florida with an average area of 50,504 acres. There are 26 such enterprises of 50,000 acres or more, 74 between 5,000 and 50,000 acres, 44 between 500 and 5,000 acres, and 2 of less than 500 acres.

The area of enterprises exceeds the land in enterprises by 1,418,693 acres, which is the amount of overlap.

STATE TABLE 2.—AREA OF ENTERPRISES, BY SIZE: 1930 AND 1920

SIZE GROUP	AREA OF ENTERPRISES ¹				Land in enterprises, 1930
	1930		1920		
	Acres	Per cent	Acres	Per cent	
All enterprises.....	7,373,627	100.0	1,759,041	100.0	5,054,034
200 to 499 acres.....	824	(?)	3,370	0.2	824
500 to 999 acres.....	2,980	(?)	63,157	3.6	2,170
1,000 to 4,999 acres.....	101,480	1.4	114,456	6.5	83,101
5,000 to 9,999 acres.....	187,251	2.5	994,045	30.4	146,832
10,000 to 49,999 acres.....	1,017,082	13.8	604,913	34.4	654,677
50,000 to 99,999 acres.....	732,777	9.9	280,000	15.0	504,877
100,000 acres and over.....	5,330,327	72.3			4,473,553

¹ The sum of the areas of individual enterprises, including overlap.
² Less than one-tenth of 1 per cent.

Character of enterprise.—Organized drainage enterprises having executive officers exclusively their own, chosen according to the State drainage laws, are classed as *drainage districts*.

Enterprises under the control of individuals, or organizations engaged in the draining of land for purposes of development, subdivision, and sale, are classed as *commercial developments*.

Enterprises without legal organization, as such, belonging to individuals, partnerships, or agricultural companies, are classed as *individually owned projects*. Projects of this type are included only when the area drained is 500 acres or more.

STATE TABLE 3.—LAND AND CAPITAL, BY CHARACTER OF ENTERPRISE, 1930

CHARACTER OF ENTERPRISE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	5,954,934	100.0	45,487,705	100.0
Drainage districts.....	5,840,401	98.2	43,458,145	95.5
Commercial developments.....	34,927	0.6	1,257,047	2.8
Individually owned projects.....	70,606	1.2	772,003	1.7

Type of drainage.—There were 128 enterprises, covering 5,780,698 acres of land, with an invested capital of \$39,297,273, that reported their works as completed.

There were 18 enterprises, covering 174,236 acres of land, with an invested capital of \$6,190,522, which estimated that \$2,919,744 would be required to complete the drainage works under construction. However, after the completion of these works the larger portion of the Everglades Drainage District, representing approximately half of all land in Florida enterprises, will still be unreclaimed. As the necessary works have not yet been authorized, the cost of reclaiming these lands has not been included.

The works completed to January 1, 1930, included approximately 5,113 miles of ditches and 718 miles of

levees. These figures do not include drains or levees installed by individual farmers supplemental to the works of an enterprise. There were 12 pumping plants reported.

STATE TABLE 4.—LAND AND CAPITAL, BY TYPE OF DRAINAGE, 1930

TYPE OF DRAINAGE (See definitions in Introduction)	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	5,954,934	100.0	45,487,705	100.0
Gravity drainage only, ditches and levees.....	5,452,240	91.6	41,124,738	90.4
Drainage, all or part by pumping.....	502,688	8.4	4,363,057	9.6
All drainage by pumping.....	50,652	1.0	1,300,108	2.9
Part gravity and part pumping.....	443,036	7.4	3,062,949	6.7

Pumping plants.—Of the 12 pumping plants reported, 11 are located within the Everglades Drainage District, and 1 in Marion County, in the northern part of the peninsula. One of these plants served land in two counties. The average lift of all pumps was approximately 5 feet.

These 12 plants had a total engine and motor capacity of 5,065 horsepower, and a pump capacity of 1,980,799 gallons per minute. The area served was 129,872 acres.

STATE TABLE 5.—PUMPING PLANTS AND LAND SERVED, BY KIND OF POWER: 1930 AND 1920

KIND OF POWER	Enterprises	Engine or motor capacity		Pump capacity	Land served
		Number	H. p.			Per cent
All enterprises.....	12	5,065	100.0	1,980,799	129,872
		120	100.0	30,000	4,600
Electric.....	3	275	5.4	118,300	11,525
Internal combustion.....	9	4,790	94.6	1,862,499	118,347
	1	45	37.5	1,000	1,600
Steam and internal combustion.....	1	75	62.5	38,000	3,000

STATE TABLE 6.—PUMPING PLANTS AND LAND SERVED, BY KIND OF PUMP, 1930

KIND OF PUMP	Pumps	Pump capacity		Engine or motor capacity	Land served
		G. p. m.	Per cent		
All enterprises.....	37	1,980,799	100.0	5,065	129,872
Centrifugal.....	17	460,799	22.8	1,110	40,110
Screw.....	13	1,145,000	57.8	2,860	60,195
Rotary.....	7	365,000	19.4	1,095	23,558

Arrears and delinquency.—There were 53 enterprises, with approximately 39 per cent of the invested capital and covering about 21 per cent of the land in organized districts, reported as in arrears in payment of principal or interest on bonds or other obligations; while the remaining 93 enterprises reported no arrearage. There were 113 enterprises, covering 5,663,703 acres, that reported a total of 3,044,462 acres delinquent in drainage taxes; 30 enterprises, covering 280,965 acres, that reported no delinquency; while 3 enterprises failed to report.

On account of the overlapping of later enterprises with the Everglades Drainage District, the area shown delinquent contains some land that has been reported delinquent in 2 enterprises. This duplication in delinquent acreage can only be approximately determined from the available data, but a study of the reports indicates that 634,922 acres or approximately 21 per cent of the area delinquent has been twice reported.

STATE TABLE 7.—LAND, CAPITAL INVESTED, AND AREA DELINQUENT IN DRAINAGE TAXES, ACCORDING TO ARREARAGE IN PAYMENT OF PRINCIPAL OR INTEREST ON BONDS OR OTHER OBLIGATIONS, 1930

FINANCIAL STATUS	Land		Capital invested to Jan. 1, 1930		Area delinquent
	Acres	Per cent	Dollars	Per cent	Acres
All enterprises.....	5,954,934	100.0	45,487,795	100.0	3,044,462
Enterprises in arrears.....	1,240,168	20.8	17,563,684	38.0	888,000
With some delinquent land.....	1,227,046	20.6	17,432,335	38.3	888,000
With no delinquent land.....	8,642	0.1	116,349	0.3	
With no report on delinquency.....	4,480	0.1	15,000	(1)	
Enterprises not in arrears.....	4,714,766	79.2	27,924,111	61.4	2,156,462
With some delinquent land.....	4,430,657	74.5	24,301,000	53.6	2,150,402
With no delinquent land.....	272,323	4.6	3,453,001	7.6	
With no report on delinquency.....	6,786	0.1	109,210	0.2	

¹ Less than one-tenth of 1 per cent.

Purpose of drainage.—In some cases the drainage development accomplished two or more purposes. An enterprise, prior to drainage, may contain swamp land, improved land in farms, and land subject to overflow. The object in drainage may be to reclaim or benefit all such lands. However, the land is classified according to the principal purpose reported.

STATE TABLE 8.—LAND AND CAPITAL, BY PURPOSE OF DRAINAGE, 1930

PURPOSE OF DRAINAGE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	5,954,934	100.0	45,487,795	100.0
Reclamation of swamp land not previously in farms.....	5,700,041	95.7	39,801,915	87.5
Improvement of land already in farms.....	168,016	2.7	3,769,275	8.3
Protection against overflow.....	96,277	1.0	1,916,605	4.2

Date of organization.—A period of one or more years may elapse between the date of organization and the beginning of actual construction, and in large enterprises the work may extend over a period of several years. For these reasons the original drainage was accomplished somewhat later than the dates shown. It was not feasible to secure dates of beginning and ending of construction work, so the date of establishment of each enterprise was used.

The 4,477,810 acres shown as organized into a drainage enterprise between 1905 and 1909 constitute the Everglades Drainage District. The actual drainage of lands of this project has proceeded slowly and on the census date only about one-third of the area had been reclaimed. These facts must, therefore, be borne in mind when considering the rate of development of drainage as shown by the following table.

STATE TABLE 9.—LAND AND CAPITAL, BY DATE OF ORGANIZATION, 1930

DATE OF ORGANIZATION	Land		Area of enterprises ¹		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Acres	Over-lapped acres	Dollars	Per cent
All enterprises.....	5,954,934	100.0	7,373,627	1,418,603	45,487,795	100.0
1800-1899.....	12,000	0.2	12,000		82,000	0.2
1900-1904.....	2,887	(?)	2,887		28,718	0.1
1905-1909.....	4,477,810	75.2	4,477,810		16,600,682	36.5
1910-1914.....	160,571	2.7	202,706	42,135	2,370,627	5.2
1915-1919.....	785,218	13.2	1,263,450	478,232	14,900,661	32.8
1920-1924.....	292,895	4.9	380,853	506,958	8,051,866	17.7
1925-1929.....	223,553	3.7	524,921	301,368	3,435,011	7.6

¹ Includes overlap.

² Less than one-tenth of 1 per cent.

STATE TABLE 10.—CONDITION OF LAND AND LAND AVAILABLE FOR SETTLEMENT, BY DATE OF ORGANIZATION, 1930

DATE OF ORGANIZATION	LAND IN ENTERPRISES					Land available for settlement
	Total	Condition of land			Land available for settlement	
		Improved land	Woodland	Other unimproved land		
All enterprises.....	5,954,934	783,093	13.1	1,839,512	3,332,389	2,325,423
1800-1899.....	12,000	2,000	16.7	5,000	5,000	1,000
1900-1904.....	2,887	1,000	34.6	350	637	898
1905-1909.....	4,477,810	555,000	12.4	1,100,000	2,822,210	1,485,376
1910-1914.....	160,571	40,390	25.1	50,683	54,498	75,157
1915-1919.....	785,218	88,165	11.2	463,208	233,845	511,382
1920-1924.....	292,895	60,959	20.8	123,133	108,803	141,208
1925-1929.....	223,553	28,619	12.8	87,538	107,306	110,342

Method of maintenance.—Some enterprises reported more than one method of maintenance, but in such cases the principal method is shown.

Systematic maintenance was reported by 71 enterprises, covering 5,200,674 acres of land and having an invested capital of \$32,289,739; while 75 enterprises, covering 754,260 acres of land, with an invested capital of \$13,198,056, did not have systematic maintenance.

There were 24 enterprises, covering 4,562,310 acres of land, with an invested capital of \$26,175,886, that reported ownership of excavators or other power equipment used principally for maintenance; while 122 enterprises, covering 1,392,624 acres of land, with an invested capital of \$19,311,909, did not report any such equipment.

The Everglades Drainage District, including approximately 3,100,000 acres of unreclaimed land which is about two-thirds of its area, reported both systematic maintenance and ownership of power equipment used principally for maintenance.

STATE TABLE 11.—LAND AND CAPITAL, BY METHOD OF MAINTENANCE, 1930

METHOD OF MAINTENANCE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	5,054,034	100.0	45,487,705	100.0
By district forces.....	4,834,401	81.2	34,601,737	76.3
By contract.....	600,892	10.1	3,713,301	8.2
By work apportioned to landowners.....	145,092	2.4	1,474,098	3.2
Other, none, and not reported.....	373,649	6.3	5,608,650	12.3

Cost of operation and maintenance.—All drainage enterprises in Florida reported definitely either *some* or *no* cost of maintenance in 1929. Approximately 90 per cent of the land reporting showed some cost, and 10 per cent no cost for the year. The average cost for all enterprises was 12 cents per acre, while that for enterprises drained all or part by pumping was 18 cents per acre.

However, if the unreclaimed land in the Everglades Drainage District were excluded from the acreage reported, the average cost for all enterprises would be 24 cents per acre; that for gravity drainage only would be 25 cents per acre; and that for drainage all or part by pumping would remain the same, as all pumping plants in this area were constructed by subdistricts or separate enterprises. Expenditures for operation and maintenance vary greatly from year to year.

STATE TABLE 12.—LAND AND COST OF OPERATION AND MAINTENANCE, 1929, BY TYPE OF DRAINAGE

TYPE OF DRAINAGE (See definitions in Introduction)	Land reporting on cost	COST REPORTED	
		Total	Per acre
All enterprises reporting.....	Acres 5,054,034	Dollars 683,510	Dollars 0.12
Gravity drainage only, ditches and levees.....	5,452,210	508,850	0.11
Drainage, all or part by pumping.....	502,688	80,654	0.18

THE EVERGLADES DRAINAGE AREA

The term "Everglades area" used in the following text and tables includes the Everglades Drainage District proper and 35 subdistricts located wholly or partly within the boundaries of the Everglades Drainage District.

Special tables have been prepared to show the Everglades area and the relation of this development to that in the remaining portion of the State.

The Everglades Drainage District covers a large area consisting principally of peat and muck soil, underlain with oolitic limestone and coral rock, in the southeastern portion of the State. The original act of organization was passed by the Legislature in 1905. This act was declared unconstitutional and the district was reorganized in 1907. Lake Okeechobee, located in the northern portion of the district, is about 30 miles in diameter, covers an area of approximately 730 square miles, and has a normal water elevation of 15 to 16 feet above sea level and an extreme depth of approximately 15 feet. The Okeechobee Flood Control District was organized in 1929 for the purpose of protecting lives and property around the lake from loss due to high water caused by tropical hurricanes. The plan of protection contemplates the construction of a levee around a portion of the lake.

The drainage works of the Everglades Drainage District proper consist chiefly of large main canals extending from Lake Okeechobee to the eastern coast,

but the more complete drainage of the lands is accomplished through the formation of subdistricts.

Approximately three-fourths of all land in drainage enterprises in the State is located within the Everglades area. Nearly one-third of this land is covered by subdistricts and the remaining portion is largely unreclaimed land. This unreclaimed land constitutes over half of all land in drainage enterprises in Florida.

Summary and condition of land in the Everglades area.—The following table shows the condition of land and the drainage works for the Everglades area and a comparison of these items with those for the State as a whole.

Approximately 12 per cent of all land within the Everglades area was reported as improved; 25 per cent, woodland; and 63 per cent, other unimproved land. Approximately 22 per cent was reported as unfit to raise any crop for lack of drainage; 24 per cent, fit to raise a normal crop; and 54 per cent, fit to raise only a partial crop.

Nearly 5 per cent of the land within the Everglades area was in occupied farms; a little over 2 per cent was in planted crops; and about 96 per cent was idle in 1929.

The capital invested averaged \$5.69 per acre for the full area; but if only the area so far reclaimed were considered, the cost of reclamation would average about three times that amount. Nearly all the reclaimed area is located within subdistricts.

DRAINAGE—FLORIDA

SPECIAL TABLE 1.—SUMMARY OF LAND IN DRAINAGE ENTERPRISES; CONDITION AND USE OF LAND; DRAINAGE WORKS; AND CAPITAL INVESTED AND COST PER ACRE, FOR THE STATE AND FOR THE EVERGLADES AREA, 1930

ITEM (See definitions in Introduction)	THE STATE			Everglades area			ITEM (See definitions in Introduction)	THE STATE			Everglades area		
	Acres	Per cent		Acres	Per cent			Acres	Per cent		Acres	Per cent	
Approximate land area.....	35,111,040	100.0		4,477,810	12.8		Land in drainage enterprises—Continued						
Land in drainage enterprises.....	5,954,934	100.0		4,477,810	75.2	1,477,124	Land in occupied farms.....	398,200	100.0	207,000	52.0	101,200	48.0
Improved land.....	783,033	100.0		555,000	70.9	228,033	Land in planted crops.....	216,636	100.0	98,500	45.5	118,036	54.5
Unimproved land:							Land idle.....	5,505,445	100.0	4,285,220	77.8	1,220,225	22.2
Woodland.....	1,839,512	100.0		1,100,600	59.8	738,912	Ditches—						
Other.....	3,332,389	100.0		2,822,210	84.7	510,179	Completed.....	5,112.6	100.0	1,754.1	33.9	3,358.5	65.1
Land unfit to raise any crop for lack of drainage.....	1,380,583	100.0		1,005,000	72.8	375,583	Additional under construction.....	460.6	100.0	310.0	67.3	141.6	30.7
Land drained, fit to raise normal crop.....	1,067,568	100.0		1,069,600	100.0	897,908	Levees and dikes—						
Land partly drained, fit for partial crop.....	2,606,783	100.0		2,403,150	92.2	203,633	Completed.....	718.4	100.0	542.0	75.5	175.5	24.5
							Additional under construction.....	40.5	100.0	40.5	100.0		
							Pumping plants—						
							Engine or motor capacity.....	5,065	100.0	5,005	98.8	60	1.2
							Pump capacity.....	1,980,769	100.0	1,907,400	96.3	13,333	0.7
							Land served by pumps.....	129,872	100.0	128,372	98.8	1,500	1.2
							Capital invested in enterprises						
							to Jan. 1, 1930.....	45,487,795	100.0	25,488,177	56.1	19,999,618	44.0
							Average, per acre.....	7.64	100.0	5.69	74.5	73.8	96.7

¹ That portion of the State outside of Everglades Drainage District.

Type of drainage.—The works completed within the Everglades area included approximately 1,754 miles of ditches and 543 miles of levees. These figures do not include drains or levees installed by individual farmers supplemental to the works of an enterprise. There were 11 pumping plants reported within this area.

The works constructed by the Everglades Drainage District, exclusive of the works of the subdistricts, included 445 miles of main canals and 194 miles of levees. The capital invested by this district was \$16,600,682, out of a total of \$25,488,177 invested by enterprises within the Everglades area.

SPECIAL TABLE 2.—LAND AND CAPITAL FOR THE STATE AND FOR THE EVERGLADES AREA, BY TYPE OF DRAINAGE, 1930

TYPE OF DRAINAGE	LAND						CAPITAL INVESTED TO JAN. 1, 1930					
	The State		Everglades area		Other enterprises		The State		Everglades area		Other enterprises	
	Acres	Per cent	Acres	Per cent	Acres	Per cent	Dollars	Per cent	Dollars	Per cent	Dollars	Per cent
All enterprises.....	5,954,934	100.0	4,477,810	75.2	1,477,124	24.8	45,487,795	100.0	25,488,177	56.0	19,999,618	44.0
Gravity drainage only.....	5,452,240	91.0	3,978,422	66.8	1,473,824	24.8	41,124,738	90.4	21,425,120	47.1	10,699,618	33.3
Ditches and levees.....	3,452,240	91.0	3,978,422	66.8	1,473,824	24.8	41,124,738	90.4	21,425,120	47.1	10,699,618	33.3
Drainage, all or part by pumping.....	502,688	8.4	499,388	8.4	3,300	(¹)	4,363,057	9.6	4,063,057	8.9	300,000	0.7
All drainage by pumping.....	50,652	1.0	50,652	1.0			1,300,108	2.9	1,300,108	2.9		
Part gravity and part pumping.....	443,036	7.4	439,736	7.4	3,300	(¹)	3,062,949	6.7	2,762,949	6.0	300,000	0.7

¹ Less than one-tenth of 1 per cent.

Arrears and delinquency.—There were 35 subdistricts located either completely or partly within the boundaries of the Everglades Drainage District. These subdistricts within this area cover 1,374,398 acres or 30.7 per cent of the total Everglades area of 4,477,810 acres.

The Everglades Drainage District proper reported no arrearage in payment of principal or interest on bonds or other obligations. However, 15 subdistricts covering 255,023 acres, or 5.7 per cent of all land within this area, and 18.6 per cent of the lands covered by the 35 subdistricts were reported as in arrears. Enterprises reported in arrears in other portions of the State covered a total of 985,145 acres or 66.7 per cent of all land in enterprises outside of the Everglades area. It should here be noted that about two-thirds of the Everglades area is still unreclaimed and the assessments on this part have been very low.

The total acreage reported delinquent in drainage taxes by all enterprises within the Everglades area amounted to 2,278,188 acres. Of this amount 1,643,266

acres were reported delinquent by the Everglades Drainage District proper and 634,922 acres by the subdistricts. However, it is highly probable that all lands reported delinquent by the subdistricts were also delinquent in the Everglades District proper. It therefore may be stated that approximately 1,643,266 acres of land were delinquent in one or more enterprises within this area.

The 766,274 acres reported delinquent in other parts of the State contains no such duplication and may be compared directly with the 1,643,266 acres estimated as delinquent within the Everglades area. This comparison shows that approximately 75 per cent of all land delinquent in drainage taxes is located within the Everglades area and 25 per cent in enterprises in other parts of the State.

A further comparison shows that approximately 51 per cent of all land within the Everglades area and 52 per cent of all land in enterprises in other parts of the State was delinquent in drainage taxes. Much of the delinquent area was in enterprises not yet in arrears.

SPECIAL TABLE 3.—LAND, CAPITAL INVESTED, AND AREA DELINQUENT IN DRAINAGE TAXES, FOR THE STATE AND FOR THE EVERGLADES AREA, ACCORDING TO ARREARAGE IN PAYMENT OF PRINCIPAL OR INTEREST ON BONDS OR OTHER OBLIGATIONS, 1930

FINANCIAL STATUS	LAND						CAPITAL INVESTED TO JAN. 1, 1930						AREA DELINQUENT					
	The State		Everglades area		Other enter-prises		The State		Everglades area		Other enter-prises		The State		Everglades area		Other enter-prises	
	Acres	Per cent	Acres	Per cent	Acres	Per cent	Dollars	Per cent	Dollars	Per cent	Dollars	Per cent	Acres	Per cent	Acres	Per cent	Acres	Per cent
All enterprises...	5,954,934	100.0	4,477,810	75.2	1,477,124	24.8	45,487,795	100.0	25,488,177	56.0	10,999,618	44.0	3,014,462	100.0	2,278,188	74.8	766,274	25.2
Enterprises in arrears...	1,210,108	20.8	255,023	4.3	955,145	10.5	17,563,084	38.0	2,740,452	6.0	14,814,232	32.0	888,060	29.2	205,461	6.8	682,599	22.4
With some delinquent land.....	1,227,046	20.6	255,023	4.3	972,023	16.3	17,432,335	38.3	2,740,452	6.0	14,692,883	32.3	888,060	29.2	205,461	6.8	682,599	22.4
With no delinquent land.....	8,642	0.1	-----	-----	8,642	0.1	116,349	0.3	-----	-----	116,349	0.3	-----	-----	-----	-----	-----	-----
With no report on delinquency.....	4,480	0.1	-----	-----	4,480	0.1	15,000	(1)	-----	-----	15,000	(1)	-----	-----	-----	-----	-----	-----
Enterprises not in arrears.....	4,714,760	79.2	4,222,787	70.9	401,979	8.3	27,924,111	61.4	22,738,725	50.0	5,185,386	11.4	2,156,402	70.8	2,072,727	68.0	83,675	2.8
With some delinquent land.....	4,436,657	74.5	4,222,787	70.9	213,870	3.6	24,361,900	53.0	22,154,676	48.7	2,207,224	4.9	2,156,402	70.8	2,072,727	68.0	83,675	2.8
With no delinquent land.....	272,323	4.6	-----	-----	272,323	4.6	3,453,001	7.0	519,839	1.2	2,933,162	6.4	-----	-----	-----	-----	-----	-----
With no report on delinquency.....	5,786	0.1	-----	-----	5,786	0.1	100,210	0.2	64,210	0.1	45,000	0.1	-----	-----	-----	-----	-----	-----

¹ Less than one-tenth of 1 per cent.

Date of organization.—In the following table the first period from 1905 to 1909 shows the land and capital for the Everglades Drainage District, exclusive of subdistricts. The remaining periods show the time of organization of the subdistricts within this area.

As the reclamation of the Everglades area is far from complete and will probably continue for many years, the rate of progress made in reclamation is best shown by the periods of organization of the subdistricts extending from 1910 to 1929.

SPECIAL TABLE 4.—LAND AND CAPITAL FOR THE EVERGLADES AREA, BY DATE OF ORGANIZATION, 1930

DATE OF ORGANIZATION	Land		Area of enter-prises ¹	Capital invested to Jan. 1, 1930	
	Acres	Per cent		Acres	Per cent
All enterprises, Everglades area.....	4,477,810	100.0	5,880,268	25,488,177	100.0
1905-1909.....	4,477,810	100.0	4,477,810	16,000,682	66.1
1910-1914.....	-----	-----	42,135	597,047	2.3
1915-1919.....	-----	-----	478,232	3,597,430	14.0
1920-1924.....	-----	-----	591,008	3,351,613	13.2
1925-1929.....	-----	-----	300,083	1,370,796	5.4

¹ Includes overlap.

COUNTY TABLE I.—FARMS REPORTING DRAINAGE AND FARM LAND DRAINED, 1930 AND 1920; FARMS, ALL LAND IN FARMS, AND APPROXIMATE LAND AREA, 1930

STATE AND COUNTY	FARMS REPORTING DRAINAGE ¹		FARM LAND PROVIDED WITH DRAINAGE		All farms, 1930	FARM LAND, 1930			Approximate land area, 1930
	1930	1920	1930	1920		All land in farms	Crop land	Woodland	
	Number	Number	Acres	Acres		Number	Acres	Acres	
The State.....	2,064	4,507	108,354	147,940	58,900	5,026,617	1,009,234	1,891,838	35,111,040
Brevard.....	75	100	2,235	3,428	633	25,608	10,650	3,171	650,000
Broward.....	243	121	3,500	5,849	938	24,130	14,071	304	775,680
Calhoun ²	54	45	684	590	570	43,610	21,355	17,028	330,840
Clay.....	21	97	1,008	6,820	452	146,353	9,556	43,052	393,000
De Soto.....	97	36	3,280	3,302	1,160	50,620	35,747	4,688	1,202,100
Duval.....	159	259	4,982	12,248	520	36,652	12,615	14,745	400,000
Flagler.....	34	150	508	2,047	1,091	44,008	9,957	27,162	500,480
Hillsborough.....	42	63	2,344	2,604	144	13,403	3,070	3,408	314,240
Indian River ⁴	144	286	3,005	3,577	2,400	98,020	34,831	20,518	663,040
Lake.....	200	-----	10,410	-----	425	47,022	10,886	32,886	318,080
Lee ⁵	16	60	568	4,561	1,981	127,027	42,575	44,323	670,080
Manatee ⁶	35	187	1,134	4,440	382	10,134	8,446	5,270	523,520
Marion.....	291	534	8,149	10,104	911	32,275	14,444	10,232	520,720
Martin ⁷	4	48	1,703	2,915	2,175	204,467	80,538	70,136	1,054,080
Orange.....	21	-----	918	-----	180	7,677	4,427	1,161	382,720
Palm Beach ⁸	34	123	574	2,113	1,608	102,347	32,760	24,052	694,560
Pinalas.....	67	228	12,714	9,021	874	34,570	20,639	6,041	1,241,000
Polk.....	62	111	1,100	1,450	745	31,321	15,416	9,551	187,520
Putnam.....	61	62	3,952	16,464	4,667	318,640	96,072	181,310	1,220,480
St. Johns.....	90	258	3,388	9,317	1,000	67,608	21,200	32,167	481,280
St. Lucie ⁹	213	214	12,519	11,216	348	22,935	12,834	7,675	889,120
Sarasota ¹⁰	274	438	10,211	12,334	394	19,013	11,624	2,757	371,200
Seминоle.....	150	-----	4,592	-----	254	10,881	5,225	2,577	328,960
Sumner.....	250	268	3,043	3,358	780	34,471	11,360	10,440	205,440
Volusia.....	25	54	2,434	1,709	799	55,702	23,800	13,187	373,120
Washington.....	44	37	980	1,120	1,013	70,081	17,204	20,221	718,720
All other counties.....	83	58	932	1,414	1,119	85,544	36,587	34,167	309,800
	179	661	6,689	15,834	31,475	3,250,145	1,343,185	1,226,700	19,782,400

¹ No drainage on farms reported in Citrus, Collier, Dixie, Gadsden, Gleebrist, Jefferson, Lafayette, Levy, Liberty, Madison, Monroe, Okaloosa, Suwannee, and Taylor Counties in 1930; nor in Lafayette, Levy, Monroe, Okaloosa, and Suwannee Counties for 1920.

² Part taken to form Gulf in 1925.

³ Parts taken to form Charlotte, Glades, Hardee, and Highlands in 1921.

⁴ Organized from part of St. Lucie in 1925.

⁵ Parts taken to form Collier and Hendry in 1923.

⁶ Part taken to form Sarasota in 1921.

⁷ Organized from parts of Palm Beach and St. Lucie in 1925.

⁸ Part taken to form part of Martin in 1925.

⁹ Parts taken to form Indian River and part of Martin in 1925.

¹⁰ Organized from part of Manatee in 1921.

DRAINAGE—FLORIDA

COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER

ITEM (See definitions in Introduction)		THE STATE	Brevard	Broward	Char- lotte ¹	Collier ²	Dade	De Soto ³
LAND AREA								
1	Approximate land area.....1930.....acres..	35,111,040	656,000	775,680	440,080	1,300,880	1,292,160	400,600
2	Land in enterprises.....1930.....acres..	5,954,934	127,945	739,469	22,925	346,624	1,110,295	11,770
3	.....1920.....acres..	1,637,073	17,000	162,250	.....	.....	199,300	165,040
4	Increase, ⁷ 1920-1930.....per cent.....	263.8	652.0	355.8	.....	.....	457.1	-92.0
5	Area of all enterprises (overlapping areas included).....1930.....acres..	7,373,627	127,945	958,729	22,925	340,624	1,447,281	11,770
6	Excess over land in enterprises (total areas overlapping).....acres..	1,418,693	.....	210,260	.....	.....	336,085	.....
CONDITION AND USE OF LAND								
7	Land unfit to raise any crop.....1930.....acres..	1,380,583	52,116	124,770	8,500	138,200	345,600	2,000
8	Land unfit to raise any crop prior to drainage.....acres..	4,638,795	127,945	654,959	18,925	242,424	847,334	8,500
9	Decrease since drainage.....per cent.....	70.2	50.3	80.9	55.1	43.0	50.2	76.7
10	Land fit to raise a normal crop.....1930.....acres..	1,907,568	65,670	211,295	14,425	.....	232,337	0,770
11	Land fit to raise a normal crop prior to drainage.....acres..	71,580	.....	.....	4,000	.....	1,481	500
12	Increase since drainage ⁷.....per cent.....	.....	.....	.....	200.6	.....	.....	.....
13	Land fit to raise a partial crop.....1930.....acres..	2,606,783	10,150	403,404	.....	208,424	532,350	.....
14	Land fit to raise a partial crop prior to drainage.....acres..	1,244,559	.....	84,510	.....	104,200	291,481	2,680
15	Increase since drainage ⁷.....per cent.....	109.5	.....	377.3	.....	100.0	103.6	-100.0
16	Improved land.....1930.....acres..	783,033	15,500	112,395	1,800	.....	102,571	2,340
17	.....1920.....acres..	94,589	200	4,792	.....	.....	8,048	12,541
18	Increase, ⁷ 1920-1930.....per cent.....	727.8	.....	.....	.....	.....	.....	-81.3
19	Unimproved land—	.....	.....	.....	.....	.....	.....	.....
20	Woodland.....1930.....acres..	1,830,512	44,824	41,000	500	173,300	185,000	8,460
20	Other.....1930.....acres..	3,332,350	67,621	536,164	20,625	173,324	822,725	980
21	Land in occupied farms.....1930.....acres..	398,200	1,375	38,535	1,600	.....	28,500	2,040
22	Land in planted crops.....1930.....acres..	216,536	1,150	19,510	1,460	.....	13,600	1,220
23	Woodland cleared and cultivated since drainage.....1930.....acres..	107,306	1,000	2,740	1,300	.....	2,000	1,150
24	Land idle.....1930.....acres..	5,605,445	111,685	700,027	21,125	338,044	1,075,014	9,730
25	Land available for settlement.....1930.....acres..	2,325,423	73,479	183,820	13,500	208,000	205,429	7,300
DRAINAGE WORKS, 1930								
26	Ditches—	.....	.....	.....	.....	.....	.....	.....
27	Completed.....miles..	5,112.0	378.0	334.0	65.5	(⁹)	330.3	23.0
27	Additional under construction.....miles..	460.6	62.8	10.0	12.0	.....	150.0	.....
28	Levees and dikes—	.....	.....	.....	.....	.....	.....	.....
28	Completed.....miles..	718.4	.....	84.6	.....	(⁹)	123.0	.....
29	Additional under construction.....miles..	40.5	.....	.....	.....	.....	24.0	.....
30	Pumping plants—	.....	.....	.....	.....	.....	.....	.....
30	Engine or motor capacity.....horsepower..	5,065	.....	.....	.....	.....	.....	.....
31	Pump capacity.....gals. per min..	1,080,799	.....	.....	.....	.....	.....	.....
32	Land served by pumps.....acres..	129,872	.....	.....	.....	.....	.....	.....
33	Land drained by ditches only ¹¹.....acres..	1,731,452	63,642	72,249	22,925	.....	30,393	11,770
34	Length of ditches.....miles..	2,095.0	107.8	100.0	77.5	.....	82.2	23.0
35	Land having ditches and levees ¹¹.....acres..	3,720,794	64,303	667,220	.....	346,624	1,070,933	.....
36	Length of ditches.....miles..	2,304.4	243.0	244.0	.....	(⁹)	398.1	.....
37	Length of levees.....miles..	550.1	22.0	84.6	.....	(⁹)	147.0	.....
38	Land drained by pumps and other drainage works ¹².....acres..	502,685	.....	.....	.....	.....	.....	.....
39	Length of ditches.....miles..	1,143.8	.....	.....	.....	.....	.....	.....
40	Length of levees.....miles..	217.8	.....	.....	.....	.....	.....	.....
41	Land protected by levees of an outside agency.....acres..	100,600	.....	25,760	.....	.....	2,962	.....
CAPITAL INVESTED AND COST PER ACRE								
42	Capital invested in enterprises to Jan. 1, 1930.....dollars..	45,487,795	2,864,526	5,444,886	112,000	(⁹)	3,143,432	43,500
43	.....1920.....dollars..	13,840,807	585,000	1,689,945	.....	.....	710,894	1,030,110
44	Increase, ⁷ 1920-1930.....per cent.....	228.6	389.7	222.2	.....	.....	342.2	-95.7
45	Estimated cost of enterprises when completed.....1930.....dollars..	48,407,539	3,367,470	5,474,886	124,000	(⁹)	4,036,232	43,500
46	.....1920.....dollars..	20,762,497	585,000	3,634,902	.....	.....	4,060,562	1,204,550
47	Average, per acre when completed.....1930.....dollars..	8.13	20.32	7.40	5.41	.....	3.04	3.72
48	.....1920.....dollars..	10.35	34.41	22.40	.....	.....	20.37	7.27
49	Invested in and required for completion of—	.....	.....	.....	.....	.....	.....	.....
50	Enterprises having ditches only.....1930.....dollars..	13,784,168	1,095,000	411,458	124,000	.....	705,952	43,500
51	Average, per acre.....dollars..	7.96	17.21	5.69	5.41	.....	20.22	3.72
52	Enterprises having ditches and levees.....1930.....dollars..	29,678,318	2,272,470	5,063,428	.....	(⁹)	3,240,280	.....
53	Average, per acre.....dollars..	7.98	35.34	7.59	.....	.....	3.03	.....
54	Enterprises having pumps and other drainage works.....1930.....dollars..	4,945,057	.....	.....	.....	.....	.....	.....
55	Average, per acre.....dollars..	0.84	.....	.....	.....	.....	.....	.....

1 Parts of De Soto taken to form Charlotte, Glades, Hardee, and Highlands in 1921.
 2 Parts of Lee taken to form Collier and Hendry in 1923.
 3 Organized from part of St. Lucie in 1925.
 4 Part taken to form Sarasota in 1921.
 5 Organized from parts of Palm Beach and St. Lucie in 1925.
 6 Part taken to form part of Martin in 1925.
 7 A minus sign (-) denotes decrease. Per cent not shown when more than 1,000.
 8 Estimated total for county.
 9 Works located in adjoining counties. No money expended in construction of drainage works in this county.
 10 Works located in adjoining counties.
 11 When works under construction have been completed. No investment allocated to Monroe County.
 12 Area of enterprises having some land served by pumps.

DRAINAGE—FLORIDA

ACRE, AND CONDITION AND USE OF LAND, 1930 AND 1920; AND DRAINAGE WORKS, 1930

Duval	Flagler	Glades ¹	Hendry ²	High-lands ¹	Hills-borough	Indian River ³	Lee ²	Manatee ⁴	Martin ⁵	Monroe	Nassau	Palm Beach ⁶	Polk	Putnam	
500,480	314,240	488,000	740,440	653,440	663,040	318,080	523,520	526,720	382,720	704,000	403,200	1,241,000	1,220,480	481,280	1
57,600	126,182	299,360	425,044	135,242	52,700	95,770	25,805	81,890	216,700	199,680	11,520	1,140,373	76,940	46,065	2
57,600	70,313						29,500	60,250			11,520	448,786	50,400	34,000	3
	65.3						-12.5	35.9				154.1	36.4	35.5	4
57,600	126,507	411,650	518,554	211,242	52,700	95,770	25,805	81,890	217,700	314,880	11,520	1,600,302	76,940	46,065	5
	325	112,284	93,510	70,000					1,000	116,200		450,920			6
14,400	23,796	31,060	118,000	70,000	5,131	23,385	4,702	32,900	30,000	101,960	1,804	116,200	56,270	5,468	7
46,080	108,327	199,360	275,044	123,242	32,000	93,320	17,760	73,899	125,770	100,680	9,210	858,973	60,500	20,197	8
8,640	9,240	84.0	57.1	43.2	84.0	74.9	73.5	55.5	70.1	48.9	80.4	86.6	10.0	81.3	9
30,000	73,880	90,000	64,000	32,000	43,000	72,385	21,103	48,999	66,080	9,450	7,912	427,100	14,170	35,269	10
2,880	9,240				12,200	2,450		6,500			576		3,700	9,798	11
941.7	000.0				252.5			653.8					283.0	260.0	12
13,200	28,506	171,408	243,044	33,242	4,569				120,620	88,240	1,804	598,073	6,500	5,328	13
8,640	8,615	100,000	160,000	12,000	8,500		8,045	1,500	90,930		1,728	281,400	3,740	7,070	14
62.8	230.9	71.4	62.0	177.0	8,600		-100.0	-100.0	32.7		4.4	112.5	73.8	-24.0	15
900	9,600	86,550	18,000	10,000	18,169	9,350	5,785	21,705	40,065	9,450	100	175,000	18,510	17,300	16
5,760	2,020						1,940	10,204			1,152	7,658	7,800	7,709	17
-84.4	373.8						108.2	113.3			-01.3		137.3	124.7	18
56,700	70,806	97,060	200,000	41,250	24,400	44,500	15,504	47,275	120,000	32,700	11,420	230,350	7,000	24,971	19
	36,776	116,156	207,044	83,992	10,131	41,920	4,426	12,899	55,735	157,440		735,023	50,470	3,794	20
150	9,600	35,335	26,000	10,000	17,769	8,350	3,670	19,525	22,930	400	50	58,900	4,280	11,500	21
100	8,700	14,565	11,000	5,000	10,200	7,800	2,670	16,045	10,372	306	40	29,375	3,810	7,000	22
	5,760	6,400	500	500	7,000		1,600	9,540	5,000	300		13,250	1,510	3,000	23
56,700	113,582	280,906	404,004	128,322	20,131	87,420	10,081	60,004	200,620	109,380	11,420	1,061,852	70,335	38,705	24
40,320	64,280	67,350	284,044	22,000	20,800	64,650	17,424	50,110	166,980	46,700	6,612	352,600	16,410	26,950	25
71.0	163.7	203.4	199.0	18.8	181.0	381.0	77.0	230.0	90.0	17.0	15.0	1,115.8	75.0	94.8	26
		5.0	154.0	3.0		45.0	5.0	9.0							27
		33.8	42.5		0.1	45.0	10.5		40.0	(10)		239.9	1.0		28
		25.5													29
		475	640									3,810			30
		320,000	240,000									1,374,133			31
		23,768	30,380									72,204			32
57,600	126,182	64,965	332,344	135,242	44,200		1,457	81,890	14,157	125,798	11,520	90,535	73,740	46,065	33
71.0	163.7	125.0	15.2	21.8	155.0		10.0	239.0	65.7	17.0	15.0	66.0	65.9	94.8	34
		207,897			8,500	95,770	24,348		202,543	73,882		071,854	3,200		35
		53.4			26.0	426.0	72.0		25.2	(16)		285.8	10.0		36
		12.0			0.1	45.0	10.6		40.0	(16)		121.9	1.0		37
		26,504	92,700									377,084			38
		30.0	337.8									734.0			39
		21.8	68.0									118.0			40
		5,000													41
466,000	886,588	1,772,109	1,204,451	404,080	720,500	1,716,468	850,000	1,100,630	5,828,069	170,000	94,000	10,593,387	1,380,593	328,793	42
290,835	277,590						29,350	297,276			54,165	4,778,218	325,000	67,000	43
78.7	219.4							270.2			73.5	121.7	324.8	390.7	44
406,000	886,588	1,792,109	1,846,451	434,080	720,500	2,416,468	875,000	1,180,630	5,828,069	170,000	94,000	10,593,387	1,380,593	328,793	45
365,000	382,650						380,350	412,276			75,000	9,703,753	355,000	83,000	46
8.09	7.03	5.00	4.34	3.21	13.07	25.23	33.91	14.42	26.00	0.85	8.16	0.29	17.94	7.14	47
6.34	5.01						13.20	0.84			6.51	21.62	6.29	2.44	48
466,000	886,588	302,702	99,337	434,080	606,500		125,000	1,180,630	120,000	170,000	94,000	3,575,000	1,277,193	328,793	40
8.00	7.03	6.04	0.21	3.21	13.59		85.79	14.42	8.48	1.35	8.16	30.40	17.32	7.14	50
		870,089			120,000	2,416,468	750,000		5,708,069	(16)		4,765,762	103,400		51
		4.23			14.12	25.23	30.80		23.19			7.00	32.31		52
		520,318	1,777,114									2,252,625			53
		19.63	19.17									5.96			54

DRAINAGE—FLORIDA

COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER ACRE, AND CONDITION AND USE OF LAND, 1930 AND 1920; AND DRAINAGE WORKS, 1930—Continued

ITEM (See definitions in Introduction)		St. Johns	St. Lucie ¹	Sarasota ²	Seminole	Volusia	Other counties ³
LAND AREA							
1	Approximate land area.....1930.....acres..	380,120	371,200	328,000	205,440	718,720	4,341,780
2	Land in enterprises.....1930.....acres..	23,082	167,188	48,941	13,139	78,720	273,349
3	.....1920.....acres..	7,740	115,645	.....	6,972	48,937	139,220
4	Increase, ⁴ 1920-1930.....per cent..	206.0	44.6	.....	88.5	60.9	90.3
5	Area of all enterprises (overlapping areas included).....1930.....acres..	23,082	167,188	50,941	13,139	78,720	275,549
6	Excess over land in enterprises (total areas overlapping).....acres..	.....	.....	2,000	.....	.....	2,200
CONDITION AND USE OF LAND							
7	Land unfit to raise any crop.....1930.....acres..	1,620	18,000	.....	650	1,845	52,270
8	Land unfit to raise any crop prior to drainage.....acres..	18,157	132,070	34,311	11,286	72,781	208,639
9	Decrease since drainage.....per cent..	91.0	86.4	100.0	94.2	97.5	74.9
10	Land fit to raise a normal crop.....1930.....acres..	20,778	97,705	48,941	8,853	75,012	140,827
11	Land fit to raise a normal crop prior to drainage.....acres..	525	3,779	.....	1,653	4,823	7,475
12	Increase since drainage ⁴.....per cent..	.....	.....	.....	435.6	.....	.....
13	Land fit to raise a partial crop.....1930.....acres..	1,280	51,483	.....	3,636	1,263	80,252
14	Land fit to raise a partial crop prior to drainage.....acres..	5,000	31,339	14,630	200	1,116	57,235
15	Increase since drainage ⁴.....per cent..	-74.4	64.3	-100.0	.....	13.2	40.2
16	Improved land.....1930.....acres..	9,800	15,000	8,800	1,500	8,673	63,240
17	.....1920.....acres..	4,043	9,347	.....	405	673	10,300
18	Increase, ⁴ 1920-1930.....per cent..	143.9	60.5	.....	270.4	.....	514.0
19	Unimproved land—	.....	.....	.....	.....	.....	.....
20	Woodland.....1930.....acres..	13,196	81,000	33,061	11,639	67,527	145,439
21	Other.....1930.....acres..	620	71,188	7,080	100	2,520	64,670
22	Land in occupied farms.....1930.....acres..	12,046	15,000	6,800	1,500	8,050	54,286
23	Land in planted crops.....1930.....acres..	9,860	3,500	6,300	1,460	6,700	18,800
24	Woodland cleared and cultivated since drainage.....1930.....acres..	1,900	13,500	7,200	1,100	6,300	14,050
25	Land idle.....1930.....acres..	13,822	129,560	41,801	11,639	66,942	225,428
26	Land available for settlement.....1930.....acres..	9,760	79,118	41,518	8,280	69,000	170,693
DRAINAGE WORKS, 1930							
27	Ditches—	.....	.....	.....	.....	.....	.....
28	Completed.....miles..	67.3	255.0	133.5	45.1	214.8	330.9
29	Additional under construction.....miles..	.....	.....	2.0	2.8	.....	.....
30	Levees and dikes—	.....	.....	.....	.....	.....	.....
31	Completed.....miles..	.....	38.2	5.0	.....	10.8	22.0
32	Additional under construction.....miles..	.....	.....	.....	.....	.....	.....
33	Pumping plants—	.....	.....	.....	.....	.....	.....
34	Engine or motor capacity.....horsepower.....	.....	.....	.....	.....	.....	140
35	Pump capacity.....gals. per min.....	.....	.....	.....	.....	.....	46,666
36	Land served by pumps.....acres..	.....	.....	.....	.....	.....	3,820
37	Land drained by ditches only ⁵.....acres..	23,682	.....	22,039	13,139	20,720	230,210
38	Length of ditches.....miles..	67.3	.....	35.5	47.9	44.8	233.9
39	Land having ditches and levees ⁶.....acres..	.....	167,183	26,002	.....	58,000	31,630
40	Length of ditches.....miles..	.....	255.0	100.0	.....	170.0	55.0
41	Length of levees.....miles..	.....	38.2	5.0	.....	10.8	12.0
42	Land drained by pumps and other drainage works ⁷.....acres..	.....	.....	.....	.....	.....	5,500
43	Length of ditches.....miles..	.....	.....	.....	.....	.....	42.0
44	Length of levees.....miles..	.....	.....	.....	.....	.....	10.0
45	Land protected by levees of an outside agency.....acres..	.....	72,587	.....	.....	.....	3,300
CAPITAL INVESTED AND COST PER ACRE							
46	Capital invested in enterprises to Jan. 1, 1930.....dollars..	207,498	2,327,500	762,240	156,000	1,241,100	1,608,233
47	.....1920.....dollars..	20,000	2,801,308	.....	52,000	306,370	661,746
48	Increase, ⁴ 1920-1930.....per cent..	937.5	-16.9	.....	200.0	305.1	186.3
49	Estimated cost of enterprises when completed.....1930.....dollars..	207,498	2,327,500	787,240	176,000	1,241,100	1,608,233
50	.....1920.....dollars..	22,500	4,261,308	.....	52,000	636,310	639,246
51	Average, per acre when completed.....1930.....dollars..	8.70	13.92	16.00	13.40	15.77	5.88
52	.....1920.....dollars..	2.91	36.85	.....	7.46	10.00	4.50
53	Invested in and required for completion of—	.....	.....	.....	.....	.....	.....
54	Enterprises having ditches only.....1930.....dollars..	207,498	.....	187,240	176,000	355,150	668,233
55	Average, per acre.....dollars..	8.76	.....	8.50	13.40	17.14	2.83
56	Enterprises having ditches and levees.....1930.....dollars..	.....	2,327,500	600,000	.....	885,950	545,000
57	Average, per acre.....dollars..	.....	13.92	22.30	.....	15.28	17.23
58	Enterprises having pumps and other drainage works.....1930.....dollars..	.....	.....	.....	.....	.....	395,000
59	Average, per acre.....dollars..	.....	.....	.....	.....	.....	71.82

¹ Parts taken to form Indian River and part of Martin in 1925.² Organized from part of Manatee in 1921.³ Includes Alachua, Hardee, Lake, Marion, Okeechobee, Orange, Pinellas, and Sumter Counties in 1930; and Bradford, Lake, Marion, Okeechobee, Orange, Pinellas, Santa Rosa, and Sumter Counties for 1920.⁴ A minus sign (—) denotes decrease. Per cent not shown when more than 1,000.⁵ Estimated total for county.⁶ When works under construction have been completed.⁷ Area of enterprises having some land served by pumps.

GEORGIA

APPROXIMATE LOCATION OF LAND IN DRAINAGE ENTERPRISES



GEORGIA

Introduction.—Statistics concerning the drainage of lands for agricultural purposes are presented in the following pages. The data relate to drainage conditions as of January 1, 1930, and the crop year 1929. The first drainage census for the United States was that of 1920 and statistics from that census are shown for purposes of comparison.

An organized drainage enterprise may include timbered and other unimproved land not yet in farms. The statistics for drainage on farms were collected in 1930 on the general farm schedule and are shown in the first section of State Table 1 and in County Table I; while those for drainage enterprises were obtained on a special drainage schedule.

Since farm lands provided with drains may be either within or without an organized enterprise, and since these drains may be either supplemental to or independent of the works installed by an enterprise, the figures for the two parts of the drainage census are shown separately.

Summary and condition of land in enterprises.—All except two enterprises in Georgia are located in the Piedmont Plateau. This region is located between the Appalachian Mountains on the north and the coastal plain region on the south and covers about one-third of the State's area. One of the enterprises outside of this region is in Rabun County in the north-

eastern part of the State, and the other is in McIntosh County, on the Atlantic coast.

The streams of the Piedmont Plateau drain rather steep hill areas subject to heavy erosion. The channels of many of these streams had gradually become filled and thus caused the frequent flooding of the adjacent fertile bottom lands. Therefore, the drainage work has consisted largely in straightening and enlarging these old channels so that excessive floods can be prevented and the lands again restored to agriculture.

These alluvial valleys generally have a fall of 5 to 15 feet per mile but in quite a number of cases the erosion from the hills has been so heavy that the drainage channels have again become filled and the bottoms made either partly or wholly unfit for crops. In such cases terracing, to prevent soil erosion, should be practiced jointly with drainage if these lands are again to be made productive.

For the year 1929, the annual precipitation at stations of record varied from approximately 51 to 98 inches, and averaged 70 inches for the State. This amount was about 20 inches above normal.

Approximately 53 per cent of the land in drainage enterprises was reported as improved; nearly 29 per cent was unfit to raise any crop for lack of drainage; and about 42 per cent was idle in 1929. The average cost of drainage was almost \$23 per acre.

STATE TABLE 1.—SUMMARY FOR THE STATE: 1930 AND 1920

ITEM (See definitions in Introduction)	CENSUS OF—		INCREASE ¹	
	1930	1920	Amount	Per cent
FARMS AND DRAINAGE ON FARMS				
All farms.....	255,598	310,732	-55,134	-17.8
Farms reporting drainage.....	4,074	15,121	-10,147	-67.1
All land in farms.....	22,078,630	25,441,061	-3,362,431	-13.2
Farm land provided with drainage.....	100,034	274,688	-174,654	-63.4
AREA, DRAINS, AND INVESTMENT IN ENTERPRISES				
Approximate land area of State.....	37,584,000	37,584,000		
Land in drainage enterprises.....	84,255	65,452	18,803	28.7
Improved land.....	44,675	20,753	15,222	51.2
Unimproved land:				
Woodland.....	10,153	10,155	-2	
Other.....	29,127	25,544	3,583	14.0
Land unfit to raise any crop for lack of drainage.....	24,114	21,951	2,163	9.9
Land drained, fit to raise normal crop.....	46,592	(2)		
Land partly drained, fit for partial crop.....	13,549	1,832	11,717	630.6
Land in occupied farms.....	63,865	(3)		
Land in planted crops.....	37,097	(3)		
Land idle.....	35,640	(2)		
Ditches, completed.....	496.0	276.8	220.1	70.5
Tile drains, completed.....	40.0		40.0	
Capital invested in enterprises.....	1,018,525	704,685	1,123,940	141.4
Average, per acre.....	22.77	12.14	10.63	87.6

¹ A minus sign (-) denotes decrease. Per cent not shown when more than 1,000, or less than one-tenth of 1 per cent.
² "Swampy or subject to overflow."
³ Not called for on schedule.
⁴ "Suffering a loss of crops from defective drainage."

AREA AND CAPITAL

Area of enterprises.—Statistics by counties require that an enterprise located in more than one county be divided, and the part in each county be considered as a separate enterprise. In this way, 59 drainage enterprises are shown for Georgia with an average area of 1,428 acres. There are 3 such enterprises of 5,000 acres or more, 45 of between 500 and 5,000 acres, and 11 of less than 500 acres.

The area of enterprises equals the land in enterprises, as there is no overlap.

STATE TABLE 2.—AREA OF ENTERPRISES, BY SIZE: 1930 AND 1920

SIZE GROUP	AREA OF ENTERPRISES ¹				Land in enterprises, 1930
	1930		1920		
	Acres	Per cent	Acres	Per cent	
All enterprises.....	84,255	100.0	65,452	100.0	84,255
Less than 100 acres.....	142	0.2	488	0.7	142
100 to 199 acres.....	250	0.3	250	0.4	250
200 to 499 acres.....	2,316	2.7	2,764	4.2	2,316
500 to 999 acres.....	15,704	18.0	11,750	18.0	15,704
1,000 to 4,999 acres.....	40,043	47.5	25,205	38.5	40,043
5,000 to 9,999 acres.....	15,800	18.8	15,245	23.3	15,800
10,000 to 49,999 acres.....	10,000	11.9	10,000	15.3	10,000

¹ No overlap.

Character of enterprise.—Organized drainage enterprises having executive officers exclusively their own, chosen according to the State drainage laws, are classed as *drainage districts*.

Enterprises without legal organization, as such, belonging to individuals, partnerships, or agricultural companies, are classed as *individually owned projects*. Projects of this type are included only when the area drained is 500 acres or more.

STATE TABLE 3.—LAND AND CAPITAL, BY CHARACTER OF ENTERPRISE, 1930

CHARACTER OF ENTERPRISE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	84,255	100.0	1,918,525	100.0
Drainage districts.....	75,255	89.3	1,848,525	96.4
Individually owned projects.....	9,000	10.7	70,000	3.6

Type of drainage.—All enterprises reported their works as completed.

The works completed to January 1, 1930, included approximately 497 miles of ditches and 40 miles of tile drains. These figures do not include drains or levees installed by individual farmers supplemental to the works of an enterprise. Only 1 pumping plant was reported. This plant is located near Darien on the flat coastal lands and served 200 acres.

STATE TABLE 4.—LAND AND CAPITAL, BY TYPE OF DRAINAGE, 1930

TYPE OF DRAINAGE (See definitions in Introduction)	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	84,255	100.0	1,918,525	100.0
Gravity drainage only.....	83,555	99.2	1,868,525	97.4
Ditches.....	80,555	95.6	1,848,525	96.4
Ditches and tile drains.....	3,000	3.6	20,000	1.0
Drainage, part gravity and part pumping.....	700	0.8	50,000	2.6

Pumping plants.—Only 1 enterprise reported land served by pumps. This pumping plant had 4 pumps operated by gasoline engines, and served 200 acres of land located just south of Darien at the mouth of the Altamaha River.

STATE TABLE 5.—PUMPING PLANTS AND LAND SERVED, BY KIND OF POWER, 1930¹

KIND OF POWER	Enterprises	Engine capacity		Pump capacity	Land served
		H. p.	Per cent		
All enterprises, internal combustion only.....	1	60	100.0	4,000	200

¹ No pumping plants reported in 1920.

STATE TABLE 6.—PUMPING PLANTS AND LAND SERVED, BY KIND OF PUMP, 1930

KIND OF PUMP	Pumps	Pump capacity		Engine capacity	Land served
		G. p. m.	Per cent		
All enterprises, centrifugal only.....	4	4,000	100.0	60	200

Arrears and delinquency.—There were 33 enterprises, with approximately 65 per cent of the invested capital and covering about 68 per cent of the land in organized districts, reported as in arrears in payment of principal or interest on bonds or other obligations; while the remaining 26 enterprises were reported as not in arrears. Reports of 22 enterprises, covering 38,755 acres, show a total of 25,486 acres delinquent in drainage taxes; 21 enterprises, covering 23,387 acres, reported no delinquency; while 16 enterprises failed to report.

STATE TABLE 7.—LAND, CAPITAL INVESTED, AND AREA DELINQUENT IN DRAINAGE TAXES, ACCORDING TO ARREARAGE IN PAYMENT OF PRINCIPAL OR INTEREST ON BONDS OR OTHER OBLIGATIONS, 1930

FINANCIAL STATUS	Land		Capital invested to Jan. 1, 1930		Area delinquent
	Acres	Per cent	Dollars	Per cent	
All enterprises.....	84,255	100.0	1,918,525	100.0	25,486
Enterprises in arrears.....	57,058	67.7	1,245,705	64.9	25,480
With some delinquent land.....	38,755	46.0	885,563	46.1	25,480
With no delinquent land.....	4,130	4.9	97,897	5.1	-----
With no report on delinquency.....	14,164	16.8	262,305	13.7	-----
Enterprises not in arrears.....	27,197	32.3	672,730	35.1	-----
With no delinquent land.....	19,248	22.9	370,800	19.3	-----
With no report on delinquency.....	7,949	9.4	301,870	15.8	-----

Purpose of drainage.—In some cases the drainage development accomplished two or more purposes, as an enterprise may contain swamp land, land in farms, and land subject to overflow, all of which are benefited. However, the land is classified according to the principal purpose reported.

Nearly all the drainage enterprises in Georgia are located in the alluvial bottoms along the Piedmont streams. The reclamation of wet and swampy lands, and protection from excessive overflow, has been the principal object in drainage.

STATE TABLE 8.—LAND AND CAPITAL, BY PURPOSE OF DRAINAGE, 1930

PURPOSE OF DRAINAGE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	84,255	100.0	1,918,525	100.0
Reclamation of swamp land not previously in farms.....	44,159	52.4	1,341,151	69.9
Improvement of land already in farms.....	33,346	39.6	501,374	26.1
Protection against overflow.....	6,750	8.0	76,000	4.0

Date of organization.—A period of one or more years may elapse between the date of organization and the beginning of actual construction, and in large enterprises the work may extend over a period of several years. For these reasons the original drainage was accomplished somewhat later than the dates shown. It was not feasible to secure dates of beginning and ending of construction work, so the date of establishment of each enterprise was used.

STATE TABLE 9.—LAND AND CAPITAL, BY DATE OF ORGANIZATION, 1930

DATE OF ORGANIZATION	Land		Area of enterprises ¹	Capital invested to Jan. 1, 1930	
	Acres	Per cent		Dollars	Per cent
All enterprises.....	84,255	100.0	84,255	1,918,525	100.0
1880-1889.....	3,000	3.6	3,000	20,000	1.0
1910-1914.....	1,092	2.0	1,092	64,960	3.4
1915-1919.....	69,405	82.4	69,405	1,304,241	72.7
1920-1924.....	9,458	11.2	9,458	389,324	20.3
1925-1929.....	700	0.8	700	50,000	2.6

¹ No overlap.

STATE TABLE 10.—CONDITION OF LAND AND LAND AVAILABLE FOR SETTLEMENT, BY DATE OF ORGANIZATION, 1930

DATE OF ORGANIZATION	LAND IN ENTERPRISES					Land available for settlement
	Total	Condition of land			Land available for settlement	
		Improved land	Woodland	Other unimproved land		
All enterprises.....	Acres 84,255	Acres 44,975	Per cent 53.4	Acres 10,163	Acres 29,127	Acres 4,787
1880-1889.....	3,000	3,000	100.0			
1910-1914.....	1,092	1,115	65.0	577		
1915-1919.....	69,405	36,897	53.2	8,612	23,896	3,787
1920-1924.....	9,458	3,763	39.8	804	4,331	500
1925-1929.....	700	200	28.6	100	400	500

Method of maintenance.—Some enterprises reported more than one method of maintenance, but in such cases the principal method is shown.

Systematic maintenance was reported by 9 enterprises, covering 12,117 acres of land and having an invested capital of \$253,876; while 50 enterprises, with an invested capital of \$1,664,649 and covering 72,138 acres of land, did not have systematic maintenance.

Only 1 enterprise, with an invested capital of \$24,867 and covering 633 acres of land, reported ownership of excavators or other power equipment used principally for maintenance; while 58 enterprises, with an invested capital of \$1,893,658 and covering 83,622 acres of land, did not report any such equipment.

STATE TABLE 11.—LAND AND CAPITAL, BY METHOD OF MAINTENANCE, 1930

METHOD OF MAINTENANCE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	84,255	100.0	1,918,525	100.0
By district forces.....	700	0.8	50,000	2.6
By work apportioned to landowners.....	32,919	39.1	801,790	41.8
Other, none, and not reported.....	50,636	60.1	1,066,735	55.6

Cost of operation and maintenance.—Since many enterprises do not have annual maintenance, it is necessary to include those that reported *no* cost as well as those that reported *some* cost for 1929, in order to determine a fair average cost of maintenance for the State. Approximately 5 per cent of the land reporting showed some cost, and 95 per cent showed no cost in 1929. The average cost was 1 cent per acre. Expenditures for operation and maintenance vary greatly from year to year.

STATE TABLE 12.—LAND AND COST OF OPERATION AND MAINTENANCE, 1929, BY TYPE OF DRAINAGE

TYPE OF DRAINAGE (See definitions in Introduction)	Land reporting on cost	COST REPORTED	
		Total	Per acre
All enterprises reporting.....	Acres 83,555	Dollars 1,033	Dollars 0.01
Gravity drainage only.....	83,555	1,033	0.01
Ditches.....	80,555	33	(¹)
Ditches and tile drains.....	3,000	1,000	0.33

¹ Less than 1 cent.

DRAINAGE—GEORGIA

COUNTY TABLE I.—FARMS REPORTING DRAINAGE AND FARM LAND DRAINED, 1930 AND 1920; FARMS, ALL LAND IN FARMS, AND APPROXIMATE LAND AREA, 1930

STATE AND COUNTY	FARMS REPORTING DRAINAGE ¹		FARM LAND PROVIDED WITH DRAINAGE		All farms, 1930	FARM LAND, 1930			Approximate land area, 1930
	1930	1920	1930	1920		All land in farms	Crop land	Woodland	
	Number 4, 974	Number 15, 121	Acres 100, 034	Acres 274, 088		Number 255, 598	Acres 22, 078, 630	Acres 10, 440, 597		Acres 8, 372, 937	Acres 37, 584, 000
The State.....									
Banks.....	87	245	818	2, 438	1, 067	123, 154	52, 745	60, 400	142, 080
Brooks.....	119	131	2, 210	1, 308	2, 447	230, 035	120, 751	81, 201	328, 960
Bryan.....	6	157	523	6, 340	522	103, 086	17, 474	81, 154	275, 840
Camden.....	3	106	3, 010	3, 538	366	103, 065	0, 153	71, 826	455, 040
Campbell.....	34		655		1, 314	104, 881	43, 332	45, 073	185, 040
Carroll.....	167	206	2, 271	2, 708	5, 280	265, 421	140, 047	80, 870	314, 880
Chatham.....	17	45	1, 807	5, 515	281	30, 971	8, 347	17, 344	236, 800
Cherokee.....	120	325	1, 032	1, 990	2, 452	188, 475	65, 181	96, 033	274, 500
Clarke.....	39	(?)	744	(?)	1, 041	57, 067	34, 107	14, 907	72, 000
Clay.....	5	(?)	1, 285	(?)	967	70, 090	40, 033	17, 393	120, 920
Cobb.....	45	106	723	1, 017	3, 413	170, 268	84, 811	49, 278	225, 920
Colquitt.....	102	118	1, 549	810	3, 088	247, 973	135, 180	81, 190	338, 500
Crisp.....	88	229	1, 058	2, 541	1, 544	140, 825	89, 340	33, 037	177, 280
De Kalb.....	32	99	555	507	2, 398	111, 418	55, 494	32, 173	174, 000
Dooly.....	144	306	3, 520	5, 081	2, 523	180, 820	132, 811	34, 151	264, 080
Douglas.....	6	375	901	9, 808	1, 396	90, 687	40, 218	36, 937	133, 120
Effingham.....	11	182	642	5, 100	979	130, 380	39, 575	73, 793	286, 720
Floyd.....	55	106	832	4, 231	2, 847	226, 595	107, 030	70, 212	321, 280
Franklin.....	101	374	2, 028	7, 800	2, 031	143, 655	82, 528	33, 889	178, 500
Fulton ²	8	(?)	609	(?)	1, 132	36, 784	15, 274	14, 851	123, 520
Gilmer.....	99	137	530	1, 255	1, 234	147, 784	23, 040	93, 370	281, 000
Glynn.....	12	(?)	1, 000	(?)	169	47, 774	2, 709	28, 923	280, 960
Gordon.....	118	351	1, 081	4, 011	2, 400	171, 044	80, 569	56, 028	240, 000
Greene.....	79	(?)	666	(?)	1, 557	143, 416	60, 747	46, 620	266, 240
Gwinnett.....	78	421	1, 105	2, 073	3, 925	232, 298	114, 101	74, 059	281, 000
Habersham.....	80	100	1, 040	1, 528	1, 216	104, 220	35, 410	55, 170	185, 000
Haralson.....	65	213	1, 061	1, 570	1, 841	140, 425	55, 047	69, 724	181, 700
Houston ³	11	101	664	2, 648	1, 241	100, 024	87, 515	67, 800	283, 520
Jenkins.....	110	188	1, 149	1, 583	1, 667	128, 166	72, 017	42, 845	218, 880
Jones.....	11	(?)	674	(?)	921	154, 226	63, 171	58, 953	241, 280
Lee.....	74	150	2, 460	2, 320	1, 169	142, 600	79, 837	35, 317	208, 640
Lincoln.....	22	127	690	3, 393	1, 481	92, 111	42, 454	36, 392	180, 240
McDuffie.....	56	(?)	1, 436	(?)	1, 193	80, 893	47, 042	24, 840	183, 600
Macon ⁴	100	22	5, 837	771	1, 917	223, 691	125, 187	77, 582	212, 400
Madison.....	53	(?)	660	(?)	2, 801	137, 008	86, 591	38, 118	181, 700
Milton ⁵	91	132	882	753	1, 313	69, 744	33, 124	25, 490	87, 680
Murray.....	112	72	2, 070	1, 770	1, 498	120, 566	47, 146	58, 559	218, 880
Oglethorpe.....	144	600	4, 401	16, 240	2, 115	180, 947	90, 844	53, 402	322, 550
Polk.....	40	99	593	2, 569	1, 936	125, 809	67, 079	48, 213	202, 880
Pulaski.....	30	157	922	1, 404	980	164, 311	63, 825	29, 018	165, 120
Quitman.....	3	(?)	645	(?)	490	68, 411	26, 473	35, 715	92, 160
Screven.....	165	301	4, 478	3, 333	2, 752	234, 251	117, 310	79, 853	508, 160
Sumter.....	141	368	1, 574	6, 724	2, 204	226, 188	140, 785	68, 280	291, 840
Torroll.....	110	291	4, 817	6, 416	2, 328	153, 730	109, 107	27, 968	200, 080
Troup.....	90	36	1, 099	2, 340	1, 820	168, 410	91, 064	48, 568	278, 400
Union.....	232	217	2, 445	1, 908	1, 117	100, 486	26, 145	62, 257	207, 300
Walton.....	55	118	2, 475	1, 115	3, 025	176, 435	103, 172	45, 732	211, 840
Warren.....	27	(?)	583	(?)	1, 560	138, 802	71, 555	34, 666	258, 500
Washington.....	38	56	661	511	3, 288	247, 311	147, 800	76, 075	428, 160
White.....	103	283	911	3, 354	921	84, 215	25, 206	47, 297	156, 800
Whitfield.....	52	53	632	915	1, 311	151, 270	67, 508	61, 821	181, 120
Wilkes.....	120	149	1, 900	2, 598	2, 374	176, 165	83, 550	63, 031	293, 120
Worth.....	21	129	745	1, 225	2, 078	211, 883	138, 310	54, 703	416, 040
All other counties.....	1, 123	6, 852	20, 380	137, 190	158, 263	14, 443, 425	6, 700, 120	5, 635, 322	25, 043, 200

¹ No drainage on farms reported in Atkinson, Baker, Brantley, Calhoun, Candler, Lanier, Long, Lumpkin, Pierce, Schley, Stewart, and Turner Counties in 1930; nor in Campbell, Deatur, Echols, Glascock, Harris, McIntosh, Rockdale, Schley, Toombs, and Wheeler Counties for 1920.

² Included in "All other counties."

³ Part of Milton annexed to Fulton in 1925.

⁴ Part taken to form part of Peach in 1925.

⁵ The excess of farm acreage over approximate land area is due to the fact that the entire acreage of a farm is tabulated as in the county in which the headquarters are located, even though a part of the farm may be situated in an adjoining county.

DRAINAGE—GEORGIA

COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER ACRE, AND CONDITION AND USE OF LAND, 1930 AND 1920; AND DRAINAGE WORKS, 1930

ITEM (See definitions in Introduction)		THE STATE	Banks	Barrow	Cobb	Franklin	Greene	Hall
LAND AREA								
1	Approximate land area..... 1930.. acres..	37,684,000	142,080	107,620	225,020	178,500	266,240	270,680
2	Land in enterprises..... 1930.. acres..	84,255	3,015	4,160	2,910	25,065	2,690	6,000
3	..... 1920.. acres..	65,462	5,097	3,274	2,502	21,055		
4	Increase, ¹ 1920-1930..... per cent..	28.7	-23.2	27.1	16.3	23.3		
5	Area of all enterprises ² 1930.. acres..	84,255	3,015	4,160	2,910	25,065	2,690	6,000
CONDITION AND USE OF LAND								
6	Land unfit to raise any crop..... 1930.. acres..	24,114	100	2,550	500	6,385	1,250	
7	Land unfit to raise any crop prior to drainage..... acres..	60,449	1,650	3,525	2,750	11,025	2,175	5,500
8	Decrease since drainage..... per cent..	60.1	93.9	27.7	81.8	42.1	42.5	100.0
9	Land fit to raise a normal crop..... 1930.. acres..	40,592	3,815	1,140	1,033	10,015	1,050	1,000
10	Land fit to raise a normal crop prior to drainage..... acres..	12,704	2,065	280	85	8,154	240	
11	Increase since drainage ¹ per cent..	266.8	84.7	307.1		90.4	337.5	
12	Land fit to raise a partial crop..... 1930.. acres..	13,549		470	777	3,565	390	5,000
13	Land fit to raise a partial crop prior to drainage..... acres..	11,102	200	355	75	6,786	275	500
14	Increase since drainage ¹ per cent..	22.0	-100.0	32.4	936.0	-47.5	41.8	900.0
15	Improved land..... 1930.. acres..	44,975	2,500	1,490	1,653	12,715	910	6,000
16	..... 1920.. acres..	29,753	2,419	889	1,500	5,548		
17	Increase, ¹ 1920-1930..... per cent..	51.2	3.3	67.6	10.2	129.2		
Unimproved land—								
18	Woodland..... 1930.. acres..	10,153	600		730	1,755	80	
19	Other..... 1930.. acres..	29,127	815	2,670	527	11,495	1,700	
20	Land in occupied farms..... 1930.. acres..	63,865	3,915	4,160	1,813	17,015	2,100	6,000
21	Land in planted crops..... 1930.. acres..	37,097	2,500	865	1,440	11,275	340	5,600
22	Woodland cleared and cultivated since drainage..... 1930.. acres..	0,173	800		1,150	1,590	80	
23	Land idle..... 1930.. acres..	35,640	865	2,972	880	10,890	1,085	
24	Land available for settlement..... 1930.. acres..	4,787			407	805		
DRAINAGE WORKS, 1930								
Ditches—								
25	Completed..... miles..	496.9	27.5	35.5	24.7	60.2	30.0	2.0
Tile drains—								
26	Completed..... miles..	40.0						
Pumping plants—								
27	Engine capacity..... horsepower..	60						
28	Pump capacity..... gals. per min..	4,000						
29	Land served by pumps..... acres..	200						
30	Land drained by ditches only..... acres..	80,555	3,915	4,160	2,910	25,065	2,690	6,000
31	Length of ditches..... miles..	451.9	27.5	35.5	24.7	60.2	30.0	2.0
32	Land drained by ditches and tile..... acres..	3,000						
33	Length of ditches..... miles..	25.0						
34	Length of tile..... miles..	40.0						
35	Land drained by pumps and other drainage works ³ acres..	700						
36	Length of ditches..... miles..	20.0						
CAPITAL INVESTED AND COST PER ACRE								
37	Capital invested in enterprises to Jan. 1, 1930..... dollars..	1,918,525	111,509	99,644	86,614	328,500	87,365	50,000
38	..... 1920..... dollars..	704,585	100,500	52,570	53,000	182,857		
39	Increase, ¹ 1920-1930..... per cent..	141.4	11.0	89.5	63.4	79.6		
40	Estimated cost of enterprises when completed..... 1930.. dollars..	1,018,525	111,509	99,644	86,614	328,500	87,365	50,000
41	..... 1920.. dollars..	1,098,239	100,500	94,558	73,000	308,574		
42	Average, per acre when completed..... 1930.. dollars..	22.77	28.48	23.95	20.76	12.65	32.48	8.33
43	..... 1920.. dollars..	16.78	10.72	28.88	20.18	14.60		
Invested in—								
44	Enterprises having ditches only..... 1930.. dollars..	1,848,525	111,509	99,644	86,614	328,500	87,365	50,000
45	Average, per acre..... dollars..	22.65	28.48	23.95	20.76	12.65	32.48	8.33
46	Enterprises having ditches and tile drains..... 1930.. dollars..	20,000						
47	Average, per acre..... dollars..	0.87						
48	Enterprises having pumps and other drainage works..... 1930.. dollars..	50,000						
49	Average, per acre..... dollars..	71.43						

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

² No overlap.

³ Area of enterprises having some land served by pumps.

DRAINAGE—GEORGIA

COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER ACRE, AND CONDITION AND USE OF LAND, 1930 AND 1920; AND DRAINAGE WORKS, 1930—Continued

ITEM (See definitions in Introduction)		Hart	Henry	Jackson	Rabun	Stephens	Walton	Other counties ¹
LAND AREA								
1	Approximate land area.....1930...acres	167,040	207,360	227,200	241,280	106,240	211,840	3,340,160
2	Land in enterprises.....1930...acres	3,506	3,704	3,700	3,000	3,500	5,053	15,552
3	.....1920...acres	1,831		4,681	(?)	3,522	3,232	20,258
4	Increase, ² 1920-1930.....per cent	91.5		-21.0		-0.6	74.0	-23.2
5	Area of all enterprises ⁴.....1930...acres	3,506	3,704	3,700	3,000	3,500	5,053	15,552
CONDITION AND USE OF LAND								
6	Land unfit to raise any crop.....1930...acres	97	204	1,700			4,200	7,128
7	Land unfit to raise any crop prior to drainage.....acres	3,506	2,500	3,700	3,000	1,750	5,085	14,283
8	Decrease since drainage.....per cent	97.2	91.8	54.0	100.0	100.0	17.4	50.1
9	Land fit to raise a normal crop.....1930...acres	2,705	2,500	2,000	3,000	3,500	875	7,350
10	Land fit to raise a normal crop prior to drainage.....acres					750	310	820
11	Increase since drainage ³.....per cent					368.7	182.3	797.4
12	Land fit to raise a partial crop.....1930...acres	704	1,000				578	1,095
13	Land fit to raise a partial crop prior to drainage.....acres		1,204			1,000	268	440
14	Increase since drainage ³.....per cent		-16.0			-100.0	124.0	137.2
15	Improved land.....1930...acres	3,049	2,000	1,300	3,000	3,500	1,260	5,608
16	.....1920...acres	183		1,442	(?)	1,012	2,305	14,455
17	Increase, ² 1920-1930.....per cent			-9.8		245.8	-45.8	-61.2
18	Unimproved land—							
19	Woodland.....1930...acres	228	704	1,700				4,350
19	Other.....1930...acres	220	1,000	700			4,403	5,688
20	Land in occupied farms.....1930...acres	3,500	2,000	1,300	3,000	3,500	5,253	10,303
21	Land in planted crops.....1930...acres	3,043	2,000	1,000		2,500	830	5,204
22	Woodland cleared and cultivated since drainage.....acres		1,000	850			200	3,603
23	Land idle.....1930...acres	363	1,700	2,500			4,580	9,205
24	Land available for settlement.....1930...acres		500	800				2,185
DRAINAGE WORKS, 1930								
25	Ditches—							
25	Completed.....miles	15.5	19.0	19.7	26.0	9.4	50.3	168.1
26	Tile drains—							
26	Completed.....miles				40.0			
27	Pumping plants—							
27	Engine capacity.....horsepower							60
28	Pump capacity.....gals. per min.							4,000
29	Land served by pumps.....acres							200
30	Land drained by ditches only.....acres	3,500	3,704	3,700		3,500	5,053	14,852
31	Length of ditches.....miles	15.5	19.0	19.7		9.4	50.3	148.1
32	Land drained by ditches and tile.....acres				3,000			
33	Length of ditches.....miles				25.0			
34	Length of tile.....miles				40.0			
35	Land drained by pumps and other drainage works ⁵.....acres							700
36	Length of ditches.....miles							20.0
CAPITAL INVESTED AND COST PER ACRE								
37	Capital invested in enterprises to Jan. 1, 1930.....dollars	73,000	85,000	150,044	20,000	21,000	225,121	580,128
38	.....1920.....dollars	27,752		78,170	(?)	20,398	68,500	204,820
39	Increase, ² 1920-1930.....per cent	163.0		92.7		-20.4	228.6	183.2
40	Estimated cost of enterprises when completed.....1930...dollars	73,000	85,000	150,044	20,000	21,000	225,121	580,128
41	.....1920...dollars	37,063		152,581	(?)	20,398	68,500	237,125
42	Average, per acre when completed.....1930...dollars	20.82	22.95	40.71	6.67	6.00	30.82	37.30
43	.....1920...dollars	20.21		32.60	(?)	7.50	21.19	11.71
44	Invested in—							
44	Enterprises having ditches only.....1930...dollars	73,000	85,000	150,044		21,000	225,121	530,128
45	Average, per acre.....dollars	20.82	22.95	40.71		6.00	30.82	35.60
46	Enterprises having ditches and tile drains.....1930...dollars				20,000			
47	Average, per acre.....dollars				6.67			
48	Enterprises having pumps and other drainage works.....1930...dollars							50,000
49	Average, per acre.....dollars							71.43

¹ Includes Bartow, Clarke, Clayton, Fayette, Forsyth, Gwinnett, McIntosh, Madison, Milton, Morgan, Newton, Oconee, Oglethorpe, Paulding, Putnam, Spalding, and Wilkes Counties in 1930; and Bartow, Clarke, Clayton, Fayette, Gwinnett, Madison, Newton, Oconee, Oglethorpe, Paulding, and Rabun Counties for 1920.

² Included in "Other counties".

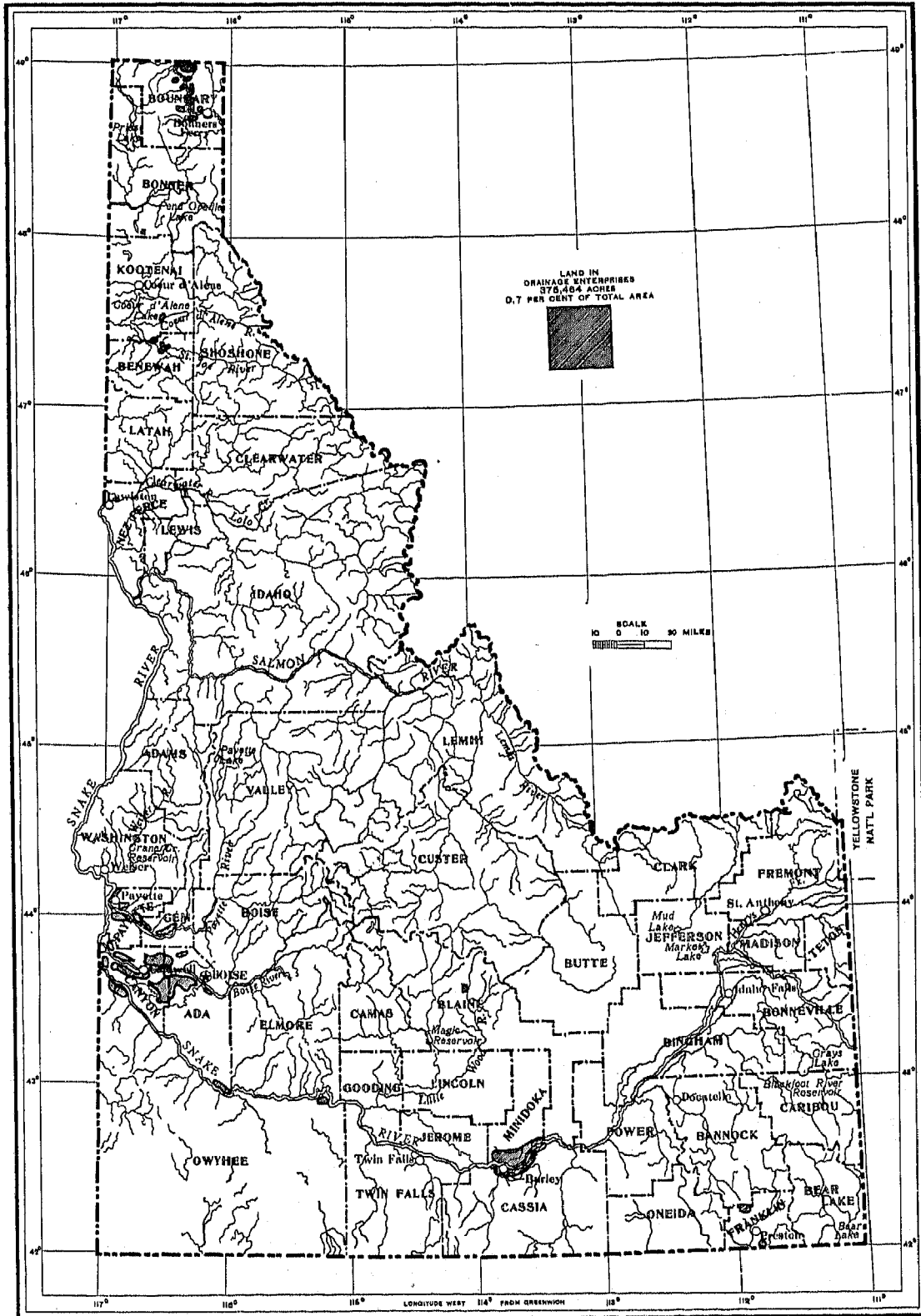
³ A minus sign (-) denotes decrease. Per cent not shown when more than 1,000.

⁴ No overlap.

⁵ Area of enterprises having some land served by pumps.

IDAHO

APPROXIMATE LOCATION OF LAND IN DRAINAGE ENTERPRISES



IDAHO

Introduction.—Statistics concerning the drainage of lands for agricultural purposes are presented in the following pages. The data relate to drainage conditions as of January 1, 1930, and the crop year 1929. The first drainage census for the United States was that of 1920 and statistics from that census are shown for purposes of comparison.

An organized drainage enterprise may include timbered and other unimproved land not yet in farms. The statistics for drainage on farms were collected in 1930 on the general farm schedule and are shown in the first section of State Table 1 and in County Table I; while those for drainage enterprises were obtained on a special drainage schedule.

Summary and condition of land in enterprises.—About 10 per cent of the drained land of Idaho is located in the extreme northern portion of the State where the mean annual rainfall exceeds 20 inches. This land is in the basin of the Clark Fork and Spokane Rivers where little or no irrigation is practiced. The remaining drained land is located in irrigation enterprises.

When the drainage work is done directly by an irrigation enterprise, the drainage enterprise has been considered as identical with the irrigation enterprise as all irrigable lands are usually assessed for the necessary drainage works. Of the 254,969 acres located in such enterprises, 142,685 acres are now served by drainage works. Only a small portion of the remaining 112,284 acres in these enterprises as yet requires drainage. By far the greater portion of this land, not yet drained, is located in districts constructed by the United States Bureau of Reclamation in the basin of the Snake River.

The usual purpose of an organized drainage enterprise is to provide adequate outlets into which the farms of the district may be drained, and to afford relief from overflow for the district as a unit. Therefore, the fact that an enterprise which has completed its drainage works contains land still unfit to raise any crop, or land fit only for a partial crop, does not necessarily show that the works are inadequate. State Table 1 includes a summary of the condition of lands in drainage enterprises.

STATE TABLE 1.—SUMMARY FOR THE STATE: 1930 AND 1920

ITEM (See definitions in Introduction)	CENSUS OF —		INCREASE ¹	
	1930	1920	Amount	Per cent
FARMS AND DRAINAGE ON FARMS				
All farms.....number.....	41,074	42,100	-432	-1.0
Farms reporting drainage.....number.....	2,609	1,107	1,442	123.6
All land in farms.....acres.....	9,340,908	8,375,873	971,035	11.6
Farm land provided with drainage.....acres.....	143,421	64,648	78,773	121.8
AREA, DRAINS, AND INVESTMENT IN ENTERPRISES				
Approximate land area of State.....acres.....	53,346,560	53,346,560		
Land in drainage enterprises.....acres.....	375,464	64,642	310,822	480.8
Improved land.....acres.....	364,675	62,098	302,477	580.6
Unimproved land:				
Woodland.....acres.....	637	87	550	832.2
Other.....acres.....	20,252	12,457	7,795	62.6
Land unfit to raise any crop for lack of drainage.....acres.....	13,070	³ 11,402	2,268	19.9
Land drained, fit to raise normal crop.....acres.....	333,204	(4)		
Land partly drained, fit for partial crop.....acres.....	28,500	*104	28,420	
Land in occupied farms.....acres.....	362,303	(4)		
Land in planted crops.....acres.....	334,546	(4)		
Land idle.....acres.....	28,673	(4)		
Ditches, completed.....miles.....	651.2	274.5	376.7	137.2
Tile drains, completed.....miles.....	19.9	1.8	18.1	
Capital invested in enterprises.....dollars.....	5,112,444	1,668,569	3,443,875	206.4
Average, per acre.....dollars.....	13.62	25.81	-12.19	-47.2

¹ A minus sign (-) denotes decrease. Per cent not shown when more than 1,000. ² Includes 30,080 acres of Yellowstone National Park. ³ "Swampy, subject to overflow, seeped, or alkali." ⁴ Not called for on schedule. ⁵ "Suffering a loss of crops from defective drainage."

AREA AND CAPITAL

Area of enterprises.—Statistics by counties require that an enterprise located in more than one county be divided, and the part in each county be considered as a separate enterprise. In this way, there are 50 drain-

age enterprises in Idaho, with an average area of 7,509 acres. There are 15 such enterprises of 5,000 acres or more, 31 of between 500 and 5,000 acres, and 4 of less than 500 acres.

The area of enterprises equals the land in enterprises, as there is no overlap.

STATE TABLE 2.—AREA OF ENTERPRISES, BY SIZE: 1930 AND 1920

SIZE GROUP	AREA OF ENTERPRISES ¹				Land in enterprises, 1930
	1930		1920		
	Acres	Per cent	Acres	Per cent	
All enterprises.....	375,464	100.0	64,642	100.0	375,464
Less than 100 acres.....	153	(?)	—	—	153
100 to 199 acres.....	154	(?)	—	—	154
200 to 499 acres.....	255	(?)	—	—	255
500 to 999 acres.....	5,632	1.5	2,472	3.8	5,632
1,000 to 4,999 acres.....	60,005	16.0	15,210	23.5	60,005
5,000 to 9,999 acres.....	69,261	18.0	6,960	10.8	69,261
10,000 to 49,999 acres.....	181,947	48.5	40,000	61.9	181,947
50,000 to 99,999 acres.....	67,057	17.9	—	—	67,057

¹ No overlap.
² Less than one-tenth of 1 per cent.

Character of enterprise.—Organized drainage enterprises having executive officers exclusively their own, chosen according to the State drainage laws, are classed as *drainage districts*.

Drainage projects under the control of the officers of an irrigation organization are classed as *irrigation enterprises*. In such cases the drainage is incidental to land reclamation by irrigation, and both the drainage and irrigation operations are functions of the one enterprise.

Enterprises without legal organization, as such, belonging to individuals, partnerships, or agricultural companies, are classed as *individually owned projects*. Projects of this type are included only when the area drained is 500 acres or more.

About 90 per cent of the land in drainage enterprises is also irrigated land.

STATE TABLE 3.—LAND AND CAPITAL, BY CHARACTER OF ENTERPRISE, 1930

CHARACTER OF ENTERPRISE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	375,464	100.0	5,112,444	100.0
Drainage districts.....	118,645	31.6	3,137,554	61.4
Irrigation enterprises.....	254,969	67.9	1,908,890	37.3
Individually owned projects.....	1,850	0.5	68,000	1.3

Type of drainage.—There were 40 enterprises, covering 265,812 acres of land, with an invested capital of \$3,768,874, that reported their works as completed.

There were 10 enterprises, covering 109,652 acres of land, with an invested capital of \$1,343,570, which estimated that \$233,500 would be required to complete the drainage works under construction.

The works completed to January 1, 1930, included about 651 miles of ditches, 20 miles of tile drains, and 75 miles of levees. These figures do not include drains or levees installed by individual farmers supplemental to the works of an enterprise. There were 23 enterprises that reported land served by pumps and 3 that reported a total of 6 wells pumped for drainage.

STATE TABLE 4.—LAND AND CAPITAL, BY TYPE OF DRAINAGE, 1930

TYPE OF DRAINAGE (See definitions in Introduction)	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	375,464	100.0	5,112,444	100.0
Gravity drainage only.....	183,004	48.7	2,189,205	42.8
Ditches and levees.....	141,746	37.7	1,950,470	38.4
Tile drains.....	229	0.1	18,582	0.4
Ditches and tile drains.....	41,620	10.9	820,144	16.0
Drainage, all or part by pumping.....	102,460	51.2	2,923,239	57.2
All drainage by pumping.....	40,254	10.7	1,704,809	33.4
Part gravity and part pumping.....	152,206	40.5	1,218,430	23.8

Pumping plants.—There were 23 enterprises that reported 40,434 acres served by pumps with a total capacity of 171,675 gallons per minute. Of the 37 pumps 36 were of the centrifugal type.

The horsepower of the electric motors was nearly two-thirds of the total reported and the rated capacity of the internal combustion engines was about one-fourth of this total.

STATE TABLE 5.—PUMPING PLANTS AND LAND SERVED, BY KIND OF POWER: 1930 AND 1920

KIND OF POWER	Enterprises	Engine or motor capacity		Pump capacity	Land served
		Number	H. p.		
All enterprises.....	1930.....	23	1,435	171,675	40,434
	1920.....	4	285	36,200	7,912
Electric.....	1930.....	12	930	108,075	14,997
	1920.....	3	200	33,200	7,012
Internal combustion.....	1930.....	8	345	42,600	21,557
	1920.....	2	115	15,000	1,580
Steam.....	1930.....	1	25	3,000	900
	1920.....	1	45	6,000	2,300

STATE TABLE 6.—PUMPING PLANTS AND LAND SERVED, BY KIND OF PUMP, 1930

KIND OF PUMP	Pumps	Pump capacity		Engine or motor capacity	Land served
		G. p. m.	Per cent		
All enterprises.....	37	171,675	100.0	1,435	40,434
Centrifugal.....	36	169,875	99.0	1,405	40,114
Turbine.....	1	1,800	1.0	30	320

Arrears and delinquency.—Only 6 enterprises, with approximately 7 per cent of the invested capital and approximately 3 per cent of the land in organized districts, were reported as in arrears in payment of principal or interest on bonds or other obligations; while 44 enterprises reported no arrearage. There were 17 enterprises, covering 171,835 acres, which reported a total of 12,027 acres delinquent in drainage taxes, and 31 enterprises, covering 186,979 acres, that reported no delinquency, while 2 enterprises, covering 16,650 acres, failed to report.

STATE TABLE 7.—LAND, CAPITAL INVESTED, AND AREA DELINQUENT IN DRAINAGE TAXES, ACCORDING TO ARREARAGE IN PAYMENT OF PRINCIPAL OR INTEREST ON BONDS OR OTHER OBLIGATIONS, 1930

FINANCIAL STATUS	Land		Capital invested to Jan. 1, 1930		Area delinquent Acres
	Acres	Per cent 100.0	Dollars	Per cent 100.0	
All enterprises.....	375,464		5,112,444		12,027
Enterprises in arrears.....	10,721	2.9	351,009	6.9	3,023
With some delinquent land.....	10,021	2.7	303,099	6.0	3,023
With no delinquent land.....	700	0.2	43,000	0.9	
Enterprises not in arrears.....	364,743	97.1	4,761,345	93.1	8,104
With some delinquent land.....	161,814	43.1	1,666,413	32.6	8,104
With no delinquent land.....	186,279	49.6	2,953,932	57.8	
With no report on delinquency.....	16,650	4.4	141,000	2.7	

Purpose of drainage.—In some cases the drainage development accomplished two or more purposes, as an enterprise may contain swamp land, land in farms, land damaged by alkali and seepage from irrigation, and land subject to overflow, all of which are benefited. However, the land is classified according to the principal purpose reported. Approximately 90 per cent of the drainage enterprises in Idaho are located on irrigated lands and, therefore, the purpose of drainage was primarily the removal of alkali and seepage resulting from irrigation.

STATE TABLE 8.—LAND AND CAPITAL, BY PURPOSE OF DRAINAGE, 1930

PURPOSE OF DRAINAGE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0	Dollars	Per cent 100.0
All enterprises.....	375,464		5,112,444	
Reclamation of swamp land not previously in farms.....	33,784	9.0	1,090,290	33.1
Improvement of land already in farms.....	26,020	7.2	424,960	8.3
Removal of alkali and seepage from irrigation.....	314,251	83.7	2,957,204	57.8
Protection against overflow.....	500	0.1	40,000	0.8

Date of organization.—A period of one or more years may elapse between the date of organization and the beginning of actual construction, and in large enterprises the work may extend over a period of several years. For these reasons the original drainage was accomplished somewhat later than the dates shown. It was not feasible to secure dates of beginning and ending of construction work, so the date of establishment of each enterprise was used. Where the drainage work was done directly by an irrigation enterprise, the year in which drainage was undertaken is used instead of the year of organization of the irrigation project.

STATE TABLE 9.—LAND AND CAPITAL, BY DATE OF ORGANIZATION, 1930

DATE OF ORGANIZATION	Land		Area of enterprises Acres	Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0		Dollars	Per cent 100.0
All enterprises.....	375,464		375,464	5,112,444	
1905-1909.....	10,000	4.2	10,000	121,000	2.4
1910-1914.....	222,184	59.2	222,184	1,635,030	30.0
1915-1919.....	66,845	17.8	66,845	1,430,150	28.0
1920-1924.....	26,572	7.1	26,572	562,231	10.8
1925-1929.....	43,863	11.7	43,863	1,474,027	28.8

1 No overlap.

STATE TABLE 10.—CONDITION OF LAND AND LAND AVAILABLE FOR SETTLEMENT, BY DATE OF ORGANIZATION, 1930

DATE OF ORGANIZATION	LAND IN ENTERPRISES					Land available for settlement Acres
	Total	Condition of land			Other unimproved land Acres	
		Improved land Acres	Per cent	Wood-land Acres		
All enterprises.....	375,464	354,575	94.4	637	20,252	6,830
1905-1909.....	16,000	16,000	100.0			
1910-1914.....	222,184	221,184	99.5		1,000	1,050
1915-1919.....	66,845	57,457	86.0	10	9,378	3,510
1920-1924.....	26,572	24,629	92.7	252	1,691	
1925-1929.....	43,863	35,305	80.5	375	8,183	2,270

Method of maintenance.—Some enterprises reported more than one method of maintenance, but in such cases the principal method is shown. The drainage commissioners annually make an estimate of the cost of maintenance for the succeeding year, and apportion it against the land in the enterprise in proportion to the maximum benefit originally assessed. In irrigation enterprises the drainage works are maintained as a part of the irrigation system.

Systematic maintenance was reported by 43 enterprises, covering 348,448 acres of land, and having an invested capital of \$4,687,121. There were 7 enterprises, with an invested capital of \$425,323, covering 27,016 acres of land, that did not have systematic maintenance.

There were 21 enterprises, with an invested capital of \$3,393,196, covering 245,806 acres of land, that reported ownership of excavators or other power equipment used principally for maintenance. There were 29 enterprises, with an invested capital of \$1,719,248, covering 129,653 acres of land, that did not report any such equipment.

STATE TABLE 11.—LAND AND CAPITAL, BY METHOD OF MAINTENANCE, 1930

METHOD OF MAINTENANCE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0	Dollars	Per cent 100.0
All enterprises.....	375,464		5,112,444	
By district forces.....	340,030	90.7	4,200,335	82.2
By contract.....	11,578	3.1	410,367	8.0
By work apportioned to landowners.....	5,885	1.6	277,242	5.4
Other, none, and not reported.....	17,371	4.6	224,500	4.4

Cost of operation and maintenance.—Since many enterprises do not have annual maintenance, it is necessary to include those that reported no cost as well as those that reported some cost for 1929, in order to determine a fair average cost of maintenance for the State. Approximately 93 per cent of the land reported some cost and 7 per cent reported no cost in 1929. The average cost was 20 cents per acre. The expenditures for operation and maintenance vary greatly from year to year.

STATE TABLE 12.—LAND AND COST OF OPERATION AND MAINTENANCE, 1929, BY TYPE OF DRAINAGE

TYPE OF DRAINAGE (See definitions in Introduction)	Land reporting on cost Acres	COST REPORTED	
		Total Dollars	Per acre Dollars
	All enterprises reporting.....	375,464	75,760	0.20
Gravity drainage only.....	183,004	30,938	0.17
Ditches and levees.....	141,746	14,800	0.10
Tile drains.....	220	100	0.45
Ditches and tile drains.....	41,020	15,888	0.39
Drainage, all or part by pumping.....	192,400	44,822	0.23

DRAINAGE—IDAHO

COUNTY TABLE I.—FARMS REPORTING DRAINAGE AND FARM LAND DRAINED, 1930 AND 1920; FARMS, ALL LAND IN FARMS, AND APPROXIMATE LAND AREA, 1930

STATE AND COUNTY	FARMS REPORTING DRAINAGE ¹		FARM LAND PROVIDED WITH DRAINAGE		All farms, 1930	FARM LAND, 1930			Approximate land area, 1930
	1930	1920	1930	1920		All land in farms	Crop land	Woodland	
	Number 2,600	Number 1,167	Acres 143,421	Acres 64,648		Number 41,074	Acres 9,346,008	Acres 4,073,265		Acres 850,008	Acres 53,346,500
The State.....									
Ada.....	426	90	17,981	9,024	2,305	177,470	90,825	3,617	738,500
Bannock.....	16	32	600	1,614	1,748	535,694	241,759	10,642	1,175,680
Bear Lake.....	6	6	661	561	915	284,000	107,191	3,838	627,200
Bingham.....	16	(3)	770	(5)	2,311	209,288	137,692	7,281	1,397,700
Blaine.....	5	(3)	2,700	(5)	382	168,952	40,093	4,503	1,700,080
Bonner.....	44	127	2,096	6,161	1,010	155,782	34,102	100,398	1,118,720
Bonneville.....	21	(3)	725	(5)	1,577	320,933	202,694	7,109	1,218,560
Boundary.....	60	40	15,938	3,003	426	78,068	30,063	38,063	816,640
Canyon.....	885	342	45,401	19,249	3,270	225,270	143,704	1,300	378,880
Cassia.....	37	(3)	1,225	(5)	1,407	271,038	131,085	2,053	1,690,800
Franklin.....	64	33	3,277	985	1,131	203,201	100,310	1,480	355,840
Gem.....	228	(3)	10,834	(5)	768	150,764	30,073	7,052	362,880
Minidoka.....	355	16	20,343	580	1,025	60,955	50,572	15	483,840
Owyhee.....	47	(3)	5,176	(5)	720	308,585	48,603	1,487	5,001,840
Payette.....	280	155	12,632	12,219	820	73,387	20,077	1,402	264,060
Twin Falls.....	33	63	671	1,040	2,785	304,873	211,852	656	1,252,480
All other counties.....	77	203	2,331	10,203	10,056	5,740,024	2,433,001	650,400	34,581,700

¹ No drainage on farms reported in Camas, Caribou, Custer, Fremont, Jefferson, Jerome, Lincoln, Oneida, and Teton Counties in 1930; nor in Butte, Camas, Clark, Custer, and Lincoln Counties for 1920.

² Includes 30,080 acres of Yellowstone National Park, not shown in detail.

³ Included in "All other counties."

DRAINAGE—IDAHO

COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER ACRE, AND CONDITION AND USE OF LAND, 1930 AND 1920; AND DRAINAGE WORKS, 1930

ITEM (See definitions in Introduction)		THE STATE	Ada	Benewah	Boundary	Canyon
LAND AREA						
1	Approximate land area.....1930.....acres..	53,340,560	738,560	603,040	816,640	378,880
2	Land in enterprises.....1930.....acres..	375,464	56,223	2,797	31,137	100,256
3	.....1920.....acres..	64,642	5,800	1,912		12,200
4	Increase, ¹ 1920-1930.....per cent..	480.8	869.4	46.3		771.0
5	Area of all enterprises ¹.....1930.....acres..	375,464	56,223	2,797	31,137	100,256
CONDITION AND USE OF LAND						
6	Land unfit to raise any crop.....1930.....acres..	13,670	3,800	171	4,528	3,423
7	Land unfit to raise any crop prior to drainage.....acres..	146,490	21,640	2,117	30,187	20,223
8	Decrease since drainage.....per cent..	90.7	82.4	91.9	85.0	86.9
9	Land fit to raise a normal crop.....1930.....acres..	333,204	52,223	2,626	20,411	93,671
10	Land fit to raise a normal crop prior to drainage.....acres..	160,865	28,968	655	960	26,300
11	Increase since drainage ².....per cent..	107.1	80.3	300.9		256.2
12	Land fit to raise a partial crop.....1930.....acres..	28,590	200		200	9,162
13	Land fit to raise a partial crop prior to drainage.....acres..	68,109	5,715	25		53,733
14	Decrease since drainage ².....per cent..	58.0	96.5	100.0		82.9
15	Improved land.....1930.....acres..	354,575	52,208	2,612	22,280	103,303
16	.....1920.....acres..	52,098	5,655	1,075		12,165
17	Increase, ¹ 1920-1930.....per cent..	580.6	823.2	143.0		749.9
Unimproved land—						
18	Woodland.....1930.....acres..	637		32	605	
19	Other.....1930.....acres..	20,252	4,015	163	8,252	2,863
20	Land in occupied farms.....1930.....acres..	382,303	52,723	2,562	27,677	101,610
21	Land in planted crops.....1930.....acres..	334,546	51,098	2,482	21,480	99,071
22	Woodland cleared and cultivated since drainage.....1930.....acres..	1,675		175	1,000	
23	Land idle.....1930.....acres..	28,673	4,100	110	8,591	5,040
24	Land available for settlement.....1930.....acres..	6,830	3,500	60	2,200	1,000
DRAINAGE WORKS, 1930						
Ditches—						
25	Completed.....miles..	651.2	92.5	22.5	52.9	157.0
26	Additional under construction.....miles..	20.5			1.5	1.0
Tile drains—						
27	Completed.....miles..	19.9	1.0	0.6	0.5	4.6
Levees and dikes—						
28	Completed.....miles..	74.8		14.5	56.6	
29	Additional under construction.....miles..	14.0			14.0	
Pumping plants—						
30	Engine or motor capacity.....horsepower..	1,435	10	295	640	160
31	Pump capacity.....gals. per min..	171,675	1,350	42,700	77,600	8,800
32	Land served by pumps.....acres..	40,434	400	2,797	20,937	3,329
Wells—						
33	Pumped for drainage.....number..	6	1			5
34	Land drained by ditches only ⁴.....acres..	140,546	52,021			43,735
35	Length of ditches.....miles..	271.8	78.5			53.5
36	Land drained by tile only.....acres..	229				
37	Length of tile.....miles..	3.7				
38	Land drained by ditches and tile ⁴.....acres..	41,029				22,471
39	Length of ditches.....miles..	87.2				34.0
40	Length of tile.....miles..	13.0				4.1
41	Land having ditches and levees ⁴.....acres..	1,200			1,200	
42	Length of ditches.....miles..	1.0			1.0	
43	Length of levees.....miles..	1.0			1.0	
44	Land drained by pumps and other drainage works ⁵.....acres..	192,460	4,202	2,797	20,937	40,000
45	Length of ditches.....miles..	311.7	14.0	22.5	53.4	70.5
46	Length of tile.....miles..	2.6	1.0	0.6	0.5	0.5
47	Length of levees.....miles..	87.8		14.5	69.0	
CAPITAL INVESTED AND COST PER ACRE						
48	Capital invested in enterprises to Jan. 1, 1930.....dollars..	5,112,444	619,483	155,367	1,558,923	1,138,227
49	.....1920.....dollars..	1,608,569	277,565	120,000		395,824
50	Increase, ¹ 1920-1930.....per cent..	206.4	123.2	29.5		187.6
51	Estimated cost of enterprises when completed.....1930.....dollars..	5,345,044	619,483	156,867	1,664,423	1,206,727
52	.....1920.....dollars..	1,788,569	284,423	120,000		398,066
53	Average, per acre when completed.....1930.....dollars..	14.24	11.02	56.08	53.45	11.86
54	.....1920.....dollars..	27.67	49.04	62.76		32.70
Invested in and required for completion of—						
55	Enterprises having ditches only.....1930.....dollars..	1,358,470	544,483			326,860
56	Average, per acre.....dollars..	9.66	10.47			7.46
57	Enterprises having tile drains only.....1930.....dollars..	18,582				
58	Average, per acre.....dollars..	81.14				
59	Enterprises having ditches and tile drains.....1930.....dollars..	820,144				476,867
60	Average, per acre.....dollars..	19.99				21.22
61	Enterprises having ditches and levees.....1930.....dollars..	50,500			50,500	
62	Average, per acre.....dollars..	42.08			42.08	
63	Enterprises having pumps and other drainage works.....1930.....dollars..	3,098,230	75,000	156,867	1,613,923	403,000
64	Average, per acre.....dollars..	16.10	17.85	68.08	53.91	10.08

¹ Includes 30,080 acres of Yellowstone National Park, not shown in detail.

² Per cent not shown when more than 1,000.

³ No overlap.

⁴ When works under construction have been completed.

⁵ Area of enterprises having some land served by pumps.

DRAINAGE—IDAHO

COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER ACRE, AND CONDITION AND USE OF LAND, 1930 AND 1920; AND DRAINAGE WORKS, 1930—Continued

ITEM (See definitions in Introduction)		Cassia	Gem	Minidoka	Owyhee	Payette	Other counties ¹
LAND AREA							
1	Approximate land area..... 1930..... acres.....	1, 000, 800	302, 880	483, 840	5, 091, 840	264, 000	6, 188, 800
2	Land in enterprises..... 1930..... acres.....	47, 947	14, 936	67, 057	22, 680	17, 780	8, 642
3	..... 1920..... acres.....		6, 960	30, 000		5, 700	1, 080
4	Increase, ² 1920-1930..... per cent.....		114. 6	123. 5		207. 2	330. 5
5	Area of all enterprises ³ 1930..... acres.....	47, 947	14, 936	67, 057	22, 680	17, 780	8, 642
CONDITION AND USE OF LAND							
6	Land unfit to raise any crop..... 1930..... acres.....	80		1, 300		100	270
7	Land unfit to raise any crop prior to drainage..... acres.....	4, 400	10, 340	30, 200	13, 506	1, 575	6, 360
8	Decrease since drainage..... per cent.....	98. 2	100. 0	95. 7	100. 0	93. 0	95. 8
9	Land fit to raise a normal crop..... 1930..... acres.....	47, 447	9, 287	60, 674	16, 675	15, 894	8, 206
10	Land fit to raise a normal crop prior to drainage..... acres.....	43, 347	800	36, 657	9, 180	12, 765	2, 243
11	Increase since drainage ⁴ per cent.....	0. 4		70. 2	31. 0	24. 5	268. 9
12	Land fit to raise a partial crop..... 1930..... acres.....	420	5, 049	5, 083	6, 005	1, 795	76
13	Land fit to raise a partial crop prior to drainage..... acres.....	200	3, 787	1, 200		3, 449	
14	Decrease since drainage ⁴ per cent.....	+110. 0	+49. 2	+323. 0		48. 0	
15	Improved land..... 1930..... acres.....	47, 947	13, 936	67, 057	22, 680	14, 894	7, 568
16	..... 1920..... acres.....		2, 000	29, 440		1, 000	793
17	Increase, ² 1920-1930..... per cent.....		506. 8	127. 8			891. 9
Unimproved land—							
18	Woodland..... 1930..... acres.....						
19	Other..... 1930..... acres.....		1, 000			2, 805	1, 074
20	Land in occupied farms..... 1930..... acres.....	47, 947	13, 936	67, 057	22, 680	17, 780	8, 416
21	Land in planted crops..... 1930..... acres.....	45, 394	0, 000	69, 074	22, 375	14, 894	7, 568
22	Woodland cleared and cultivated since drainage..... 1930..... acres.....						500
23	Land idle..... 1930..... acres.....		4, 140	6, 383		100	200
24	Land available for settlement..... 1930..... acres.....						70
DRAINAGE WORKS, 1930							
Ditches—							
25	Completed..... miles.....	14. 0	30. 7	128. 0	27. 8	73. 6	52. 2
26	Additional under construction..... miles.....			3. 0	15. 0		
Tile drains—							
27	Completed..... miles.....		1. 8			5. 8	5. 6
Levees and dikes—							
28	Completed..... miles.....						3. 7
29	Additional under construction..... miles.....						
Pumping plants—							
30	Engine or motor capacity..... horsepower.....	45		210			75
31	Pump capacity..... gals. per min.....	7, 000		24, 225			10, 000
32	Land served by pumps..... acres.....	2, 200		1, 200			520
Wells—							
33	Pumped for drainage..... number.....						
34	Land drained by ditches only ⁵ acres.....		7, 787		22, 680	10, 902	3, 371
35	Length of ditches..... miles.....		18. 7		42. 8	60. 5	17. 8
36	Land drained by tile only..... acres.....					220	
37	Length of tile..... miles.....					3. 7	
38	Land drained by ditches and tile ⁵ acres.....		7, 149			6, 658	4, 751
39	Length of ditches..... miles.....		12. 0			13. 1	28. 1
40	Length of tile..... miles.....		1. 8			2. 1	5. 6
41	Land having ditches and levees ⁵ acres.....						
42	Length of ditches..... miles.....						
43	Length of levees..... miles.....						
44	Land drained by pumps and other drainage works ⁵ acres.....	47, 947		67, 057			520
45	Length of ditches..... miles.....	14. 0		131. 0			0. 3
46	Length of tile..... miles.....						
47	Length of levees..... miles.....						3. 7
CAPITAL INVESTED AND COST PER ACRE							
48	Capital invested in enterprises to Jan. 1, 1930..... dollars.....	61, 000	265, 000	749, 430	122, 600	288, 225	154, 180
49	..... 1920..... dollars.....		33, 333	778, 000		22, 667	41, 150
50	Increase, ² 1920-1930..... per cent.....		665. 0	-3. 7			274. 4
51	Estimated cost of enterprises when completed..... 1930..... dollars.....	61, 000	265, 000	757, 430	172, 600	288, 225	154, 180
52	..... 1920..... dollars.....		80, 000	778, 000		56, 000	41, 180
53	Average, per acre when completed..... 1930..... dollars.....	1. 27	17. 74	11. 30	7. 61	16. 20	17. 84
54	..... 1920..... dollars.....		11. 49	25. 93		14. 85	20. 80
Invested in and required for completion of—							
55	Enterprises having ditches only..... 1930..... dollars.....		145, 000		172, 000	66, 536	103, 000
56	Average, per acre..... dollars.....		18. 62		7. 61	6. 10	30. 55
57	Enterprises having tile drains only..... 1930..... dollars.....					15, 532	
58	Average, per acre..... dollars.....					81. 14	
59	Enterprises having ditches and tile drains..... 1930..... dollars.....		120, 000			203, 107	20, 170
60	Average, per acre..... dollars.....		16. 78			30. 50	4. 24
61	Enterprises having ditches and levees..... 1930..... dollars.....						
62	Average, per acre..... dollars.....						
63	Enterprises having pumps and other drainage works..... 1930..... dollars.....	61, 000		757, 430			31, 010
64	Average, per acre..... dollars.....	1. 27		11. 30			59. 05

¹ Includes only Bannock, Blaine, Bonner, Franklin, Kootenai, and Washington Counties in 1930; but only Bannock and Bonner Counties for 1920.

² Per cent not shown when more than 1,000. A plus sign (+) denotes increase. A minus sign (-) denotes decrease.

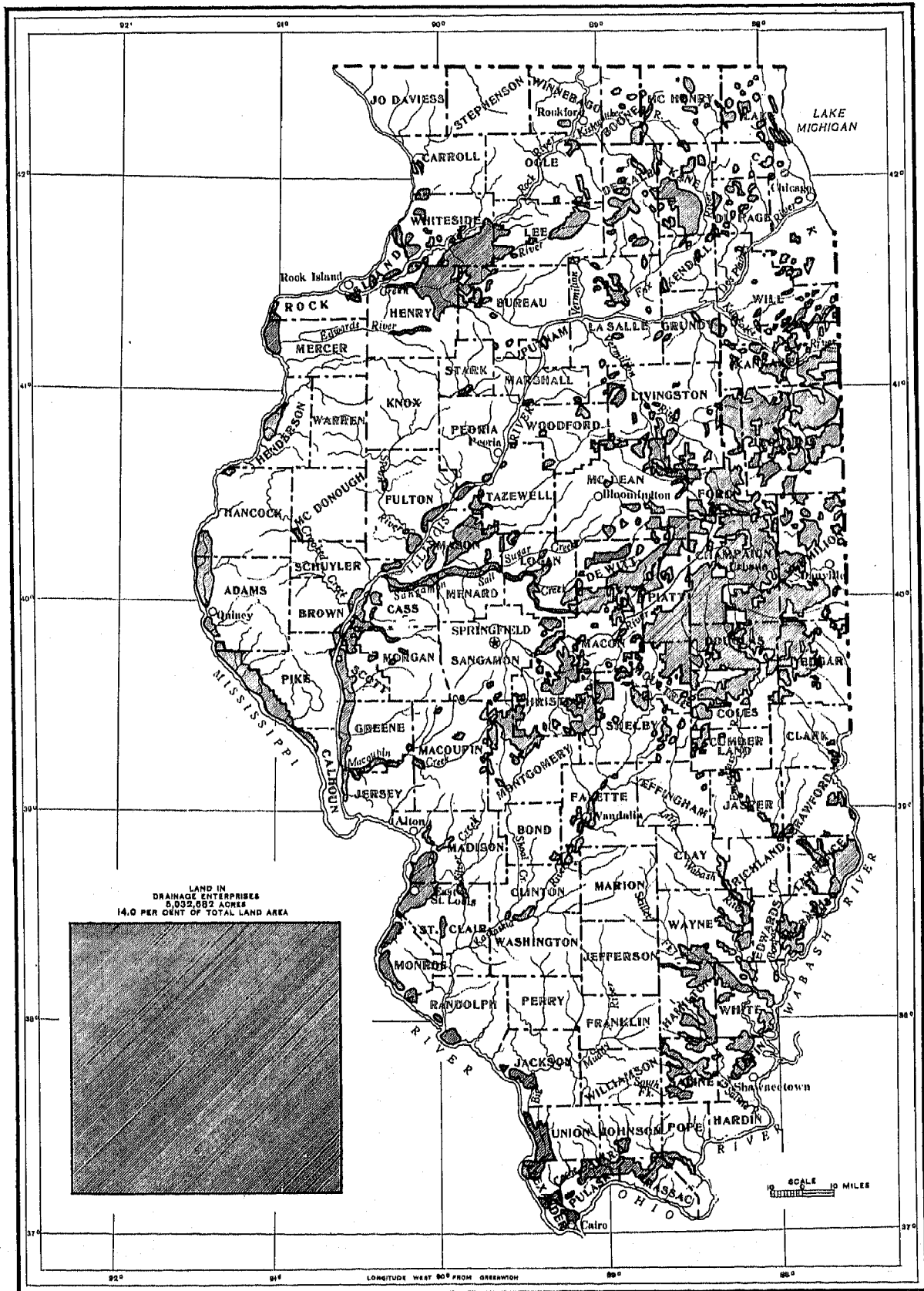
³ No overlap.

⁴ When works under construction have been completed.

⁵ Area of enterprises having some land served by pumps.

ILLINOIS

APPROXIMATE LOCATION OF LAND IN DRAINAGE ENTERPRISES



ILLINOIS

Introduction.—Statistics concerning the drainage of lands for agricultural purposes are presented in the following pages. The data relate to drainage conditions as of January 1, 1930, and the crop year 1929. The first drainage census for the United States was that of 1920 and statistics from that census are shown for purposes of comparison.

An organized drainage enterprise may include timbered and other unimproved land not yet in farms. The statistics for drainage on farms were collected in 1930 on the general farm schedule and are shown in the first section of State Table 1 and in County Table I; while those for drainage enterprises were obtained on a special drainage schedule.

Since farm lands provided with drains may be either within or without an organized enterprise, and since these drains may be either supplemental to or independent of the works installed by an enterprise, the figures for the two parts of the drainage census are shown separately.

Summary and condition of land in enterprises.—The greater portion of the land in drainage enterprises is located in the large flat areas of the east central part of the State where the purpose of drainage was largely to improve wet land, much of which was in cultivation prior to drainage.

Most of the remaining portion of the land in enterprises is located in the alluvial bottoms of the various

streams where the object in drainage was mainly the prevention of overflow. Nearly all of the land served by pumps is located along the Illinois River below Peoria and along the Mississippi River between Rock Island and St. Louis.

Of all land in enterprises, 94.3 per cent was reported as improved; 3.5 per cent, as woodland; and 2.2 per cent, as other unimproved land. There was 5.5 per cent of the land unfit to raise any crop for lack of drainage and 4.6 per cent was idle in 1929. The average cost of drainage was almost \$15 per acre.

The total precipitation for 1929 varied from 26 to 50 inches in the northern, and from 42 to 56 inches in the southern section of the State. The average for the State was approximately 42 inches, which is 5.6 inches above normal. The total precipitation for April, May, June, and July was considerably above normal.

The usual purpose of an organized drainage enterprise is to provide adequate outlets into which the farms of the district may be drained, and to afford relief from overflow for the district as a unit. Therefore, the fact that an enterprise which has completed its drainage works contains land still unfit to raise any crop, or land fit only for a partial crop, does not necessarily show that the works are inadequate. State Table 1 includes a summary of the condition of lands in drainage enterprises.

STATE TABLE 1.—SUMMARY FOR THE STATE: 1930 AND 1920

ITEM (See definitions in Introduction)	CENSUS OF—		INCREASE ¹	
	1930	1920	Amount	Per cent
FARMS AND DRAINAGE ON FARMS				
All farms.....	214,497	237,181	-22,684	-9.6
Farms reporting drainage.....	71,830	90,246	-27,407	-27.6
All land in farms.....	30,695,339	31,974,775	-1,279,436	-4.0
Farm land provided with drainage.....	9,331,153	11,247,687	-1,916,484	-17.0
AREA, DRAINS, AND INVESTMENT IN ENTERPRISES				
Approximate land area of State.....	35,807,520	35,807,520		
Land in drainage enterprises.....	5,032,682	3,900,040	1,123,633	28.7
Improved land.....	4,745,840	3,532,316	1,213,524	34.4
Unimproved land:				
Woodland.....	175,571	184,573	-9,002	-4.9
Other.....	111,271	192,100	-80,829	-42.1
Land unfit to raise any crop for lack of drainage.....	275,800	228,337	47,463	20.8
Land drained, fit to raise normal crop.....	4,510,111	(3)		
Land partly drained, fit for partial crop.....	246,771	229,005	17,766	7.7
Land in occupied farms.....	5,005,376	(3)		
Land in planted crops.....	4,248,907	(3)		
Land idle.....	232,052	(3)		
Ditches, completed.....	5,096.4	4,754.5	1,241.9	26.1
Tile drains, completed.....	3,825.6	3,507.1	318.5	9.1
Capital invested in enterprises.....	75,048,548	43,505,009	31,453,479	72.1
Average, per acre.....	14.91	11.15	3.76	33.7

¹ A minus sign (-) denotes decrease. ² "Swampy or subject to overflow." ³ Not called for on schedule. ⁴ "Suffering a loss of crops from defective drainage."

AREA AND CAPITAL

Area of enterprises.—Statistics by counties require that an enterprise located in more than one county be divided, and the part in each county be considered as a separate enterprise. In this way, 1,919 drainage enterprises are shown for Illinois with an average area of 2,992 acres. There are 302 such enterprises of 5,000 acres or more, 1,383 of between 500 and 5,000 acres, and 234 of less than 500 acres.

The area of enterprises exceeds the land in enterprises by 709,234 acres, which is the amount of overlap.

STATE TABLE 2.—AREA OF ENTERPRISES, BY SIZE: 1930 AND 1920

SIZE GROUP	AREA OF ENTERPRISES ¹				Land in enterprises, 1930 Acres 5,032,682
	1930		1920		
	Acres	Per cent 100.0	Acres	Per cent 100.0	
All enterprises.....	5,741,910		4,090,500		
Less than 100 acres.....	510	(¹)	3,951	0.1	328
100 to 199 acres.....	3,303	(¹)	50,550	1.2	1,186
200 to 499 acres.....	69,788	1.2	210,371	5.2	31,427
500 to 999 acres.....	320,566	5.6	1,647,003	37.8	216,087
1,000 to 4,999 acres.....	2,100,720	37.0	476,666	23.0	1,832,131
5,000 to 9,999 acres.....	1,300,351	23.7	1,239,719	30.3	1,246,534
10,000 to 49,999 acres.....	1,728,101	30.1	82,333	1.5	1,006,503
50,000 to 99,999 acres.....	98,481	1.7			98,481

¹ The sum of the areas of individual enterprises, including overlap.
² Less than one-tenth of 1 per cent.

Character of enterprise.—Organized drainage enterprises having executive officers exclusively their own, chosen according to the State drainage laws, are classed as *drainage districts*. Agricultural land drained by sanitary districts has been included in the totals shown for "Drainage districts." The amount of this land is very small.

Enterprises which, in common with others, are under the control of State, county, or township officials, are classed as *State projects*, *county drains*, or *township drains*, according to the public officials in control.

Enterprises under the control of individuals or organizations engaged in the draining of land for purposes of development, subdivision, and sale are classed as *commercial developments*.

Enterprises without legal organization, as such, belonging to individuals, partnerships, or agricultural companies, are classed as *individually owned projects*. Projects of this type are included only when the area drained is 500 acres or more.

STATE TABLE 3.—LAND AND CAPITAL, BY CHARACTER OF ENTERPRISE, 1930

CHARACTER OF ENTERPRISE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0	Dollars	Per cent 100.0
All enterprises.....	5,032,682		75,048,548	
Drainage districts.....	4,883,860	97.0	73,937,048	98.5
County drains.....	22,100	0.4	225,050	0.3
Township drains.....	110,340	2.2	690,071	0.9
State projects.....	600	(¹)	37,000	(¹)
Commercial developments.....	1,400	(¹)	45,925	0.1
Individually owned projects.....	14,322	0.3	112,254	0.1

¹ Less than one-tenth of 1 per cent.

Type of drainage.—There were 1,860 enterprises, covering 4,756,136 acres of land, with an invested capital of \$70,380,020, which reported their works as completed; while 59 enterprises, covering 276,546 acres of land, with an invested capital of \$4,668,528, estimated that \$1,162,524 would be required to complete the drainage works under construction.

The works completed to January 1, 1930, included approximately 5,996 miles of ditches, 3,826 miles of tile drains, and 1,108 miles of levees. These figures do not include drains or levees installed by individual farmers supplemental to the works of an enterprise. There were 60 pumping plants reported.

STATE TABLE 4.—LAND AND CAPITAL, BY TYPE OF DRAINAGE, 1930

TYPE OF DRAINAGE (See definitions in Introduction)	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0	Dollars	Per cent 100.0
All enterprises.....	5,032,682		75,048,548	
Gravity drainage only.....	4,078,704	92.9	55,832,481	74.4
Ditches and levees.....	2,118,450	42.1	30,286,003	40.4
The drains.....	701,241	13.9	6,146,825	8.2
Ditches, tile drains, and levees.....	1,856,984	36.9	19,399,653	25.8
Drainage, all or part by pumping.....	356,978	7.1	19,216,067	25.6
All drainage by pumping.....	232,934	4.6	14,191,551	18.9
Part gravity and part pumping.....	124,044	2.5	5,024,516	6.7

Pumping plants.—There were 60 pumping plants in Illinois serving land in 63 drainage districts. Of these districts, 8 contained land served in 2 counties. One pumping plant served land in 2 districts and another in 3 districts.

The total area served by pumps was 331,448 acres. Approximately 38 per cent of this total is located along the Mississippi River above St. Louis; 53 per cent is located within the basin of the Illinois River; 6 per cent is in the Wabash River Basin; and the remaining 3 per cent is in enterprises located in De Kalb, Fayette, Clinton, and Alexander Counties. The total area served by pumps is somewhat smaller than the area tributary to the pumps as some outside lands drain into the area served.

The total capacity of engines and motors was 18,658 horsepower and that of the pumps, 3,156,700 gallons per minute.

STATE TABLE 5.—PUMPING PLANTS AND LAND SERVED, BY KIND OF POWER: 1930 AND 1920

KIND OF POWER	Enterprises	Engine or motor capacity		Pump capacity	Land served
		Number	Per cent 100.0		
All enterprises.....	60	18,658	100.0	3,156,700	331,448
	48	18,225	100.0	2,843,000	201,816
Electric.....	29	8,158	43.7	1,395,700	167,518
	21	10,445	57.3	1,520,666	134,950
Internal combustion.....	14	2,075	11.1	323,000	45,111
	4	325	1.8	52,500	4,243
Steam.....	7	2,425	13.0	451,000	60,143
	2	5,805	31.9	1,070,900	137,291
Steam and electric.....	11	1,650	8.8	250,000	12,318
	1	1,650	9.1	190,000	15,323
Electric and internal combustion.....	4	1,520	8.2	224,000	22,001
Steam and internal combustion.....	5	2,830	15.2	513,000	43,367

STATE TABLE 6.—PUMPING PLANTS AND LAND SERVED, BY KIND OF PUMP, 1930

KIND OF PUMP	Pumps	Pump capacity		Engine or motor capacity H. p.	Land served Acres
		G. p. m.	Per cent 100.0		
All enterprises.....	120	3,156,700	82.8	18,658	331,448
Centrifugal.....	101	2,614,200	82.8	15,453	254,065
Rotary.....	11	276,000	8.8	1,530	39,427
Screw and centrifugal.....	8	266,500	8.4	1,675	37,066

Arrears and delinquency.—There were 38 enterprises, with approximately 6 per cent of the invested capital and covering about 3 per cent of the land in organized districts, reported as in arrears in payment of principal or interest on bonds or other obligations; while the remaining 1,881 enterprises were reported as not in arrears. Reports of 88 enterprises, covering 532,304 acres, show a total of 94,944 acres delinquent in drainage taxes; 1,694 enterprises, covering 4,192,717 acres, reported no delinquency; while 137 enterprises failed to report.

On account of the overlapping of enterprises, the area delinquent may contain some land that has been reported delinquent in 2 drainage projects, but the data available do not permit of an accurate determination of this acreage which, at most, could not be large enough to substantially affect the figures given.

STATE TABLE 7.—LAND, CAPITAL INVESTED, AND AREA DELINQUENT IN DRAINAGE TAXES, ACCORDING TO ARREARAGE IN PAYMENT OF PRINCIPAL OR INTEREST ON BONDS OR OTHER OBLIGATIONS, 1930

FINANCIAL STATUS	Land		Capital invested to Jan. 1, 1930		Area delinquent Acres
	Acres	Per cent 100.0	Dollars	Per cent 100.0	
All enterprises.....	5,032,682	100.0	75,048,548	100.0	94,944
Enterprises in arrears.....	160,800	3.2	4,712,722	6.3	38,009
With some delinquent land.....	114,800	2.3	4,141,820	5.5	38,009
With no delinquent land.....	16,700	0.3	142,011	0.2	-----
With no report on delinquency.....	28,701	0.6	428,891	0.6	-----
Enterprises not in arrears.....	4,872,382	96.8	70,335,826	93.7	56,245
With some delinquent land.....	417,495	8.3	11,677,036	15.5	56,245
With no delinquent land.....	4,175,927	83.0	53,033,000	70.7	-----
With no report on delinquency.....	278,960	5.5	5,625,124	7.5	-----

Purpose of drainage.—In some cases the drainage development accomplished two or more purposes, as an enterprise may contain swamp land, land in farms, and land subject to overflow; all of which are benefited. However, the land is classified according to the principal purpose reported.

For enterprises located in the flood plains of the various streams, an important object in drainage was "Protection against overflow." Doubtless the land of many enterprises so situated has been included under the purpose, "Improvement of land already in farms."

STATE TABLE 8.—LAND AND CAPITAL, BY PURPOSE OF DRAINAGE, 1930

PURPOSE OF DRAINAGE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0	Dollars	Per cent 100.0
All enterprises.....	5,032,682	100.0	75,048,548	100.0
Reclamation of swamp land not previously in farms.....	604,062	13.2	19,605,040	26.2
Improvement of land already in farms.....	4,230,409	84.2	46,042,815	61.4
Protection against overflow.....	131,611	2.6	9,340,697	12.4

Date of organization.—A period of one or more years may elapse between the date of organization and the beginning of actual construction, and in large enterprises the work may extend over a period of several years. For these reasons the original drainage was accomplished somewhat later than the dates shown. It was not feasible to secure dates of beginning and ending of construction work, so the date of establishment of each enterprise was used.

STATE TABLE 9.—LAND AND CAPITAL, BY DATE OF ORGANIZATION, 1930

DATE OF ORGANIZATION	Land		Area of enterprises ¹		Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0	Acres	Overlapped acres	Dollars	Per cent 100.0
All enterprises.....	5,032,682	100.0	5,741,916	700,234	75,048,548	100.0
1870-1879.....	8,710	0.2	8,710	-----	108,730	0.1
1880-1889.....	1,033,690	20.5	1,094,499	60,779	12,800,552	17.1
1890-1899.....	790,389	15.7	878,035	87,640	9,215,336	12.3
1900-1904.....	556,614	11.1	640,105	83,651	7,400,153	9.9
1905-1909.....	942,804	18.7	1,091,434	148,630	10,314,454	13.7
1910-1914.....	777,819	15.5	839,905	62,086	10,100,007	13.6
1915-1919.....	337,362	6.7	405,662	68,300	6,079,047	8.1
1920-1924.....	253,399	5.0	271,873	18,474	4,403,242	5.9
1925-1929.....	331,995	6.6	511,063	179,068	4,604,127	6.1

¹ Includes overlap.

STATE TABLE 10.—CONDITION OF LAND, BY DATE OF ORGANIZATION, 1930

DATE OF ORGANIZATION	LAND IN ENTERPRISES ¹					
	Total	Condition of land				
		Improved land	Wood-land	Other unimproved land		
Acres	Acres	Per cent	Acres	Acres		
All enterprises.....	5,032,682	100.0	4,745,840	94.3	175,571	111,271
1870-1879.....	8,710	100.0	8,710	100.0	-----	-----
1880-1889.....	1,033,690	95.1	983,492	95.1	27,488	22,710
1890-1899.....	790,389	96.9	757,889	96.9	24,185	8,315
1900-1904.....	556,614	96.9	530,151	96.9	10,933	6,430
1905-1909.....	942,804	94.4	890,150	94.4	33,959	18,995
1910-1914.....	777,819	80.7	698,064	80.7	54,747	25,008
1915-1919.....	337,362	97.1	327,545	97.1	5,941	3,876
1920-1924.....	253,399	93.7	237,426	93.7	8,313	7,600
1925-1929.....	331,995	91.4	303,413	91.4	10,005	18,877

¹ No land available for settlement.

Method of maintenance.—Some enterprises reported more than one method of maintenance, but in such cases the principal method is shown.

Systematic maintenance was reported by 1,417 enterprises, covering 3,829,216 acres of land and having an invested capital of \$60,180,797; while 502 enterprises, with an invested capital of \$14,867,751 and covering 1,203,466 acres of land, did not have systematic maintenance.

There were 39 enterprises, with an invested capital of \$7,029,898 and covering 200,568 acres of land, that reported ownership of excavators or other power equipment used principally for maintenance; while 1,880 enterprises, with an invested capital of \$68,018,650 and covering 4,832,114 acres of land, did not report any such equipment.

STATE TABLE 11.—LAND AND CAPITAL, BY METHOD OF MAINTENANCE, 1930

METHOD OF MAINTENANCE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0	Dollars	Per cent 100.0
All enterprises.....	5,032,682		75,048,648	
By district forces.....	1,311,380	26.1	30,200,300	40.3
By contract.....	3,513,387	69.8	42,455,819	56.6
By work apportioned to landowners.....	157,886	3.1	1,025,790	2.6
Other, none, and not reported.....	60,020	1.0	376,679	0.5

Cost of operation and maintenance.—Since many enterprises do not have annual maintenance, it is necessary to include those that reported *no* cost as well as those that reported *some* cost for 1929, in order to determine a fair average cost of maintenance for the State. Approximately 52 per cent of the land reporting showed some cost, and 48 per cent showed no cost in 1929. The average cost for all enterprises was 31 cents per acre, while that for enterprises drained all or part by pumping was \$1.70 per acre. This latter figure is probably higher than normal as the rainfall in April, May, June, and July was excessive. Expenditures for operation and maintenance vary greatly from year to year.

STATE TABLE 12.—LAND AND COST OF OPERATION AND MAINTENANCE, 1929, BY TYPE OF DRAINAGE

TYPE OF DRAINAGE (See definitions in Introduction)	Land reporting on cost	COST REPORTED	
		Total	Per acre
	Acres	Dollars	Dollars
All enterprises reporting.....	4,807,055	1,598,285	0.31
Gravity drainage only.....	4,640,077	901,342	0.20
Ditches and levees.....	2,022,042	462,076	0.22
Tile drains.....	701,201	11,814	0.01
Ditches, tile drains, and levees.....	1,810,774	437,463	0.24
Drainage, all or part by pumping.....	350,078	606,943	1.70

COUNTY TABLE I.—FARMS REPORTING DRAINAGE AND FARM LAND DRAINED, 1930 AND 1920; FARMS, ALL LAND IN FARMS, AND APPROXIMATE LAND AREA, 1930

STATE AND COUNTY	FARMS REPORTING DRAINAGE ¹		FARM LAND PROVIDED WITH DRAINAGE		All farms, 1930	FARM LAND, 1930			Approximate land area, 1930
	1930	1920	1930	1920		All land in farms	Crop land	Woodland	
	Number	Number	Acres	Acres		Acres	Acres	Acres	
The State.....	71,830	99,240	9,331,153	11,247,637	214,407	30,696,330	21,130,907	2,741,750	35,897,520
Adams.....	234	207	27,150	13,540	3,559	490,803	277,310	81,020	538,880
Alexander.....	30	58	2,789	4,668	719	86,089	40,556	22,104	144,040
Bond.....	49	02	2,010	1,914	1,683	207,538	120,912	24,530	248,320
Boone.....	477	558	27,700	28,085	1,159	170,541	110,410	0,090	187,520
Brown.....	131	193	12,496	12,549	1,211	170,110	80,201	41,745	100,080
Bureau.....	1,865	2,255	233,320	234,091	3,058	511,021	304,803	30,183	563,840
Carroll.....	153	177	8,027	5,339	1,097	267,918	160,827	20,513	280,020
Cass.....	432	488	64,153	63,544	1,070	203,004	146,012	10,100	237,440
Champaign.....	2,768	3,088	404,025	413,233	3,315	608,376	514,120	19,019	667,520
Christian.....	1,397	2,227	201,452	287,705	2,607	407,398	319,031	18,487	448,000
Clark.....	139	422	8,730	22,840	2,481	259,590	148,090	30,366	315,520
Clay.....	30	90	2,227	3,447	2,084	248,824	163,655	23,370	296,680
Clinton.....	91	08	5,809	7,277	1,747	258,100	188,070	21,702	309,120
Coles.....	1,847	1,792	177,874	204,282	2,170	200,114	209,790	19,009	350,000
Cook.....	1,190	2,976	60,840	124,653	3,348	214,742	104,478	8,531	597,120
Crawford.....	150	331	11,300	23,191	1,814	214,031	118,315	14,331	280,020
Cumberland.....	96	331	6,109	14,501	1,608	175,298	103,915	13,130	225,920
De Kalb.....	1,767	2,063	220,731	240,170	2,317	380,565	306,290	0,059	408,320
De Witt.....	1,028	1,399	155,208	105,088	1,439	242,091	188,278	10,015	265,000
Douglas.....	1,264	1,528	208,390	220,111	1,456	246,987	205,568	0,534	266,880
Du Page.....	453	1,369	35,042	92,500	1,296	140,370	102,525	0,062	220,800
Edgar.....	1,378	1,788	224,058	244,840	2,325	304,007	269,689	23,837	307,440
Edwards.....	241	306	16,630	15,352	1,030	129,817	84,183	0,037	152,320
Effingham.....	147	366	7,323	31,284	2,029	262,034	164,133	38,185	327,040
Fayette.....	234	612	15,150	20,306	3,122	377,718	232,164	44,119	466,560
Ford.....	1,235	1,439	224,734	256,984	1,540	298,700	251,120	2,556	320,000
Fulton.....	1,010	1,443	90,532	119,005	3,343	503,391	300,103	98,932	505,790
Gallatin.....	272	582	28,392	53,473	1,104	150,027	98,154	15,657	216,320
Greene.....	419	797	49,412	77,070	1,810	303,468	181,258	37,997	329,606
Grundy.....	889	1,345	144,496	187,104	1,870	249,958	197,112	10,170	277,120
Hamilton.....	96	148	7,744	6,837	2,180	220,470	134,223	15,816	291,200
Hancock.....	842	963	83,115	74,558	3,314	450,683	285,751	67,061	490,200
Henderson.....	443	574	61,067	78,935	1,073	211,152	141,109	23,471	240,640
Henry.....	1,724	1,970	172,813	174,702	3,170	497,885	352,861	21,993	527,360
Ironquois.....	8,039	3,609	493,003	555,813	3,821	678,458	557,286	16,477	717,440

¹ Drainage on farms reported in all counties in 1930; but no drainage on farms reported in Jefferson and Perry Counties in 1920.

DRAINAGE—ILLINOIS

COUNTY TABLE I.—FARMS REPORTING DRAINAGE AND FARM LAND DRAINED, 1930 AND 1920; FARMS, ALL LAND IN FARMS, AND APPROXIMATE LAND AREA, 1930—Continued

STATE AND COUNTY	FARMS REPORTING DRAINAGE ¹		FARM LAND PROVIDED WITH DRAINAGE		All farms, 1930	FARM LAND, 1930			Approximate land area, 1930
	1930	1920	1930	1920		All land in farms	Crop land	Woodland	
	Number	Number	Acres	Acres		Acres	Acres	Acres	
Jackson.....	84	118	11,441	14,194	2,252	286,409	164,028	59,093	379,320
Jasper.....	93	340	4,632	20,877	2,177	267,006	170,030	18,607	325,120
Jersey.....	163	313	14,580	23,387	1,346	203,680	114,569	45,261	234,880
Jo Daviess.....	94	194	2,449	5,816	2,023	348,492	156,735	61,391	308,720
Johnson.....	32	45	4,133	1,895	1,471	171,805	73,623	37,244	222,720
Kane.....	1,215	1,459	120,307	100,120	1,904	283,726	211,385	21,004	337,280
Kankakee.....	1,408	2,196	212,418	304,499	2,210	383,221	302,664	12,598	427,520
Kendall.....	677	981	90,693	130,061	1,140	194,628	154,130	10,860	207,360
Knox.....	1,435	1,698	158,262	166,500	2,560	418,018	274,189	43,585	455,040
Lake.....	906	1,531	59,606	66,346	1,566	170,245	105,632	18,164	291,200
La Salle.....	2,849	3,406	396,446	472,542	4,019	663,542	518,450	39,838	733,440
Lawrence.....	302	431	30,039	28,430	1,215	171,656	111,708	13,780	220,120
Lee.....	1,436	1,870	188,917	240,039	2,459	435,888	324,847	12,805	474,880
Livingston.....	2,955	3,453	476,910	559,913	3,570	644,539	546,648	13,921	667,520
Logan.....	1,423	1,902	232,291	282,513	2,025	369,309	304,439	12,787	394,880
McDonough.....	1,205	1,889	142,036	194,593	2,433	347,320	230,365	30,712	376,320
McHenry.....	502	778	20,288	34,078	2,007	343,191	222,210	27,224	366,800
McLean.....	2,681	3,020	464,680	589,887	4,060	718,795	587,468	23,545	762,240
Macon.....	1,354	2,120	194,681	285,956	2,422	340,903	272,608	10,757	374,400
Macoupin.....	523	840	45,404	64,322	3,290	464,910	272,671	64,323	550,400
Madison.....	175	461	9,767	24,770	3,325	375,638	267,696	27,878	471,680
Marshall.....	650	917	89,560	108,722	1,164	222,018	160,608	24,669	253,440
Mason.....	409	512	64,534	70,927	1,371	292,292	228,930	18,163	355,200
Massac.....	104	39	14,717	1,148	1,130	125,098	63,905	23,283	153,600
Menard.....	522	688	75,458	86,335	1,034	188,804	141,309	16,360	292,880
Mercer.....	830	1,161	75,210	87,401	1,841	318,894	202,377	24,452	345,600
Monroe.....	136	99	8,438	5,927	1,310	169,082	128,509	35,294	248,960
Montgomery.....	465	648	54,320	54,535	2,881	389,782	255,255	38,180	440,600
Morgan.....	1,079	1,457	143,210	158,123	2,130	327,824	221,958	20,732	368,640
Moultrie.....	946	1,335	125,053	107,194	1,446	206,146	163,886	10,368	216,320
Ogle.....	592	669	47,440	51,452	2,688	448,782	312,720	33,515	483,840
Peoria.....	887	1,171	93,867	121,737	2,372	332,764	210,423	49,672	467,040
Piatt.....	1,042	1,310	212,001	243,716	1,395	265,359	217,725	5,614	288,040
Pike.....	308	515	30,210	32,335	2,879	450,921	251,943	55,905	563,040
Pope.....	62	31	2,287	977	1,250	167,435	69,460	43,749	246,400
Pulaski.....	135	191	7,151	11,682	1,047	92,071	59,870	11,939	121,600
Putnam.....	237	323	30,104	35,991	433	59,645	59,772	12,861	110,720
Richland.....	33	128	708	3,185	1,632	192,320	128,237	13,977	228,480
Rock Island.....	441	533	81,004	29,432	1,729	226,800	133,975	25,230	271,360
St. Clair.....	349	386	14,962	12,144	2,398	350,534	245,327	28,644	424,320
Saline.....	238	453	21,108	33,774	2,175	187,893	115,018	16,149	255,360
Sangamon.....	1,622	2,340	248,983	314,126	3,284	504,384	368,780	25,482	560,640
Schuyler.....	197	554	20,753	53,332	1,635	248,305	136,184	72,421	276,480
Scott.....	197	298	25,837	31,153	934	142,618	61,610	33,637	159,360
Shelby.....	1,029	1,640	107,288	161,443	3,462	433,380	291,314	40,537	494,080
Stark.....	475	751	62,720	79,328	976	174,264	127,343	7,615	185,600
Stephenson.....	393	466	14,243	16,354	2,631	395,372	216,596	17,091	367,760
Tazewell.....	1,106	1,448	159,290	199,825	2,192	366,130	287,607	22,701	414,080
Union.....	39	160	2,227	14,341	1,752	200,672	105,293	45,266	267,620
Vermilion.....	2,295	2,959	339,995	417,698	3,630	529,335	412,415	33,235	589,440
Wabash.....	240	466	22,267	32,570	953	120,334	61,733	7,838	140,800
Warren.....	1,370	1,661	165,235	195,371	1,870	327,505	224,789	24,938	349,440
Washington.....	11	18	674	568	2,114	303,774	214,242	35,902	369,040
Wayne.....	202	261	16,003	18,408	3,110	384,305	236,605	33,058	469,120
White.....	307	865	35,298	75,995	2,015	268,581	182,452	13,145	324,480
Whiteside.....	758	879	63,593	73,498	2,754	418,803	295,876	18,714	434,560
Will.....	1,840	2,719	220,621	305,211	2,969	455,382	348,255	21,812	540,160
Williamson.....	11	(?)	607	(?)	2,509	204,690	111,266	22,004	287,360
Winnebago.....	186	299	6,909	11,693	1,928	276,273	189,201	18,842	338,560
Woodford.....	1,258	1,421	161,358	190,652	1,914	315,293	238,169	30,383	337,920
All other counties.....	67	181	1,784	6,258	14,104	1,523,747	896,533	224,475	1,981,440

¹ Drainage on farms reported in all counties in 1930; but no drainage on farms reported in Jefferson and Perry Counties in 1920.
² Included in "All other counties."

DRAINAGE—ILLINOIS

COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER ACRE, AND CONDITION AND USE OF LAND, 1930 AND 1920; AND DRAINAGE WORKS, 1930

ITEM (See definitions in Introduction)		THE STATE	Adams	Alexander	Boone	Brown	Bureau	Calhoun	Carroll
LAND AREA									
1	Approximate land area..... 1930..... acres..	35,867,520	538,880	144,640	187,520	100,080	503,840	103,840	280,920
2	Land in enterprises..... 1930..... acres..	5,032,682	42,322	28,393	10,609	9,000	55,537	7,706	9,300
3	..... 1920..... acres..	3,909,049	50,843	18,875	4,052	7,890	64,788	33,000	4,000
4	Increase, ¹ 1920-1930..... per cent..	28.7	-25.6	50.4	163.1	14.1	-14.3	-76.6	68.3
5	Area of all enterprises (overlapping areas included)..... 1930..... acres..	5,741,916	45,428	28,393	10,600	0,000	50,007	10,332	9,300
6	Excess over land in enterprises (total areas overlapping)..... acres..	700,234	3,106				660	2,626	
CONDITION AND USE OF LAND									
7	Land unfit to raise any crop..... 1930..... acres..	275,800	2,278			1,825	3,320	4,000	500
8	Land unfit to raise any crop prior to drainage..... acres..	1,001,017	20,500	22,348	5,430	6,120	21,542	6,000	6,100
9	Decrease since drainage..... per cent..	82.8	88.9	100.0	100.0	70.2	89.2	33.3	91.8
10	Land fit to raise a normal crop..... 1930..... acres..	4,510,111	38,773	28,393	9,563	6,475	49,217	1,000	7,700
11	Land fit to raise a normal crop prior to drainage..... acres..	2,330,700	15,505	5,491	2,180	2,030	11,015		1,200
12	Increase since drainage ¹ per cent..	93.5	150.1	417.1	338.7	210.0	340.8		641.7
13	Land fit to raise a partial crop..... 1930..... acres..	240,771	1,271		1,097	700	4,000	2,700	1,100
14	Land fit to raise a partial crop prior to drainage..... acres..	1,100,965	6,317	554	3,000	550	22,080	1,700	2,000
15	Decrease since drainage ¹ per cent..	77.6	70.9	100.0	63.4	17.6	82.6	+58.6	45.0
16	Improved land..... 1930..... acres..	4,745,840	37,905	26,593	7,563	8,309	55,037	3,700	7,400
17	..... 1920..... acres..	3,532,316	39,831	13,319	3,956	6,122	63,360	20,700	3,616
18	Increase, ¹ 1920-1930..... per cent..	34.4	-4.8	99.7	91.2	35.6	-13.1	-87.5	103.0
19	Unimproved land—								
20	Woodland..... 1930..... acres..	176,571	2,503	1,800	1,000	550		3,700	600
20	Other..... 1930..... acres..	111,271	1,854		2,097	160	500	294	1,400
21	Land in occupied farms..... 1930..... acres..	5,005,376	40,904	28,393	10,600	9,000	55,537	7,706	9,300
22	Land in planted crops..... 1930..... acres..	4,245,907	27,400	24,093	9,493	7,080	52,562	2,500	4,000
23	Woodland cleared and cultivated since drainage..... 1930..... acres..	306,749	12,000	21,130	1,000	2,100			200
24	Land idle..... 1930..... acres..	232,052	7,381	900	540	275	100	1,853	440
DRAINAGE WORKS, 1930									
25	Ditches—								
26	Completed..... miles..	5,006.4	32.5	51.5	13.8	22.0	116.5	22.0	25.0
26	Additional under construction..... miles..	91.0							
27	Tile drains—								
28	Completed..... miles..	3,825.6	24.0		27.0	10.0	20.9		
28	Additional under construction..... miles..	59.3							
29	Levees and dikes—								
30	Completed..... miles..	1,103.4	56.7	34.3		11.0	12.0	25.0	22.0
30	Additional under construction..... miles..	0.0							
31	Pumping plants—								
31	Engine or motor capacity..... horsepower..	15,958	1,750	100		280			485
32	Pump capacity..... gals. per min..	3,150,700	284,000	16,000		50,000			88,000
33	Land served by pumps..... acres..	331,448	30,924			8,900			7,500
34	Land drained by ditches only ² acres..	1,702,093		7,387	1,040		8,058		
35	Length of ditches..... miles..	2,018.4		19.9	8.0		23.5		
36	Land drained by tile only ² acres..	701,201			720		320		
37	Length of tile..... miles..	1,381.9			10.0		2.0		
38	Land drained by ditches and tile ² acres..	1,754,404			8,000		38,745		
39	Length of ditches..... miles..	2,125.2			5.8		87.0		
40	Length of tile..... miles..	2,059.9			17.0		18.9		
41	Land having ditches and levees ² acres..	415,760	3,813	14,655			8,414	7,700	
42	Length of ditches..... miles..	512.1	5.0	22.0			6.0	22.0	
43	Length of levees..... miles..	532.7	8.0	19.5			12.0	25.0	
44	Land having ditches, tile drains, and levees..... acres..	101,520							
45	Length of ditches..... miles..	100.6							
46	Length of tile..... miles..	69.8							
47	Length of levees..... miles..	108.7							
48	Land drained by pumps and other drainage works ³ acres..	356,678	38,500	6,351		9,000			6,300
49	Length of ditches..... miles..	671.1	27.5	9.0		22.0			26.0
50	Length of tile..... miles..	373.3	24.0			10.0			
51	Length of levees..... miles..	476.0	48.7	14.8		11.0			22.0
52	Land protected by levees of an outside agency..... acres..	140,384	3,106	20,093				6,000	
CAPITAL INVESTED AND COST PER ACRE									
53	Capital invested in enterprises to Jan. 1, 1930..... dollars..	75,048,548	2,414,521	1,166,441	127,000	525,387	1,037,180	245,100	425,000
54	..... 1920..... dollars..	43,505,069	1,430,905	371,484	40,500	284,250	787,120	733,488	114,000
55	Increase, ¹ 1920-1930..... per cent..	72.1	68.0	214.0	213.6	84.8	31.8	-60.6	272.8
56	Estimated cost of enterprises when completed..... 1930..... dollars..	70,211,072	2,039,521	1,166,441	127,000	525,387	1,037,180	245,100	425,000
57	..... 1920..... dollars..	51,303,244	2,133,995	371,484	40,500	301,150	883,120	733,488	133,000
58	Average, per acre when completed..... 1930..... dollars..	15.14	62.37	41.08	11.91	58.38	18.68	31.81	45.70
59	..... 1920..... dollars..	13.15	37.54	10.08	10.00	38.17	13.63	22.23	28.36
60	Invested in and required for completion of—								
60	Enterprises having ditches only..... 1930..... dollars..	14,513,123		102,000	20,000		44,180		
61	Average, per acre..... dollars..	8.52		13.81	10.31		5.48		
62	Enterprises having tile drains only..... 1930..... dollars..	6,177,025			7,000		13,000		
63	Average, per acre..... dollars..	8.81			9.72		40.63		
64	Enterprises having ditches and tile drains..... 1930..... dollars..	18,207,597			100,000		830,000		
65	Average, per acre..... dollars..	10.38			12.50		21.42		
66	Enterprises having ditches and levees..... 1930..... dollars..	15,988,420	111,304	389,000			150,000	245,100	
67	Average, per acre..... dollars..	38.46	29.10	26.54			17.83	31.81	
68	Enterprises having ditches, tile drains, and levees..... 1930..... dollars..	1,492,940							
69	Average, per acre..... dollars..	14.71							
70	Enterprises having pumps and other drainage works..... 1930..... dollars..	10,831,007	2,528,217	675,441		525,387			425,000
71	Average, per acre..... dollars..	55.55	65.65	106.35		58.38			45.70

¹ A minus sign (-) denotes decrease. A plus sign (+) denotes increase. Per cent not shown when more than 1,000.
² When works under construction have been completed.
³ Area of enterprises having some land served by pumps.

DRAINAGE—ILLINOIS

COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER ACRE,

ITEM (See definitions in Introduction)		Cass	Cham- paign	Chris- tian	Clark	Clay	Clinton	Coles	Cook
LAND AREA									
1	Approximate land area..... 1930..... acres..	237,440	667,520	448,000	315,520	295,080	300,120	336,000	597,120
2	Land in enterprises..... 1930..... acres..	46,974	443,262	147,761	6,590	5,566	9,045	111,907	38,300
3	..... 1920..... acres..	35,109	331,646	110,129	5,344	6,080	8,303	65,595	37,532
4	Increase, ¹ 1920-1930..... per cent..	33.8	33.7	34.2	23.3	-3.5	8.0	70.0	2.1
5	Area of all enterprises (overlapping areas included)..... 1930..... acres..	58,614	655,887	150,160	6,590	5,566	9,045	110,445	38,300
6	Excess over land in enterprises (total areas overlapping)..... acres..	11,640	212,625	2,408				7,538	
CONDITION AND USE OF LAND									
7	Land unfit to raise any crop..... 1930..... acres..	6,031	14,950		300	1,000	2,200		2,397
8	Land unfit to raise any crop prior to drainage..... acres..	29,135	77,730	12,823	3,200	1,000	4,040	51,741	11,216
9	Decrease since drainage..... per cent..	79.3	80.3	100.0	90.6		55.5	100.0	78.0
10	Land fit to raise a normal crop..... 1930..... acres..	35,431	426,302	147,261	0,290		5,275	111,907	34,282
11	Land fit to raise a normal crop prior to drainage..... acres..	5,687	338,038	80,753	350		3,300	15,228	17,539
12	Increase since drainage ¹ per cent..	523.0	25.9	82.4			50.8	634.0	95.5
13	Land fit to raise a partial crop..... 1930..... acres..	5,512	2,010	500		4,500	1,570		1,030
14	Land fit to raise a partial crop prior to drainage..... acres..	12,152	26,804	54,185	3,040	4,500	805	44,938	9,554
15	Decrease since drainage ¹ per cent..	54.6	92.5	90.1	100.0		-95.0	100.0	82.9
16	Improved land..... 1930..... acres..	38,076	440,902	147,261	6,430	2,500	6,825	111,807	36,504
17	..... 1920..... acres..	20,022	327,787	108,690	4,810	6,350	7,955	65,132	35,373
18	Increase, ¹ 1920-1930..... per cent..	48.8	34.5	35.5	33.7	-53.3	-14.2	71.7	3.2
19	Unimproved land—								
20	Woodland..... 1930..... acres..	1,768	1,800	500	90	500	405		148
20	Other..... 1930..... acres..	6,530	500		70	2,606	1,815	100	1,657
21	Land in occupied farms..... 1930..... acres..	46,074	443,262	147,761	6,590	5,566	9,045	111,907	38,161
22	Land in planted crops..... 1930..... acres..	35,336	404,655	135,019	6,330	1,500	6,460	99,645	30,030
23	Woodland cleared and cultivated since drainage..... 1930..... acres..	2,770	29,830	500	2,400		000	3,450	610
24	Land idle..... 1930..... acres..	3,671	560	1,192		2,033	1,735	190	
DRAINAGE WORKS, 1930									
25	Ditches—								
25	Completed..... miles..	107.2	351.2	118.0	2.0	6.0	23.2	89.0	79.7
26	Additional under construction..... miles..		11.5	44.2					2.0
27	Tile drains—								
27	Completed..... miles..	7.5	307.9	202.2	21.5			127.5	28.4
28	Additional under construction..... miles..		10.2	21.1					2.0
29	Levees and dikes—								
29	Completed..... miles..	40.9		1.0	0.9		13.4	0.8	
30	Additional under construction..... miles..	2.0							
31	Pumping plants—								
31	Engine or motor capacity..... horsepower..	850					180		
32	Pump capacity..... gals. per min..	128,600					32,000		
33	Land served by pumps..... acres..	18,100					3,000		
34	Land drained by ditches only ² acres..	21,567	153,188	5,654		5,566	700	24,273	16,077
35	Length of ditches..... miles..	43.7	173.2	17.2		6.0	4.2	24.3	43.5
36	Land drained by tile only ² acres..		116,014	58,899	5,000			25,357	855
37	Length of tile..... miles..		136.5	179.8	9.5			47.2	3.2
38	Land drained by ditches and tile ² acres..		173,100	78,773				50,227	20,777
39	Length of ditches..... miles..		189.5	142.0				61.1	38.2
40	Length of tile..... miles..		241.0	103.5				72.5	27.2
41	Land having ditches and levees ² acres..	5,333		4,435			5,345		
42	Length of ditches..... miles..	22.0		3.0			0.0		
43	Length of levees..... miles..	11.9		1.0			6.4		
44	Land having ditches, tile drains, and levees..... acres..	1,674			1,500			3,045	
45	Length of ditches..... miles..	11.0			2.0			3.6	
46	Length of tile..... miles..	1.5			12.0			7.8	
47	Length of levees..... miles..	7.0			0.9			0.8	
48	Land drained by pumps and other drainage works ³ acres..	18,400					3,000		
49	Length of ditches..... miles..	30.5					10.0		
50	Length of tile..... miles..	6.0							
51	Length of levees..... miles..	24.0					7.0		
52	Land protected by levees of an outside agency..... acres..								
CAPITAL INVESTED AND COST PER ACRE									
53	Capital invested in enterprises to Jan. 1, 1930..... dollars..	1,695,283	3,242,707	685,070	42,000	27,000	346,325	897,378	1,110,965
54	..... 1920..... dollars..	845,068	2,057,536	601,798	57,562	38,677	168,894	332,512	369,169
55	Increase, ¹ 1920-1930..... per cent..	100.0	57.0	13.8	-27.0	-30.2	118.0	169.0	205.9
56	Estimated cost of enterprises when completed..... 1930..... dollars..	1,712,283	3,268,767	843,192	42,000	27,000	346,325	897,378	1,139,965
57	..... 1920..... dollars..	850,068	2,151,932	601,798	57,562	38,677	168,894	371,410	369,169
58	Average, per acre when completed..... 1930..... dollars..	36.45	7.37	5.71	6.37	4.83	38.29	8.02	29.76
59	..... 1920..... dollars..	24.21	6.49	5.46	10.77	6.30	19.14	5.66	9.76
60	Invested in and required for completion of—								
60	Enterprises having ditches only..... 1930..... dollars..	410,710	939,805	15,837		27,000	14,000	120,824	392,350
61	Average, per acre..... dollars..	19.04	6.14	2.80		4.85	20.00	4.98	23.53
62	Enterprises having tile drains only..... 1930..... dollars..		748,355	298,381	22,000			147,272	92,000
63	Average, per acre..... dollars..		6.40	5.07	4.32			6.81	107.66
64	Enterprises having ditches and tile drains..... 1930..... dollars..		1,580,507	470,474				477,444	655,615
65	Average, per acre..... dollars..		9.13	5.07				8.06	31.55
66	Enterprises having ditches and levees..... 1930..... dollars..	176,000		58,000			217,325		
67	Average, per acre..... dollars..	33.00		13.08			40.66		
68	Enterprises having ditches, tile drains, and levees..... 1930..... dollars..	132,550			20,000			151,838	
69	Average, per acre..... dollars..	79.18			13.33			40.86	
70	Enterprises having pumps and other drainage works..... 1930..... dollars..	993,028					115,000		
71	Average, per acre..... dollars..	53.97					38.33		

¹ A minus sign (-) denotes decrease. A plus sign (+) denotes increase. Per cent not shown when more than 1,000.
² When works under construction have been completed.
³ Area of enterprises having some land served by pumps.

DRAINAGE—ILLINOIS

AND CONDITION AND USE OF LAND, 1930 AND 1920; AND DRAINAGE WORKS, 1930—Continued

Crawford	Cumber-land	De Kalb	De Witt	Douglas	Du Page	Edgar	Edwards	Fayette	Ford	Fulton	Gallatin	Greene	Grundy	Hamil- ton	Hancock	
289,920	225,020	408,320	265,000	266,880	220,800	397,440	152,320	406,500	320,000	565,700	216,320	329,000	277,120	291,200	490,200	1
19,400	11,374	53,207	85,018	206,819	17,760	133,579	5,202	39,850	166,941	27,855	40,580	51,456	13,915	53,752	17,400	2
17,589	7,207	46,900	36,200	156,823	15,019	63,442	0,011	40,592	136,175	27,194	22,170	36,548	11,300	50,470	17,100	3
10.3	67.8	13.0	136.5	32.7	18.3	110.6	-41.0	-1.8	22.0	2.4	82.8	40.8	22.5	6.5	1.8	4
19,400	12,304	53,207	87,093	266,225	17,760	152,801	5,202	40,330	249,033	27,855	42,130	51,456	13,915	79,202	17,400	5
	1,020		1,475	50,400		19,222		480	82,092		1,600			25,540		6
5,500		810		5,148	200	20	475	21,812	300	2,620		0,011		10,200	2,100	7
12,035	5,385	13,311	4,562	34,638	4,400	39,724	2,220	22,632	8,248	22,235	11,858	37,200	3,555	28,020	5,000	8
54.3	100.0	93.9	100.0	85.1	95.5	99.9	78.0	3.0	95.3	88.2	100.0	83.9	100.0	43.4	64.4	9
10,470	11,374	52,331	85,018	200,711	17,460	133,552	4,381	7,835	114,824	24,059	40,530	42,242	13,915	37,552	13,300	10
3,425	3,450	39,686	69,264	118,611	12,655	69,834	1,290	8,753	96,079	3,600	13,072	4,457	3,026		2,300	11
205.7	229.7	31.9	23.6	69.2	38.0	91.2	230.0	-10.5	72.2	593.3	210.1	847.8	359.8		478.3	12
3,430		156		960	100	7	400	10,203	51,727	276		3,203			2,000	13
3,940	2,539	300	11,792	53,570	705	24,021	1,752	8,405	92,014	2,020	15,000	9,709	7,334	26,132	0,200	14
12.9	100.0	48.0	100.0	98.2	85.8	90.0	70.8	-20.5	43.8	80.3	100.0	67.0	100.0	100.0	78.3	15
17,360	11,374	52,270	85,018	205,519	17,560	132,915	4,430	30,763	165,771	29,000	39,585	49,776	13,835	31,640	15,400	16
15,604	9,494	38,100	36,184	156,525	13,915	69,531	7,752	28,543	113,953	17,354	19,947	28,699	3,206	24,240	15,550	17
11.3	75.1	37.2	136.6	32.1	26.2	119.0	-42.9	7.8	45.5	50.4	98.5	73.4	319.8	30.5	-1.0	18
1,240		3			25	381	601	0,200	820	1,230	945	1,073	80	19,292	1,500	19
800		1,024		1,300	283	231	231	2,827	350	520		7		2,820	500	20
10,400	11,374	53,297	85,018	206,079	17,760	133,570	5,202	39,850	166,941	27,855	40,430	51,456	13,915	51,232	17,400	21
9,600	9,040	49,598	77,058	185,920	10,015	120,181	3,260	13,958	137,492	23,017	34,450	43,222	13,312	18,740	13,300	22
3,000	140	50		600		2,670	140	11,550	300	4,000	2,400	0,776		12,500	1,200	23
3,220		871		190		110	925	12,187	310	1,218	2,561	5,715	960	18,000	2,000	24
27.8	21.7	60.3	25.3	153.0	24.2	108.5	10.3	65.7	145.0	51.8	42.4	107.9	0.0	98.5	23.5	25
										3.0						26
6.5	14.7	55.1	92.1	227.2	32.4	161.9			12.5	26.5	119.0	21.2	26.5		1.0	27
		4.0								0.3	2.0					28
11.0			6.5				4.0	44.6			48.5	33.0			12.4	29
																30
125		8						50		1,440		3,450			570	31
22,000		500						7,000		195,500		574,000			83,200	32
4,000		190						600		24,070		30,694			17,240	33
1,700	1,197	19,604	7,780	32,276	3,200	28,220	4,231	13,674	127,674		30,730	11,337		53,752		34
4.3	4.0	35.1	5.0	59.3	19.0	31.9	7.3	22.2	125.3		42.4	12.2		98.5		35
	1,340	0,020	28,615	70,491	7,060	8,192			22,434		800		3,809			36
	0.8	33.2	56.7	70.8	22.4	22.9			16.5		2.0		8.0			37
13,700	8,837	23,317	25,280	104,052	7,500	97,167		7,463	16,833	1,400			10,106			38
16.5	17.7	31.2	9.3	94.6	5.2	76.6		14.5	19.7	3.8			0.0			39
6.5	13.9	24.7	16.6	147.4	10.0	139.0		8.0	10.0	5.0			18.5			40
							1,031	473								41
							3.0	0.8								42
							4.0	0.8								43
			23,043					17,640								44
			14.0					20.2								45
			18.8					3.5								46
			6.5					41.8								47
4,000		456						600		29,389		40,119			17,400	48
7.0		3.0						2.0		51.0		95.7			23.5	49
		1.2						1.0		114.3		21.2			1.0	50
11.0								2.0		48.5		33.0			12.4	51
700								480		1,000						52
532,261	78,696	400,867	456,458	1,225,553	216,760	1,141,192	63,191	519,316	799,359	2,048,500	200,243	2,625,717	204,832	922,630	672,192	53
139,000	45,161	385,667	240,830	732,899	120,192	439,310	33,542	525,094	780,272	1,178,450	92,503	1,059,920	122,444	433,901	245,000	54
280.4	74.3	3.9	80.5	87.2	80.3	159.8	-24.4	-1.3	2.1	73.8	187.8	147.7	67.3	112.7	174.4	55
532,261	78,696	419,867	456,458	1,225,553	216,760	1,141,192	63,191	519,316	799,359	2,138,500	206,243	2,625,717	204,832	922,630	672,192	56
139,000	45,161	385,667	240,830	732,899	120,192	439,310	33,542	525,094	780,272	1,001,950	92,503	1,087,920	108,612	623,001	250,000	57
27.44	6.92	7.88	5.33	12.21	8.54	12.01	13.03	4.77	76.77	6.67	51.03	14.72	17.17	17.17	38.93	58
7.95	6.27	8.22	6.65	4.70	12.53	6.92	9.27	12.67	5.73	58.01	4.17	29.77	17.48	12.36	14.62	59
29,000	2,000	134,600	20,000	105,673	42,500	175,000	28,080	72,337	559,463		262,593	185,500		922,630		60
17.06	2.42	6.76	2.65	6.06	13.28	6.20	6.64	5.29	4.38		6.61	16.36		17.17		61
	4,000	96,580	254,731	303,293	58,766	94,847		86,414			3,650		34,432			62
	2.99	10.04	8.90	4.30	8.32	11.58		3.85			4.50		9.04			63
203,261	71,796	154,975	98,143	726,677	115,500	871,345		53,900	150,482	0,500			170,400			64
14.84	8.12	6.65	3.88	6.98	15.40	8.97		7.22	8.94	4.43			18.86			65
							35,111	1,500								66
							34.06	3.17								67
			82,984					354,579								68
			3.47					20.10								69
300,000		33,712						37,000		2,132,000		2,440,217			672,192	70
75.00		73.93						61.67		80.79		60.82			35.63	71

DRAINAGE—ILLINOIS

COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER ACRE,

ITEM (See definitions in Introduction)		Hender-son	Henry	Iroquois	Jasper	Jersey	John-son	Kane	Kanka-kee
LAND AREA									
1	Approximate land area..... 1930..... acres..	240,040	527,300	717,440	325,120	234,880	222,720	337,280	427,620
2	Land in enterprises..... 1930..... acres..	18,900	121,378	344,520	13,471	12,634	17,076	100,850	137,214
3	Land unfit to raise any crop prior to drainage..... 1920..... acres..	17,500	84,500	283,169	(1)	12,412	16,806	48,828	125,344
4	Increase, 1920-1930..... per cent..	8.3	43.5	21.7		1.8	7.4	119.7	9.5
5	Area of all enterprises (overlapping areas included)..... 1930..... acres..	18,900	133,928	353,020	13,471	12,634	17,076	100,850	138,824
6	Excess over land in enterprises (total areas overlapping)..... acres..		12,550	8,500				3,000	1,010
CONDITION AND USE OF LAND									
7	Land unfit to raise any crop..... 1930..... acres..	2,040	11,550	650	1,800	1,400	513	4,145	200
8	Land unfit to raise any crop prior to drainage..... acres..	17,900	53,909	66,503	6,400	8,725	8,473	25,250	40,656
9	Decrease since drainage..... per cent..	88.6	78.6	90.0	71.9	84.0	93.9	83.6	99.5
10	Land fit to raise a normal crop..... 1930..... acres..	16,500	104,728	342,510	8,771	10,300	15,806	98,780	135,074
11	Land fit to raise a normal crop prior to drainage..... acres..	500	54,009	252,607	2,200	1,000	3,803	70,030	65,170
12	Increase since drainage 1..... per cent..		90.5	35.6	298.7	543.8	318.0	20.8	108.0
13	Land fit to raise a partial crop..... 1930..... acres..	420	5,100	2,000	667	667	3,925	3,925	1,040
14	Land fit to raise a partial crop prior to drainage..... acres..	500	12,500	25,320	4,871	2,309	4,800	5,820	31,888
15	Decrease since drainage 2..... per cent..	25.0	59.2	94.0	40.5	59.5	86.1	28.9	69.7
16	Improved land..... 1930..... acres..	16,200	112,728	343,200	10,041	11,091	13,929	97,155	136,254
17	..... 1920..... acres..	15,773	78,135	278,159	(1)	10,842	7,063	40,829	116,704
18	Increase, 1920-1930..... per cent..	3.3	44.3	23.4		7.8	81.8	107.5	17.8
19	Unimproved land—								
20	Woodland..... 1930..... acres..	1,070	2,350	900	1,700	800	3,147	5,120	960
20	Other..... 1930..... acres..	1,600	6,300	300	1,070	143		4,575	
21	Land in occupied farms..... 1930..... acres..	18,900	121,378	343,820	13,471	12,634	17,076	100,850	137,214
22	Land in planted crops..... 1930..... acres..	16,150	103,608	332,410	10,075	11,620	12,472	96,125	128,556
23	Woodland cleared and cultivated since drainage..... 1930..... acres..	1,930	2,000	33,590	600	400	4,040	2,080	500
24	Land idle..... 1930..... acres..	665	1,200	925	2,530	700	3,065	1,050	230
DRAINAGE WORKS, 1930									
25	Ditches—								
25	Completed..... miles..	31.0	107.0	392.9	24.5	31.2	21.0	120.0	146.6
26	Additional under construction..... miles..								
27	Tile drains—								
27	Completed..... miles..		61.7	104.4	2.0	0.5		41.5	151.4
28	Additional under construction..... miles..								
29	Levees and dikes—								
29	Completed..... miles..	26.0	60.0		18.2	6.5	11.3		
30	Additional under construction..... miles..								
31	Pumping plants—								
31	Engine or motor capacity..... horsepower..	900				800			
32	Pump capacity..... gals. per min..	141,000				140,000			
33	Land served by pumps..... acres..	17,460				7,541			
34	Land drained by ditches only 1..... acres..		13,118	82,709	3,460	4,793	8,224	70,076	58,034
35	Length of ditches..... miles..		22.0	128.7	10.0	9.0	12.3	86.3	90.3
36	Land drained by tile only 1..... acres..			13,050				8,000	23,973
37	Length of tile..... miles..			26.5				13.3	67.0
38	Land drained by ditches and tile 1..... acres..		77,716	248,101	600			18,874	55,207
39	Length of ditches..... miles..		140.0	204.2	1.5			34.3	60.3
40	Length of tile..... miles..		61.7	107.9	2.0			28.2	84.4
41	Land having ditches and levees 1..... acres..		30,544		9,411	300	8,852		
42	Length of ditches..... miles..		35.0		13.0	1.2	0.3		
43	Length of levees..... miles..		60.0		18.2	1.5	11.3		
44	Land having ditches, tile drains, and levees..... acres..								
45	Length of ditches..... miles..								
46	Length of tile..... miles..								
47	Length of levees..... miles..								
48	Land drained by pumps and other drainage works 1..... acres..	18,000				7,541			
49	Length of ditches..... miles..	31.0				21.0			
50	Length of tile..... miles..					0.5			
51	Length of levees..... miles..	23.0				5.0			
52	Land protected by levees of an outside agency..... acres..		7,500						
CAPITAL INVESTED AND COST PER ACRE									
53	Capital invested in enterprises to Jan. 1, 1930..... dollars..	749,350	1,466,826	3,111,533	415,000	416,800	148,270	499,111	1,168,019
54	..... 1920..... dollars..	600,000	965,759	1,629,378	(1)	344,166	107,448	201,071	932,234
55	Increase, 1920-1930..... per cent..	24.9	51.9	91.0		21.1	38.0	71.1	25.4
56	Estimated cost of enterprises when completed..... 1930..... dollars..	749,350	1,466,826	3,111,533	415,000	416,800	148,270	499,111	1,168,019
57	..... 1920..... dollars..	650,000	1,009,750	1,629,378	(1)	344,166	107,448	201,071	932,234
58	Average, per acre when completed..... 1930..... dollars..	39.52	12.98	0.95	30.81	32.99	8.68	4.67	8.52
59	..... 1920..... dollars..	37.14	11.94	5.76	(1)	27.73	6.76	6.00	7.44
60	Invested in and required for completion of—								
61	Enterprises having ditches only..... 1930..... dollars..		73,556	682,660	27,000	84,500	50,902	260,000	337,822
62	Average, per acre..... dollars..		5.61	8.26	7.80	17.63	6.19	3.25	5.82
63	Enterprises having tile drains only..... 1930..... dollars..			166,209				89,511	278,800
64	Average, per acre..... dollars..			12.18				11.19	11.08
65	Enterprises having ditches and tile drains..... 1930..... dollars..		905,500	2,267,373	8,000			149,000	552,297
66	Average, per acre..... dollars..		11.65	0.14	13.33			7.93	10.00
67	Enterprises having ditches and levees..... 1930..... dollars..		487,770		380,000	7,300	97,868		
68	Average, per acre..... dollars..		15.97		40.38	24.33	11.00		
69	Enterprises having ditches, tile drains, and levees..... 1930..... dollars..								
70	Average, per acre..... dollars..								
71	Enterprises having pumps and other drainage works..... 1930..... dollars..	749,350				325,000			
	Average, per acre..... dollars..	39.52				43.10			

1 Included in "Other counties." 2 A minus sign (-) denotes decrease. A plus sign (+) denotes increase. Per cent not shown when more than 1,000.
 3 When works under construction have been completed. 4 Area of enterprises having some land served by pumps.

DRAINAGE—ILLINOIS

AND CONDITION AND USE OF LAND, 1930 AND 1920; AND DRAINAGE WORKS, 1930—Continued

Kendall	Lake	La Salle	Lawrence	Lee	Livingston	Logan	McHenry	McLean	Macon	Macoupin	Madison	Marshall	Mason	Massac	Menard		
207,360	201,200	733,440	220,120	474,880	667,620	394,880	390,800	762,240	374,400	550,400	471,080	253,440	355,200	153,600	202,880	1	
0,548 7,414 28.8	37,496 14,520 158.2	32,658 41,801 -22.0	74,058 01,592 20.2	62,200 85,400 -27.2	95,948 47,379 102.5	52,633 22,030 138.9	30,303 48,325 -37.2	131,510 110,801 12.5	92,434 52,020 77.7	13,075 7,875 72.6	45,600 28,119 02.2	6,384 (1)	114,115 118,020 -3.8	33,603 28,800 16.7	10,799 10,738 -35.0	2 3 4	
10,003 465	37,496	32,658	74,508 460	72,895 10,695	96,848 900	58,033 6,400	30,303	131,510	134,874 42,440	13,075	40,010 3,410	6,384	133,038 10,823	35,698 2,035	17,040 7,180	5 6	
550 3,941 80.0	3,446 12,420 72.3	4,350 100.0	10,910 30,440 34.6	200 28,180 99.3	122 3,750 96.7	10,400 100.0	668 9,019 93.8	400 100.0	5,793 100.0	470 3,040 84.5	8,510 10,340 17.7	830 88,203 95.2	4,220 20,101 100.0	1,320 7,488 82.4	1,320 7,488 82.4	7 8 9	
0,798 2,600 155.0	20,874 17,690 99.8	32,658 20,999 55.5	43,161 28,918 40.3	62,000 31,109 99.3	94,946 67,581 40.5	40,633 23,020 115.0	20,108 15,555 87.5	131,510 91,025 44.5	92,234 32,404 184.0	12,305 6,185 98.9	32,050 24,100 38.0	5,445 2,824 92.8	107,705 17,007 533.3	33,603	8,838 2,820 213.4	10 11 12	
2,200 2,947 25.3	4,176 7,480 44.2	7,309 100.0	10,987 14,700 25.3	880 24,617 100.0	3,000 13,213 77.3	632 5,789 89.1	40,025 100.0	200 54,237 99.6	300 3,850 92.2	5,040 11,100 54.8	100 2,035 96.2	2,181 8,005 75.5	4,502 100.0	4,502 100.0	611 460 +30.3	13 14 15	
8,598 7,264 18.4	27,608 14,430 91.3	32,658 40,812 -20.0	57,361 48,838 17.5	61,500 84,020 -20.8	95,826 46,314 100.0	45,833 21,850 100.8	20,400 45,060 -35.5	131,510 113,101 16.2	92,434 51,088 78.8	12,095 7,500 61.3	30,000 16,335 130.3	5,285 (1)	100,135 108,702 0.3	27,477 7,200 281.6	0,168 14,088 -38.8	16 17 18	
250 700	248 0,640	11,317 5,380	500 200	122 200	5,500 1,300	155 748	680 400	2,650 3,800	1,000	2,650 3,800	1,000	2,237	2,743 2,237	0,126 511	1,000 511	10 20	
0,548 8,212	37,016 25,918	32,658 20,525	74,058 40,191	62,200 50,924	95,948 83,576	51,633 41,613	30,303 22,800	131,510 125,959	92,434 85,369	13,075 10,845	45,600 28,425	6,384 4,885	114,115 104,535	33,603 23,672	10,799 8,908	21 22	
60 200	1,096	100	21,509 13,847	80 300	700 4,500	70 2,050	150	150	150	1,140 8,225	14,090 4,000	1,128	22,070 4,000	4,050 500	23 24		
21.5	72.4	41.7 4.0	104.9	113.9	57.3	75.4 6.0	30.3	85.3	40.0	37.9 2.0	30.8	5.2	104.6	40.0	41.8	25 26	
6.5	35.4	40.8	0.5	26.4	120.9	22.5	77.0	76.1	132.7 2.0	27.2 2.0	3.6	5.3	7.7	28.0	27 28		
		7.5				1.0 2.0			11.2	34.0	50.0	0.0			29 30		
			240 40,000 6,370								200 60,000 3,800				50 10,000 2,288	31 32 33	
7,512 20.5	25,430 44.1	2,603 13.2	62,457 85.9	14,814 24.9	25,776 38.4	20,536 50.4	1,760 5.8	41,339 25.5	30,026 22.0	300 4.7	3,039 6.0	2,909 5.2	106,327 183.1	2,790 1.5	7,837 24.8	34 35	
1,010 6.0	3,000 15.9	7,070 15.8			54,282 114.7	8,400 18.0	5,976 24.8	30,294 36.5	50,003 113.2	3,000 12.2		3,475 3.0				36 37	
426 1.0 0.5	8,400 28.3 10.5	22,085 32.5 25.0	5,231 8.0 0.5	47,386 89.0 26.4	15,800 18.9 15.2	4,884 5.0 4.5	22,037 24.5 52.2	50,886 59.8 39.6	0,765 8.7 18.0	6,215 8.7 12.0			2,215 1.5 4.8			38 39 40	
						9,813 20.0 3.0			1,347 10.2 10.2	2,700 16.8 30.0	25,561 16.8 28.9			80,804 47.5 7.7	644 13.5 22.0	41 42 43	
									1,303 2.0 3.5 1.0	800 2.5 5.0 4.0			5,573 10.0 0.5 9.0			44 45 46 47	
			6,370 11.0								17,000 8.0				2,288 3.5	48 49	
			7.5								22.0				0.0	50 51	
			33,600								1,070					52	
134,147 80,392 66.0	1,176,372 140,650 736.4	264,800 204,936 -10.2	451,022 304,734 48.0	1,564,983 1,284,568 21.8	932,587 812,304 198.6	908,307 198,905 568.5	314,005 479,870 -34.5	748,291 578,701 30.4	724,905 238,151 204.4	660,011 64,483 924.5	2,812,694 2,048,500 37.3	100,802 (1)	1,554,131 1,153,100 34.8	721,000 600,000 18.4	396,212 176,500 124.5	53 54 55	
134,147 80,392 14.05 10.84	1,176,372 140,650 31.37 9.69	269,800 312,436 8.26 7.46	451,022 304,734 6.69 4.95	1,564,983 1,339,593 25.16 15.67	932,587 426,762 9.72 9.01	908,307 198,905 18.40 8.80	314,005 530,070 10.34 10.97	748,291 638,094 5.60 5.43	731,405 238,151 7.91 4.68	663,111 64,483 50.72 8.51	2,812,694 3,048,500 461.68 108.41	100,802 (1)	1,554,131 1,353,190 13.62 11.41	721,000 621,000 21.47 21.58	396,212 176,500 36.70 10.51	56 57 58 59	
102,952 13.71 25,920 16.10 5,275 12.38	680,710 20,777 154,662 42.96 341,000 40.28	40,136 15.42 79,906 11.30 149,758 6.52	286,474 4.59	619,287 41.80	156,484 6.07 574,735 10.59	501,907 10.59 71,000 8.46	15,000 1.70 60,870 10.10 238,216 10.52	70,150 4.75 303,848 8.05	142,706 4.75 402,312 8.05	15,445 51.48 508,218 160.08	133,572 43.95	43,802 15.06 67,000 16.40	1,437,711 13.52	24,067 8.58	183,368 23.40	60 61 62 63 64 65	
			45,780 8.75	945,606 19.99	201,308 12.67	140,466 28.76 25,990	374,293 6.25		75,800 7.77	53,250 3.57	71,000 26.30 18,000 13.81	2,426,122 95.03		47,670 21.52	697,593 22.65	100,000 155.28	66 67 68 69
			118,788 18.64								250,000 14.71				112,844 49.32	70 71	

Includes agricultural land in sanitary districts.

Not for drainage of agricultural land only.

DRAINAGE—ILLINOIS

COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER ACRE.

ITEM (See definitions in Introduction)		Mercer	Monroe	Montgomery	Morgan	Moultrie	Ogle	Peoria	Platt
LAND AREA									
1	Approximate land area.....1930.....acres..	345,000	248,060	440,060	308,040	216,320	483,840	407,040	288,040
2	Land in enterprises.....1930.....acres..	23,834	34,239	66,889	18,282	71,578	15,723	6,446	161,721
3	.....1920.....acres..	22,320	24,860	48,521	10,013	20,250	12,820	6,109	122,384
4	Increase, ¹ 1920-1930.....per cent..	6.8	37.7	37.9	82.6	253.5	22.6	5.7	32.1
5	Area of all enterprises (overlapping areas included).....1930.....acres..	25,334	34,239	71,021	19,682	74,502	15,723	6,446	222,918
6	Excess over land in enterprises (total areas overlapping).....acres..	1,500	-----	5,032	1,400	2,026	-----	-----	61,197
CONDITION AND USE OF LAND									
7	Land unfit to raise any crop.....1930.....acres..	800	12,400	10	4,706	-----	100	-----	-----
8	Land unfit to raise any crop prior to drainage.....acres..	21,034	21,019	14,083	10,152	4,670	6,012	4,816	20,350
9	Decrease since drainage.....per cent..	95.2	41.0	99.9	53.6	100.0	98.3	100.0	100.0
10	Land fit to raise a normal crop.....1930.....acres..	22,500	21,429	68,229	12,066	71,578	15,023	0,446	161,721
11	Land fit to raise a normal crop prior to drainage.....acres..	634	7,220	30,128	5,052	37,346	7,647	780	115,618
12	Increase since drainage ¹.....per cent..	14.6	196.8	83.3	139.4	91.7	104.3	726.4	39.9
13	Land fit to raise a partial crop.....1930.....acres..	534	410	650	1,480	-----	-----	-----	-----
14	Land fit to raise a partial crop prior to drainage.....acres..	2,166	6,000	16,878	3,078	20,560	2,004	860	25,753
15	Decrease since drainage ¹.....per cent..	75.2	93.2	96.1	51.9	100.0	100.0	100.0	100.0
16	Improved land.....1930.....acres..	22,200	31,839	66,589	17,046	71,578	14,623	6,446	161,721
17	.....1920.....acres..	10,360	22,726	48,135	8,946	19,966	12,738	5,405	121,934
18	Increase, ¹ 1920-1930.....per cent..	14.6	40.1	38.3	90.5	258.5	14.8	18.0	32.6
Unimproved land—									
19	Woodland.....1930.....acres..	1,300	2,200	150	550	-----	1,000	-----	-----
20	Other.....1930.....acres..	334	200	150	680	-----	100	-----	-----
21	Land in occupied farms.....1930.....acres..	23,834	34,239	66,889	18,282	71,578	15,723	6,446	161,721
22	Land in planted crops.....1930.....acres..	22,200	31,100	61,895	15,304	66,261	13,601	6,381	159,004
23	Woodland cleared and cultivated since drainage.....1930.....acres..	6,600	7,000	-----	4,800	50	-----	1,870	-----
24	Land idle.....1930.....acres..	1,100	1,300	200	66	80	500	-----	-----
DRAINAGE WORKS, 1930									
Ditches—									
25	Completed.....miles..	31.0	36.0	122.7	69.3	63.0	32.0	16.0	99.1
26	Additional under construction.....miles..	-----	-----	2.3	-----	-----	-----	-----	-----
Tile drains—									
27	Completed.....miles..	1.0	-----	161.7	5.5	59.4	8.5	2.7	140.3
28	Additional under construction.....miles..	-----	-----	10.4	-----	-----	-----	-----	-----
Levees and dikes—									
29	Completed.....miles..	21.0	10.0	3.0	20.9	-----	-----	14.0	3.0
30	Additional under construction.....miles..	5.0	-----	-----	-----	-----	-----	-----	-----
Pumping plants—									
31	Engine or motor capacity.....horsepower..	1,000	-----	-----	550	-----	-----	575	-----
32	Pump capacity.....gals. per min..	209,969	-----	-----	105,000	-----	-----	88,000	-----
33	Land served by pumps.....acres..	20,334	-----	-----	5,450	-----	-----	6,216	-----
34	Land drained by ditches only ².....acres..	-----	18,000	5,017	5,092	26,836	5,383	230	32,798
35	Length of ditches.....miles..	-----	18.0	16.0	21.6	30.2	11.0	0.5	34.8
36	Land drained by tile only ¹.....acres..	-----	-----	3,635	-----	15,698	-----	-----	34,078
37	Length of tile.....miles..	-----	-----	19.1	-----	38.7	-----	-----	60.0
38	Land drained by ditches and tile ¹.....acres..	-----	-----	57,067	881	26,042	10,340	-----	88,740
39	Length of ditches.....miles..	-----	-----	106.0	5.0	32.8	21.0	-----	59.1
40	Length of tile.....miles..	-----	-----	150.0	2.0	20.7	8.5	-----	84.4
41	Land having ditches and levees ².....acres..	3,000	16,239	-----	4,459	-----	-----	-----	-----
42	Length of ditches.....miles..	6.0	18.0	-----	9.3	-----	-----	-----	-----
43	Length of levees.....miles..	5.0	19.0	-----	4.7	-----	-----	-----	-----
44	Land having ditches, tile drains, and levees.....acres..	-----	-----	1,170	-----	-----	-----	-----	6,105
45	Length of ditches.....miles..	-----	-----	3.0	-----	-----	-----	-----	5.2
46	Length of tile.....miles..	-----	-----	3.0	-----	-----	-----	-----	4.3
47	Length of levees.....miles..	-----	-----	3.0	-----	-----	-----	-----	3.0
48	Land drained by pumps and other drainage works ¹.....acres..	20,834	-----	-----	7,850	-----	-----	0,216	-----
49	Length of ditches.....miles..	25.0	-----	-----	33.5	-----	-----	14.5	-----
50	Length of tile.....miles..	1.0	-----	-----	3.5	-----	-----	2.7	-----
51	Length of levees.....miles..	21.0	-----	-----	10.2	-----	-----	14.0	-----
52	Land protected by levees of an outside agency.....acres..	23,834	19,200	-----	1,370	-----	-----	-----	-----
CAPITAL INVESTED AND COST PER ACRE									
53	Capital invested in enterprises to Jan. 1, 1930.....dollars..	691,004	315,000	659,604	605,936	410,644	131,520	484,935	1,182,065
54	.....1920.....dollars..	558,000	738,446	383,853	159,032	159,001	113,000	246,760	805,364
55	Increase, ¹ 1920-1930.....per cent..	23.7	-67.8	71.8	286.1	156.8	15.5	96.5	36.0
56	Estimated cost of enterprises when completed.....1930.....dollars..	891,000	315,000	712,004	605,936	410,644	131,520	484,935	1,182,065
57	.....1920.....dollars..	975,400	738,446	386,985	159,932	159,001	141,900	246,760	805,364
58	Average, per acre when completed.....1930.....dollars..	37.38	9.20	10.64	33.14	5.74	8.36	75.23	7.31
59	.....1920.....dollars..	43.70	20.70	7.98	15.67	7.90	11.07	40.45	7.07
Invested in and required for completion of—									
Enterprises having ditches only.....1930.....dollars..									
60	Average, per acre.....dollars..	-----	30,000	44,598	114,500	139,260	25,320	3,000	245,206
61	.....1920.....dollars..	-----	1.67	8.89	22.49	4.67	4.70	13.04	7.48
Enterprises having tile drains only.....1930.....dollars..									
62	Average, per acre.....dollars..	-----	-----	26,172	7.20	130,168	8.20	-----	189,612
63	.....1920.....dollars..	-----	-----	7.20	-----	-----	-----	-----	5.56
Enterprises having ditches and tile drains.....1930.....dollars..									
64	Average, per acre.....dollars..	-----	-----	626,234	1,309	141,216	106,200	-----	601,541
65	.....1920.....dollars..	-----	-----	10.97	1.59	5.42	10.27	-----	7.79
Enterprises having ditches and levees.....1930.....dollars..									
66	Average, per acre.....dollars..	46,000	285,000	-----	90,000	-----	-----	-----	-----
67	.....1920.....dollars..	15.83	17.55	-----	20.18	-----	-----	-----	-----
Enterprises having ditches, tile drains, and levees.....1930.....dollars..									
68	Average, per acre.....dollars..	-----	-----	15,000	-----	-----	-----	-----	55,646
69	.....1920.....dollars..	-----	-----	12.82	-----	-----	-----	-----	9.11
Enterprises having pumps and other drainage works.....1930.....dollars..									
70	Average, per acre.....dollars..	845,000	-----	-----	400,036	-----	-----	481,935	-----
71	.....1920.....dollars..	40.56	-----	-----	60.96	-----	-----	77.53	-----

¹ A minus sign (-) denotes decrease. A plus sign (+) denotes increase. Per cent not shown when more than 1,000.
² When works under construction have been completed. ³ Area of enterprises having some land served by pumps.

DRAINAGE—ILLINOIS

AND CONDITION AND USE OF LAND, 1930 AND 1920; AND DRAINAGE WORKS, 1930—Continued

Pike	Pulaski	Randolph	Rock Island	St. Clair	Saline	Sangamon	Schuyler	Scott	Shelby	Tazewell	Union	Vermillion	Wabash	
503,040	121,000	375,680	271,360	424,320	255,360	560,640	276,480	139,360	494,080	414,080	257,020	589,440	140,800	1
109,784	37,155	14,307	33,628	55,275	68,209	20,051	15,836	32,350	59,019	35,644	31,500	170,315	25,305	2
67,683	19,298	18,949	23,066	55,242	66,251	7,097	16,080	32,393	31,834	34,240	34,713	121,075	26,061	3
62.2	62.5	-24.5	40.7	0.1	3.0	300.3	-1.5	-0.1	85.4	4.1	-0.3	40.7	-5.1	4
152,134	43,007	14,307	36,328	55,275	69,109	20,051	15,836	36,350	59,999	35,644	31,500	172,315	25,305	5
42,350	5,852		2,700		930			4,000	980			2,000		6
30,814	3,820	4,070	2,910	15,550	375	220	210	1,450		1,172	70		4,010	7
47,684	29,134	4,107	23,480	23,150	15,779	15,004	11,321	24,300	0,854	28,402	25,267	40,506	12,685	8
35.2	80.9	0.0	87.0	32.8	97.6	98.5	98.1	94.0	100.0	96.0	99.7	100.0	83.7	9
47,795	26,713	9,237	27,210	31,375	67,894	28,031	15,591	18,950	59,010	34,004	31,312	169,570	17,841	10
21,600	1,420	8,950	9,735	22,025	34,475	9,140	2,065	2,400	24,015	6,336	6,110	72,836	9,100	11
121.3		3.2	304.0	38.7	96.9	200.5	655.0	689.6	139.8	436.7	412.5	132.8	95.9	12
31,175	6,622	1,000	3,568	8,350		800	35	11,950		408	112	745	2,854	13
40,600	6,601	1,250	3,413	9,500	18,015	4,001	2,450	5,050	24,550	906	123	56,973	3,511	14
23.2	+0.3	20.0	+2.8	12.1	100.0	83.7	98.6	+111.5	100.0	48.3	8.0	98.7	18.7	15
85,470	25,224	14,107	31,988	44,325	64,621	26,251	15,530	30,984	58,999	35,266	20,000	168,005	20,476	16
60,379	13,829	10,418	23,221	33,337	57,040	7,097	15,899	30,740	31,834	34,167	21,309	112,843	23,751	17
41.6	82.4	-14.1	37.8	33.0	12.1	209.9	-2.3	0.8	85.3	3.2	38.0	49.7	-13.8	18
15,760	11,931	200	40	4,050	3,193	1,400	251	216	20	342	1,810	1,410	2,495	19
8,564			1,000	6,000	455	1,400	55	1,150		30			2,334	20
109,784	37,155	14,307	33,628	35,275	68,209	20,051	15,836	32,350	59,010	35,644	31,500	170,315	25,305	21
73,600	10,472	11,552	28,913	24,150	59,711	20,148	15,338	20,650	62,371	32,022	28,010	112,243	16,501	22
4,875	17,171	300	3,000	4,400	10,967	2,500	0,300	12,600	300	10,050	23,433	8,023	4,505	23
30,831	9,233	850	2,200	10,850	2,547	100	225	2,100	1,603	900	905	6,140	3,255	24
122.5	17.9	35.6	59.5	46.0	100.2	33.5	25.0	73.0	59.7	91.2	31.3	125.1	59.8	25
						4.0						2.0		26
0.5	1.5	1.0			0.8	31.1	5.0	4.0	39.5	128.9		323.5	0.0	27
						1.4						5.9		28
167.0	0.8	22.6	13.5	20.9		2.0	30.0	41.0		24.3	28.9			29
														30
1,050			550				925	1,120		1,010				31
190,000			151,000				118,000	224,000		162,000				32
10,200			12,700				15,836	30,016		14,242				33
5,400	10,007	500	13,823	9,175	65,002	700		846	33,160	17,912	4,776	14,134	20,714	34
7.0	14.3	4.3	29.4	18.7	96.8	4.0		4.0	54.3	40.7	8.3	22.5	49.5	35
						2,551			21,487	716		25,320		36
						21.5			31.6	0.9		59.9		37
	4,752				2,307	11,800			4,372	2,340		130,801	4,501	38
	1.0				3.4	5.5			5.4	7.8		104.6	10.3	39
	1.5				0.8	11.0			7.9	1.0		268.5	0.6	40
94,175	22,330	3,807	6,592	46,100		14,000				332	20,724			41
89.5	2.6	10.3	3.7	27.9		28.0				1.2	23.0			42
148.5	0.8	5.6	2.2	20.9		2.0				1.5	28.9			43
		10,000						1,488						44
		21.0						7.5						45
		1.0						0.5						46
		17.0						6.0						47
10,200			13,213				15,836	30,016		14,344				48
26.0			26.4				25.9	61.5		41.5				49
0.5							5.0	4.4		127.0				50
18.5			11.3				30.0	35.0		22.8				51
6,200		800		675				1,500		730			2,145	52
3,737,310	313,598	242,100	733,000	5,503,973	402,628	499,577	926,731	902,098	333,255	2,073,802	593,772	1,854,563	133,287	53
1,532,727	218,395	283,554	411,500	2,701,572	396,835	8,100	658,794	893,545	114,187	1,016,463	497,850	973,498	296,945	54
143.8	43.1	-14.6	78.3	103.7	1.5		49.7	1.0	191.9	104.0	13.2	90.5	-55.1	55
3,737,310	313,598	242,100	833,900	5,503,973	402,628	552,577	926,731	902,098	333,255	2,073,802	593,772	1,899,165	133,287	56
1,549,627	218,595	293,554	626,799	6,201,572	405,835	8,100	678,986	863,545	114,187	1,022,963	522,550	1,011,498	296,945	57
34.04	8.41	16.92	24.80	499.57	5.90	10.02	58.52	27.90	5.65	23.18	17.90	11.15	5.27	58
22.90	11.33	15.49	22.03	* 112.26	6.13	1.14	42.23	27.53	3.50	29.01	15.05	8.35	11.14	59
17,250	84,059	5,000	127,960	138,000	399,149	10,000		10,338	87,091	199,611	93,134	51,370	120,701	60
3.19	8.44	10.00	9.25	15.04	5.92	14.29		22.86	2.63	11.14	19.50	3.07	6.12	61
						30,577			196,389	3,318		338,354		62
						11.00			9.14	4.63		13.38		63
	97,000				12,479	112,000			50,175	20,984		1,608,441	6,586	64
	20.41				6.27	9.49			11.48	8.07		11.53	1.43	65
2,625,090	130,639	72,100	68,000	5,365,973		400,000				9,880	470,638			66
31.00	5.85	18.94	10.32	116.40		28.57				29.79				67
		105,000												68
		10.50												69
795,000			638,000				926,731	833,330		1,840,000				70
77.94			48.20				33.52	27.76		128.23				71

* Includes agricultural land in sanitary districts.

* Not for drainage of agricultural land only.

DRAINAGE—ILLINOIS

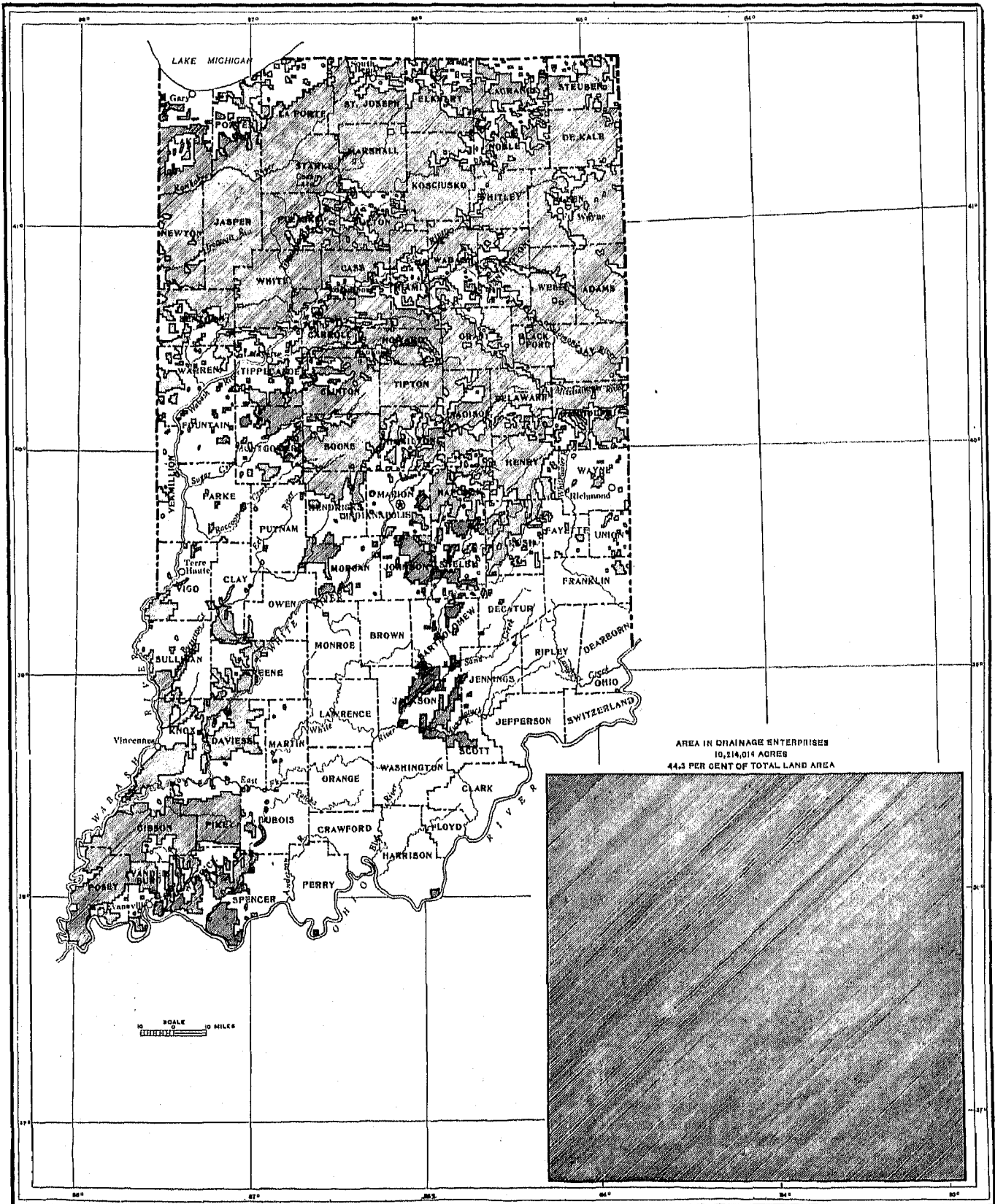
COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER ACRE, AND CONDITION AND USE OF LAND, 1930 AND 1920; AND DRAINAGE WORKS, 1930—Continued

ITEM (See definitions in Introduction)		Wayne	White	Whiteside	Will	Woodford	Other counties ¹
LAND AREA							
1	Approximate land area..... 1930..... acres..	400,120	324,480	434,560	540,160	337,020	2,437,760
2	Land in enterprises..... 1930..... acres..	70,721	55,307	120,247	64,506	15,745	40,371
3	..... 1920..... acres..	42,030	33,724	138,170	46,042	8,500	40,474
4	Increase, ² 1920-1930..... per cent..	64.7	64.0	-6.5	40.1	85.2	-0.2
5	Area of all enterprises (overlapping areas included)..... 1930..... acres..	83,221	67,128	133,507	64,506	15,745	40,371
5	Excess over land in enterprises (total areas overlapping)..... acres..	12,500	11,821	4,260			
CONDITION AND USE OF LAND							
7	Land unfit to raise any crop..... 1930..... acres..	13,838	7,725	6,945	565		1,800
8	Land unfit to raise any crop prior to drainage..... acres..	35,320	11,051	81,074	13,787		27,034
9	Decrease since drainage..... per cent..	60.8	35.4	91.5	95.9		93.0
10	Land fit to raise a normal crop..... 1930..... acres..	43,040	45,222	110,387	63,041	15,745	45,304
11	Land fit to raise a normal crop prior to drainage..... acres..	16,348	9,007	30,034	48,030	12,031	13,503
12	Increase since drainage..... per cent..	103.3	352.4	250.8	31.5	24.7	234.0
13	Land fit to raise a partial crop..... 1930..... acres..	13,843	2,300	11,915			2,177
14	Land fit to raise a partial crop prior to drainage..... acres..	10,047	33,350	16,339	2,080	3,114	8,774
15	Decrease since drainage..... per cent..	27.3	92.9	27.1	100.0	100.0	75.2
16	Improved land..... 1930..... acres..	45,270	46,882	125,718	64,160	15,745	30,813
17	..... 1920..... acres..	35,195	28,702	130,009	40,526	6,400	40,059
18	Increase, ² 1920-1930..... per cent..	28.6	63.0	-4.0	58.3	146.0	-0.6
19	Unimproved land—						
20	Woodland..... 1930..... acres..	18,802	3,025	650	240		7,212
20	Other..... 1930..... acres..	6,640	4,800	2,879	100		2,346
21	Land in occupied farms..... 1930..... acres..	70,521	55,307	120,247	64,506	15,745	40,371
22	Land in planted crops..... 1930..... acres..	30,830	39,752	100,661	58,124	14,173	33,112
23	Woodland cleared and cultivated since drainage..... 1930..... acres..	15,085	725	2,560	100		11,385
24	Land idle..... 1930..... acres..	10,648	8,764	2,395	135		0,622
DRAINAGE WORKS, 1930							
25	Ditches—						
26	Completed..... miles..	131.3	90.7	221.8	74.6	0.0	107.0
26	Additional under construction..... miles..	4.5	0.5	5.0			
27	Tile drains—						
28	Completed..... miles..	0.1	1.8	32.0	60.7	0.2	60.5
28	Additional under construction..... miles..						
29	Levees and dikes—						
30	Completed..... miles..	1.0	0.2	8.1			8.0
30	Additional under construction..... miles..						
31	Pumping plants—						
32	Engine or motor capacity..... horsepower..	200					200
32	Pump capacity..... gals. per min..	10,000					25,000
33	Land served by pumps..... acres..	9,041					2,585
34	Land drained by ditches only ³ acres..	59,435	53,424	31,707	30,852	6,124	23,228
35	Length of ditches..... miles..	101.9	89.1	87.6	47.9	0.5	46.0
36	Land drained by tile only ³ acres..		658	1,707	14,426	7,016	
37	Length of tile..... miles..		1.8	7.0	36.1	0.7	
38	Land drained by ditches and tile ³ acres..			69,604	19,228	2,605	17,847
39	Length of ditches..... miles..			90.5	26.7	0.1	48.0
40	Length of tile..... miles..			16.7	30.6	2.5	10.5
41	Land having ditches and levees ³ acres..		1,225				5,506
42	Length of ditches..... miles..		2.1				6.6
43	Length of levees..... miles..		0.2				3.0
44	Land having ditches, tile drains, and levees..... acres..	1,200		20,079			
45	Length of ditches..... miles..	3.9		48.7			
46	Length of tile..... miles..	0.1		8.3			
47	Length of levees..... miles..	0.6		8.1			
48	Land drained by pumps and other drainage works ⁴ acres..	10,080					2,700
49	Length of ditches..... miles..	30.0					7.0
50	Length of tile..... miles..						50.0
51	Length of levees..... miles..	1.3					5.0
52	Land protected by levees of an outside agency..... acres..				10		12,045
CAPITAL INVESTED AND COST PER ACRE							
53	Capital invested in enterprises to Jan. 1, 1930..... dollars..	843,185	561,367	1,060,911	460,170	128,808	1,684,312
54	..... 1920..... dollars..	282,959	233,402	883,204	334,849	147,750	807,236
55	Increase, ² 1920-1930..... per cent..	198.0	140.5	20.1	37.4	-12.8	108.7
56	Estimated cost of enterprises when completed..... 1930..... dollars..	891,185	571,367	1,080,911	460,170	128,808	1,684,312
57	..... 1920..... dollars..	282,959	240,044	993,704	388,081	171,000	859,456
58	Average, per acre when completed..... 1930..... dollars..	12.00	10.33	8.36	7.13	8.18	34.12
59	..... 1920..... dollars..	6.59	7.14	7.19	8.44	20.12	17.37
60	Invested in and required for completion of—						
61	Enterprises having ditches only..... 1930..... dollars..	514,608	516,201	419,151	122,863	36,206	264,624
61	Average, per acre..... dollars..	8.60	9.65	13.22	3.98	6.75	11.39
62	Enterprises having tile drains only..... 1930..... dollars..		6,306	19,000	137,570	61,740	
63	Average, per acre..... dollars..		9.72	10.75	9.54	8.80	
64	Enterprises having ditches and tile drains..... 1930..... dollars..			293,000	199,737	31,862	1,070,327
65	Average, per acre..... dollars..			4.20	10.39	12.23	59.37
66	Enterprises having ditches and levees..... 1930..... dollars..		40,680				74,361
67	Average, per acre..... dollars..		40.59				13.20
68	Enterprises having ditches, tile drains, and levees..... 1930..... dollars..	13,603		349,700			
69	Average, per acre..... dollars..	11.41		13.41			
70	Enterprises having pumps and other drainage works..... 1930..... dollars..	362,884					275,000
71	Average, per acre..... dollars..	35.98					101.85

¹ Includes Bond, Effingham, Jackson, McDonough, Pope, Putnam, Richland, Stark, and Winnebago Counties in 1930; and Bond, Jackson, Jasper, McDonough, Marion, Marshall, Pope, Putnam, Richland, and Winnebago Counties for 1920.
² A minus sign (-) denotes decrease.
³ When works under construction have been completed.
⁴ Area of enterprises having some land served by pumps.

INDIANA

APPROXIMATE LOCATION OF LAND IN DRAINAGE ENTERPRISES



INDIANA

Introduction.—Statistics concerning the drainage of lands for agricultural purposes are presented in the following pages. The data relate to drainage conditions as of January 1, 1930, and the crop year 1929. The first drainage census for the United States was that of 1920 and statistics from that census are shown for purposes of comparison.

An organized drainage enterprise may include timbered and other unimproved land not yet in farms. The statistics for drainage on farms were collected in 1930 on the general farm schedule and are shown in the first section of State Table 1 and in County Table I; while those for drainage enterprises were obtained on a special drainage schedule.

Since farm lands provided with drains may be either within or without an organized enterprise, and since these drains may be either supplemental to or independent of the works installed by an enterprise, the figures for the two parts of the drainage census are shown separately.

Summary and condition of land in enterprises.—By far the greater portion of the land in drainage enterprises of Indiana is located in the northern half of the State. This part of the State is rather flat, and much of the land was improved prior to drainage.

Most of the remaining land in enterprises is located in the southwestern part of the State, where protection against overflow was an important object in drainage.

Of all land in enterprises, 91.6 per cent was reported as improved; 6.7 per cent, as woodland; and 1.7 per cent as other unimproved land. Approximately 3 per cent, was unfit to raise any crop for lack of drainage, and 5 per cent was idle in 1929. The reports on the condition of land prior to drainage showed that 53 per cent was then fit to raise a normal crop; 23 per cent was fit to raise a partial crop; and 24 per cent was unfit to grow any crop. The average cost of drainage was \$5.30 per acre, but this figure is probably low due to the fact that work done by the landowners themselves was not estimated at the equivalent contract price.

The average precipitation for the State for 1929 was 47 inches, which is 7.8 inches greater than normal.

The usual purpose of an organized drainage enterprise is to provide adequate outlets into which the farms of the district may be drained, and to afford relief from overflow for the district as a unit. The fact that an enterprise which has completed its works contains land still unfit to raise any crop, or land fit only for a partial crop, does not necessarily show that the works are inadequate.

STATE TABLE 1.—SUMMARY FOR THE STATE: 1930 AND 1929

ITEM (See definitions in Introduction)	CENSUS OF—		INCREASE ¹	
	1930	1929	Amount	Per cent
FARMS AND DRAINAGE ON FARMS				
All farms.....	181,570	205,120	-23,550	-11.5
Farms reporting drainage.....	80,058	111,435	-31,377	-28.2
All land in farms.....	19,088,075	21,093,332	-1,374,057	-6.5
Farm land provided with drainage.....	6,809,417	8,308,844	-1,602,427	-18.1
AREA, DRAINS, AND INVESTMENT IN ENTERPRISES				
Approximate land area of State.....	23,068,800	23,068,800		
Land in drainage enterprises.....	10,214,014	9,087,183	1,126,831	12.4
Improved land.....	9,301,457	7,605,565	1,765,892	23.1
Unimproved land:				
Woodland.....	681,899	942,378	-260,500	-27.6
Other.....	170,688	539,240	-368,552	-68.3
Land unfit to raise any crop for lack of drainage.....	222,269	² 386,320	-164,051	-42.5
Land drained, fit to raise normal crop.....	9,303,527	³		
Land partly drained, fit for partial crop.....	688,218	⁴ 210,078	477,540	226.7
Land in occupied farms.....	10,150,221	³		
Land in planted crops.....	8,454,498	³		
Land idle.....	489,060	³		
Ditches, completed.....	20,788.8	17,470.7	3,318.1	19.0
Tile drains, completed.....	10,488.7	8,227.6	2,211.1	26.0
Capital invested in enterprises.....	54,110,854	31,147,682	22,963,172	73.7
Average, per acre.....	5.30	3.43	1.87	54.5

¹ A minus sign (-) denotes decrease.
² "Swampy or subject to overflow."

³ Not called for on schedule.
⁴ "Suffering a loss of crops from defective drainage."

AREA AND CAPITAL

Area of enterprises.—Statistics by counties require that an enterprise located in more than one county be divided, and the part in each county be considered as a separate enterprise. In this way, 18,339 drainage enterprises are shown for Indiana with an average area of 1,257 acres. There are 705 such enterprises of 5,000 acres or more, 7,762 between 500 and 5,000 acres, and 9,872 of less than 500 acres.

The area of enterprises exceeds the land in enterprises by 12,835,773 acres, which is the amount of overlap. This large amount of overlapping is due in part to the fact that some of the principal ditches are maintained and repaired by forming new enterprises and reassessing the benefited lands for the cost of the necessary work. The amount of overlap was determined by plotting the enterprises on county maps, having a scale of a half-inch to the mile. However, the results are only approximate as the schedules did not contain a description of the boundaries of the enterprises, but gave only the township in which located, the name of the lake or stream receiving the discharge, and the location of the enterprise outlet. The discrepancy in thus determining the overlap probably, will not exceed 5 per cent in any county.

STATE TABLE 2.—AREA OF ENTERPRISES, BY SIZE: 1930 AND 1920

SIZE GROUP	AREA OF ENTERPRISES ¹				Land in enterprises, 1930 Acres
	1930		1920		
	Acres	Per cent	Acres	Per cent	
All enterprises.....	23,040,787	100.0	15,015,221	100.0	10,214,014
Less than 100 acres.....	120,776	0.5	255,985	1.7	53,983
100 to 199 acres.....	307,243	1.3	1,218,792	8.1	197,571
200 to 499 acres.....	1,720,422	7.5	2,098,534	14.0	989,248
500 to 999 acres.....	2,806,060	12.0	5,017,315	33.4	1,643,358
1,000 to 4,999 acres.....	7,250,727	31.5	1,718,075	11.5	3,727,747
5,000 to 9,999 acres.....	2,727,803	11.8	2,017,817	13.4	1,109,008
10,000 to 49,999 acres.....	5,088,605	22.1	1,032,004	6.9	1,677,442
50,000 to 99,999 acres.....	1,878,000	8.2	755,700	5.0	591,187
100,000 acres and over.....	1,044,155	4.5			283,870

¹ The sum of the areas of individual enterprises, including overlap.

Character of enterprise.—Organized drainage enterprises having executive officers exclusively their own, chosen according to the State drainage laws, are classed as *drainage districts*.

Enterprises which, in common with others, are under the control of State, county, or township officials are classed as *State projects*, *county drains*, or *township drains*, according to the public officials in control.

Enterprises under the control of individuals, or organizations engaged in the draining of land for purposes of development, subdivision, and sale, are classed as *commercial developments*.

Enterprises without legal organization, as such, belonging to individuals, partnerships, or agricultural companies, are classed as *individually owned projects*. Projects of this type are included only when the area drained is 500 acres or more.

STATE TABLE 3.—LAND AND CAPITAL, BY CHARACTER OF ENTERPRISE, 1930

CHARACTER OF ENTERPRISE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	10,214,014	100.0	54,110,854	100.0
Drainage districts.....	10,460	0.2	231,274	0.4
County drains.....	10,178,828	99.6	53,670,271	99.0
Commercial developments.....	1,500	(¹)	76,700	0.2
Individually owned projects.....	14,226	0.1	223,600	0.4

¹ Less than one-tenth of 1 per cent.

Type of drainage.—There were 18,326 enterprises, covering 10,208,742 acres of land, with an invested capital of \$54,021,422, which reported their works as completed.

There were 13 enterprises, covering 5,272 acres of land, with an invested capital of \$89,432, which estimated that \$92,492 would be required to complete the drainage works under construction.

The works completed to January 1, 1930, included approximately 20,787 miles of ditches, 10,439 miles of tile drains, 132 miles of levees, and 4 pumping plants. These figures do not include drains or levees installed by individual farmers supplemental to the works of an enterprise.

STATE TABLE 4.—LAND AND CAPITAL, BY TYPE OF DRAINAGE, 1930

TYPE OF DRAINAGE (See definitions in Introduction)	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	10,214,014	100.0	54,110,854	100.0
Gravily drainage only.....	10,200,575	99.9	53,999,327	99.8
Ditches and levees.....	6,084,055	59.6	29,309,214	54.2
Tile drains.....	2,088,780	20.4	10,938,127	20.2
Ditches, tile drains, and levees.....	2,036,740	19.9	13,751,980	25.4
Drainage, all or part by pumping.....	4,480	(¹)	111,527	0.2
All drainage by pumping.....	1,133	(¹)	20,000	(¹)
Part gravily and part pumping.....	3,306	(¹)	91,527	0.2

¹ Less than one-tenth of 1 per cent.

Pumping plants.—There were 4 pumping plants reported in Indiana. The total horsepower of these plants was 166, the total capacity of the pumps was 48,000 gallons per minute, and the area served was 2,763 acres.

STATE TABLE 5.—PUMPING PLANTS AND LAND SERVED, BY KIND OF POWER: 1930 AND 1920

KIND OF POWER	Enterprises	Engine or motor capacity		Pump capacity G. p. m.	Land served Acres
		Number	Per cent		
All enterprises.....	1930..	4	166	48,000	2,763
	1920..	4	625	55,348	5,611
Internal combustion.....	1930..	1	100	30,000	1,500
	1920..	2	50	18,000	1,133
Steam.....	1930..	4	625	55,348	5,611
	1920..	1	16	2,000	130

STATE TABLE 6.—PUMPING PLANTS AND LAND SERVED, BY KIND OF PUMP, 1930

KIND OF PUMP	Pumps	Pump capacity		Engine or motor capacity	Land served
		G. p. m.	Per cent		
All enterprises.....	Number 7	48,000	100.0	H. p. 166	Acres 2,763
Centrifugal.....	6	42,000	87.5	141	2,183
Rotary.....	1	6,000	12.5	25	600

Arrears and delinquency.—There were 135 enterprises, with approximately 2 per cent of the invested capital and covering about 3 per cent of the land in organized districts, reported as in arrears in payment of principal or interest on bonds or other obligations; while the remaining 18,204 enterprises reported no arrearage. There were 128 enterprises, covering 308,812 acres, that reported a total of 99,698 acres delinquent in drainage taxes; 18,189 enterprises, covering 9,731,831 acres, reported no delinquency; while 22 enterprises failed to report.

STATE TABLE 7.—LAND, CAPITAL INVESTED, AND AREA DELINQUENT IN DRAINAGE TAXES, ACCORDING TO ARREARAGE IN PAYMENT OF PRINCIPAL OR INTEREST ON BONDS OR OTHER OBLIGATIONS, 1930

FINANCIAL STATUS	Land		Capital invested to Jan. 1, 1930		Area delinquent
	Acres	Per cent	Dollars	Per cent	
All enterprises.....	10,214,014	100.0	54,110,854	100.0	99,698
Enterprises in arrears.....	287,050	2.8	1,160,540	2.1	79,180
With some delinquent land.....	215,935	2.1	870,800	1.6	79,180
With no delinquent land.....	9,941	0.1	35,064	0.1	-----
With no report on delinquency.....	62,080	0.6	248,626	0.4	-----
Enterprises not in arrears.....	9,926,058	97.2	52,950,314	97.0	20,518
With some delinquent land.....	92,877	0.9	744,461	1.4	20,518
With no delinquent land.....	9,721,890	95.2	51,228,460	94.7	-----
With no report on delinquency.....	111,291	1.1	977,393	1.8	-----

Purpose of drainage.—In some cases the drainage development accomplished two or more purposes. An enterprise, prior to drainage, may contain swamp land, improved land in farms, and land subject to overflow. The object in drainage may be to reclaim or benefit all such lands. However, the land is classified according to the principal purpose reported.

The enterprises reporting "Improvement of land already in farms" as the principal purpose of drainage doubtless contained considerable swampy and wet lands which were either unfit or only partially fit for cultivation prior to drainage.

STATE TABLE 8.—LAND AND CAPITAL, BY PURPOSE OF DRAINAGE, 1930

PURPOSE OF DRAINAGE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	10,214,014	100.0	54,110,854	100.0
Reclamation of swamp land not previously in farms.....	564,382	5.5	3,002,407	5.6
Improvement of land already in farms.....	9,601,997	94.0	50,642,784	94.1
Protection against overflow.....	47,635	0.5	165,663	0.3

Date of organization.—A period of one or more years may elapse between the date of organization and the beginning of actual construction, and in large enterprises the work may extend over a period of several years. For these reasons the original drainage was accomplished somewhat later than the dates shown. It was not feasible to secure dates of beginning and ending of construction work, so the date of establishment of each enterprise was used.

STATE TABLE 9.—LAND AND CAPITAL, BY DATE OF ORGANIZATION, 1930

DATE OF ORGANIZATION	Land		Area of enterprises ¹		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Acres	Overlapped acres	Dollars	Per cent
All enterprises.....	10,214,014	100.0	23,049,787	12,835,773	54,110,854	100.0
Before 1870.....	63,258	0.6	64,078	820	82,304	0.1
1870-1879.....	1,058,651	10.4	1,205,842	147,191	1,442,192	2.7
1880-1889.....	2,502,801	24.5	3,518,205	1,015,314	5,712,936	10.6
1890-1899.....	1,063,232	10.3	3,136,382	1,473,150	5,140,083	9.5
1900-1904.....	1,278,471	12.5	2,584,437	1,305,066	5,201,750	9.6
1905-1909.....	1,062,098	10.4	2,521,770	1,458,772	5,527,576	10.2
1910-1914.....	1,220,091	12.1	3,292,730	2,063,648	8,370,110	15.5
1915-1919.....	696,917	6.8	2,894,595	2,187,048	9,000,074	18.3
1920-1924.....	288,584	2.8	1,541,806	1,263,812	5,865,225	10.8
1925-1929.....	369,921	3.6	2,299,873	1,929,952	6,850,604	12.7

¹ Includes overlap.

STATE TABLE 10.—CONDITION OF LAND AND LAND AVAILABLE FOR SETTLEMENT, BY DATE OF ORGANIZATION, 1930

DATE OF ORGANIZATION	LAND IN ENTERPRISES					
	Total	Condition of land			Land available for settlement	
		Improved land	Woodland	Other unimproved land		
All enterprises.....	Acres 10,214,014	Acres 9,361,467	Per cent 91.7	Acres 681,869	Acres 170,688	Acres 4,359
Before 1870.....	63,258	58,760	92.9	4,049	440	-----
1870-1879.....	1,058,651	972,508	91.9	73,773	12,370	175
1880-1889.....	2,502,801	2,317,187	92.6	169,610	26,194	1,672
1890-1899.....	1,063,232	1,515,894	91.1	109,416	37,623	360
1900-1904.....	1,278,471	1,163,554	91.0	92,119	22,708	109
1905-1909.....	1,062,098	982,623	92.4	64,772	15,003	48
1910-1914.....	1,220,091	1,108,070	90.2	90,177	30,844	-----
1915-1919.....	696,917	631,864	90.7	40,627	18,120	925
1920-1924.....	288,584	205,814	92.1	18,800	3,070	1,170
1925-1929.....	369,921	345,183	93.3	22,327	2,411	-----

Method of maintenance.—Some enterprises reported more than one method of maintenance, but in such cases the principal method is shown. When the maintenance work involves the cleaning out, deepening, and widening of county drains constructed wholly or partly with dredges, the proceedings are similar to those for constructing a new drain and the cost is assessed against the land benefited. Many enterprises are thus reorganized for maintenance work, and this accounts for much of the overlapping of enterprises in Indiana. Public drains, other than dredged ditches, are repaired and maintained under the supervision of the township trustees, who either apportion the necessary work to landowners or let contracts for the same.

Systematic maintenance was reported by 14,021 enterprises, covering 6,396,327 acres of land and having an invested capital of \$33,835,652; while 4,318

enterprises, covering 3,817,687 acres of land, with an invested capital of \$20,275,202, did not have systematic maintenance.

There were 160 enterprises, with an invested capital of \$567,207, and covering 109,360 acres of land, that reported ownership of excavators or other power equipment used principally for maintenance; while 18,179 enterprises, with an invested capital of \$53,543,647, and covering 10,104,654 acres of land, did not report any such equipment.

STATE TABLE 11.—LAND AND CAPITAL, BY METHOD OF MAINTENANCE, 1930

METHOD OF MAINTENANCE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per ct.
All enterprises.....	10,214,014	100.0	54,110,554	100.0
By district forces.....	340,458	3.4	1,431,351	2.6
By contract.....	3,142,209	30.8	17,785,833	32.9
By work apportioned to landowners.....	5,614,918	55.0	27,627,025	51.1
Other, none, and not reported.....	1,107,369	10.8	7,266,045	13.4

Cost of operation and maintenance.—Since many enterprises do not have annual maintenance, it is necessary to include those that reported *no* cost as well

110111—32—0

as those that reported *some* cost for 1929, in order to determine a fair average cost of maintenance for the State. Approximately 7 per cent of the land reporting showed some cost, and 93 per cent showed no cost in 1929. The average cost for all enterprises was 3 cents per acre, while that for enterprises drained all or part by pumping was 61 cents per acre. The costs here shown are very low, due largely to the fact that much of the maintenance work is done by again organizing the land as new enterprises and assessing it for the maintenance costs.

STATE TABLE 12.—LAND AND COST OF OPERATION AND MAINTENANCE, 1929, BY TYPE OF DRAINAGE

TYPE OF DRAINAGE (See definitions in Introduction)	Land reporting on cost	COST REPORTED	
		Total	Per acre
All enterprises reporting.....	Acres 10,112,668	Dollars 295,385	Dollars 0.03
Gravity drainage only.....	10,108,220	292,685	0.03
Ditches and levees.....	5,982,709	175,052	0.03
Tile drains.....	2,088,730	21,854	0.01
Ditches, tile drains, and levees.....	2,030,740	94,879	0.05
Drainage, all or part by pumping.....	4,430	2,700	0.61

DRAINAGE—INDIANA

COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER ACRE, AND CONDITION AND USE OF LAND, 1930 AND 1920; AND DRAINAGE WORKS, 1930

ITEM (See definitions in Introduction)		THE STATE	Adams	Allen	Bartholomew	Benton	Blackford	Boone	Carroll
LAND AREA									
1	Approximate land area.....1930.....acres..	23,008,800	215,080	423,040	200,480	201,120	107,520	273,280	241,280
2	Land in enterprises.....1930.....acres..	10,214,014	205,736	349,342	20,413	156,013	93,259	220,176	174,889
3	.....1920.....acres..	9,087,183	212,044	391,540	19,007	103,574	91,731	252,887	103,404
4	Increase, ¹ 1920-1930.....per cent..	12.4	-3.2	-10.8	7.4	50.5	7.1	-12.9	7.0
5	Area of all enterprises (overlapping areas included).....1930.....acres..	23,040,787	840,637	1,345,941	20,413	222,080	232,990	380,102	280,059
6	Excess over land in enterprises (total areas overlapping).....acres..	12,825,773	635,101	996,599	-----	67,067	134,731	160,016	111,170
CONDITION AND USE OF LAND									
7	Land unfit to raise any crop.....1930.....acres..	222,260	-----	4,000	104	502	626	4,134	2,855
8	Land unfit to raise any crop prior to drainage.....acres..	2,430,789	50,872	40,514	7,013	11,515	20,829	98,814	65,050
9	Decrease since drainage.....per cent..	90.9	100.0	91.2	97.2	95.1	97.0	95.8	94.8
10	Land fit to raise a normal crop.....1930.....acres..	9,303,527	205,728	280,419	19,001	153,200	96,124	202,958	168,133
11	Land fit to raise a normal crop prior to drainage.....acres..	5,417,022	128,163	194,301	7,406	69,691	53,720	83,574	90,490
12	Increase since drainage.....per cent..	71.7	60.5	48.9	156.6	156.8	78.0	142.8	74.2
13	Land fit to raise a partial crop.....1930.....acres..	688,218	8	55,827	1,218	2,061	1,500	13,084	3,901
14	Land fit to raise a partial crop prior to drainage.....acres..	2,395,003	20,791	108,437	5,994	84,707	23,710	37,788	23,343
15	Decrease since drainage.....per cent..	70.0	99.9	48.5	70.7	97.0	93.0	65.4	83.3
16	Improved land.....1930.....acres..	9,361,457	205,170	302,555	19,910	153,145	85,708	202,470	168,004
17	.....1920.....acres..	7,095,595	172,400	281,817	14,012	84,313	79,464	220,080	147,037
18	Increase, ¹ 1920-1930.....per cent..	23.1	19.0	7.4	42.2	81.0	8.0	-8.3	14.3
19	Unimproved land—								
20	Woodland.....1930.....acres..	681,869	420	38,557	196	2,228	12,008	10,393	6,570
21	Other.....1930.....acres..	170,688	140	8,230	208	540	453	1,804	265
22	Land in occupied farms.....1930.....acres..	10,150,221	205,736	349,187	20,283	155,013	98,259	220,130	174,678
23	Land in planted crops.....1930.....acres..	8,454,498	184,268	298,754	18,007	139,008	82,073	200,654	163,646
24	Woodland cleared and cultivated since drainage.....1930.....acres..	988,330	8,189	50,069	7,229	2,215	19,077	30,999	35,413
25	Land idle.....1930.....acres..	486,600	3	3,127	616	741	2,413	2,292	4,908
26	Land available for settlement.....1930.....acres..	4,359	-----	-----	-----	-----	-----	10	-----
DRAINAGE WORKS, 1930									
26	Ditches—								
27	Completed.....miles..	20,780.8	642.7	1,061.3	50.1	121.8	200.2	467.3	301.4
28	Additional under construction.....miles..	33.2	0.2	-----	-----	-----	-----	-----	1.2
29	Tile drains—								
28	Completed.....miles..	10,438.7	326.0	371.2	0.9	135.9	67.1	172.6	310.1
29	Additional under construction.....miles..	16.7	-----	-----	-----	-----	-----	-----	9.7
30	Levees and dikes—								
31	Completed.....miles..	131.9	-----	-----	-----	-----	-----	-----	-----
32	Pumping plants—								
33	Engine or motor capacity.....horsepower..	100	-----	-----	-----	-----	-----	-----	-----
34	Pump capacity.....gals. per min..	48,000	-----	-----	-----	-----	-----	-----	-----
35	Land served by pumps.....acres..	2,793	-----	-----	-----	-----	-----	-----	-----
36	Land drained by ditches only ².....acres..	5,005,308	80,270	289,830	16,345	60,159	40,259	125,002	70,097
37	Length of ditches.....miles..	16,464.3	450.5	970.2	53.8	73.2	141.4	408.7	384.6
38	Land drained by tile only ³.....acres..	2,088,780	60,460	37,740	2,872	55,354	23,700	65,499	78,032
39	Length of tile.....miles..	6,603.8	210.1	280.1	9.8	102.3	67.0	127.4	244.2
40	Land drained by ditches and tile ⁴.....acres..	1,985,170	65,006	21,772	1,100	40,400	28,300	20,075	26,760
41	Length of ditches.....miles..	4,064.2	133.4	91.1	2.3	48.6	58.8	48.6	63.1
42	Length of tile.....miles..	3,871.0	114.0	91.1	0.6	33.6	29.2	45.2	76.0
43	Land having ditches and levees ⁴.....acres..	178,747	-----	-----	-----	-----	-----	-----	-----
44	Length of ditches.....miles..	242.4	-----	-----	-----	-----	-----	-----	-----
45	Length of levees.....miles..	117.6	-----	-----	-----	-----	-----	-----	-----
46	Land having ditches, tile drains, and levees ⁴.....acres..	51,670	-----	-----	-----	-----	-----	-----	-----
47	Length of ditches.....miles..	37.2	-----	-----	-----	-----	-----	-----	-----
48	Length of tile.....miles..	6.0	-----	-----	-----	-----	-----	-----	-----
49	Length of levees.....miles..	4.3	-----	-----	-----	-----	-----	-----	-----
50	Land drained by pumps and other drainage works ⁴.....acres..	4,430	-----	-----	-----	-----	-----	-----	-----
51	Length of ditches.....miles..	11.9	-----	-----	-----	-----	-----	-----	-----
52	Length of tile.....miles..	12.4	-----	-----	-----	-----	-----	-----	-----
53	Length of levees.....miles..	10.0	-----	-----	-----	-----	-----	-----	-----
54	Land protected by levees of an outside agency.....acres..	27,740	-----	-----	-----	-----	-----	-----	-----
CAPITAL INVESTED AND COST PER ACRE									
53	Capital invested in enterprises to Jan. 1, 1930.....dollars..	54,110,854	1,073,602	2,461,352	47,801	807,096	627,882	767,088	902,009
54	.....1920.....dollars..	31,147,682	943,698	1,306,069	72,042	308,431	461,828	482,053	530,330
55	Increase, ¹ 1920-1930.....per cent..	73.7	13.8	88.4	-33.0	161.7	36.0	50.8	81.4
56	Estimated cost of enterprises when completed.....1930.....dollars..	54,203,346	1,073,602	2,461,352	47,801	807,096	627,882	767,088	983,750
57	.....1920.....dollars..	31,043,858	943,698	1,324,245	72,042	308,431	465,578	482,053	543,424
58	Average, per acre when completed.....1930.....dollars..	5.31	5.22	7.05	2.34	5.18	6.39	3.44	5.63
59	.....1920.....dollars..	3.52	4.44	3.38	3.79	2.98	5.08	1.91	3.32
60	Invested in and required for completion of—								
61	Enterprises having ditches only.....1930.....dollars..	27,800,020	435,309	1,006,007	38,310	193,822	271,025	465,841	323,602
62	Average, per acre.....dollars..	4.72	5.43	5.54	2.34	3.22	5.86	3.73	4.62
63	Enterprises having tile drains only.....1930.....dollars..	10,061,074	213,373	532,025	7,040	293,401	120,531	146,374	450,352
64	Average, per acre.....dollars..	5.25	3.54	14.12	2.45	5.39	5.09	2.23	5.80
65	Enterprises having ditches and tile drains.....1930.....dollars..	13,670,926	423,920	322,420	2,445	314,873	236,320	144,873	200,802
66	Average, per acre.....dollars..	0.84	0.52	14.81	2.04	7.79	8.35	4.88	7.50
67	Enterprises having ditches and levees.....1930.....dollars..	1,457,139	-----	-----	-----	-----	-----	-----	-----
68	Average, per acre.....dollars..	8.15	-----	-----	-----	-----	-----	-----	-----
69	Enterprises having ditches, tile drains, and levees.....1930.....dollars..	227,600	-----	-----	-----	-----	-----	-----	-----
70	Average, per acre.....dollars..	4.41	-----	-----	-----	-----	-----	-----	-----
71	Enterprises having pumps and other drainage works.....1930.....dollars..	111,527	-----	-----	-----	-----	-----	-----	-----
72	Average, per acre.....dollars..	25.12	-----	-----	-----	-----	-----	-----	-----

¹ A minus sign (—) denotes decrease.
² Office estimate; the reported figures exceeded the improved acreage in all farms in the county as determined by the census of agriculture.
³ When works under construction have been completed.
⁴ Area of enterprises having some land served by pumps.

COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER ACRE,

ITEM (See definitions in Introduction)		Cass	Clay	Clinton	Davless	De Kalb	Delaware	Dubois	Elkhart
LAND AREA									
1	Approximate land area.....1930.....acres..	206,240	231,040	201,120	277,120	230,800	250,880	273,280	205,680
2	Land in enterprises.....1930.....acres..	102,346	47,892	210,915	115,140	220,132	200,272	17,800	200,865
3	.....1920.....acres..	218,421	59,050	87,339	40,276	215,869	248,896	8,389	280,847
4	Increase, ¹ 1920-1930.....per cent..	-11.9	-18.9	141.5	185.9	2.0	-10.5	112.2	-28.7
5	Area of all enterprises (overlapping areas included).....1930.....acres..	493,448	59,094	603,300	133,821	607,078	437,640	17,800	282,000
6	Excess over land in enterprises (total areas overlapping).....acres..	271,102	11,202	392,391	18,681	440,946	237,377	.....	82,625
CONDITION AND USE OF LAND									
7	Land unfit to raise any crop.....1930.....acres..	07	.....	1,411	4,710	3,550	774	861	0,274
8	Land unfit to raise any crop prior to drainage.....acres..	84,793	0,000	74,477	21,042	44,780	25,796	4,475	58,270
9	Decrease since drainage.....per cent..	99.0	100.0	98.1	77.6	93.1	97.0	80.8	84.1
10	Land fit to raise a normal crop.....1930.....acres..	188,133	40,180	100,510	110,430	210,837	199,269	14,503	168,583
11	Land fit to raise a normal crop prior to drainage.....acres..	32,925	15,590	90,013	64,098	146,662	170,466	1,923	100,561
12	Increase since drainage ¹.....per cent..	471.4	100.3	111.0	72.3	44.3	16.9	654.2	58.2
13	Land fit to raise a partial crop.....1930.....acres..	4,146	1,706	18,994	.....	5,745	289	2,436	22,508
14	Land fit to raise a partial crop prior to drainage.....acres..	74,623	26,235	46,425	30,000	29,200	4,010	11,402	35,531
15	Decrease since drainage ¹.....per cent..	94.4	93.5	59.1	100.0	80.4	92.8	78.6	36.7
16	Improved land.....1930.....acres..	182,399	47,247	202,619	109,780	198,305	182,459	13,619	183,512
17	.....1920.....acres..	106,581	40,497	77,982	40,142	141,782	190,985	7,823	217,623
18	Increase, ¹ 1920-1930.....per cent..	-7.2	-4.5	169.8	166.0	39.9	-7.4	74.1	-15.7
Unimproved land—									
19	Woodland.....1930.....acres..	9,579	455	7,988	7,160	19,900	17,151	3,270	8,602
20	Other.....1930.....acres..	368	190	308	1,200	1,927	662	911	8,101
21	Land in occupied farms.....1930.....acres..	102,216	47,047	210,721	115,140	220,132	200,268	17,800	199,745
22	Land in planted crops.....1930.....acres..	175,818	37,595	191,780	98,440	187,400	167,185	12,653	107,482
23	Woodland cleared and cultivated since drainage.....1930.....acres..	33,065	2,700	53,448	1,395	9,638	4,815	810	10,024
24	Land idle.....1930.....acres..	101	5,159	451	8,275	7,805	1,962	3,520	12,051
25	Land available for settlement.....1930.....acres..	1,170	.....	.....	.....	.....	945	.....	.....
DRAINAGE WORKS, 1930									
Ditches—									
26	Completed.....miles	485.4	81.2	555.8	90.1	572.6	340.0	42.5	406.1
27	Additional under construction.....miles	.....	.....	.....	4.0	.....	.....	.....	.....
Tile drains—									
28	Completed.....miles	272.3	5.7	310.1	20.3	445.4	328.0	.....	75.7
29	Additional under construction.....miles	.....	.....	.....	2.0	.....	.....	.....	.....
Levees and dikes—									
30	Completed.....miles	.....	10.6	.....	.....	0.3	.....	2.3	.....
Pumping plants—									
31	Engine or motor capacity.....horsepower	.....	.....	.....	.....	.....	.....	.....	.....
32	Pump capacity.....gals. per min.	.....	.....	.....	.....	.....	.....	.....	.....
33	Land served by pumps.....acres	.....	.....	.....	.....	.....	.....	.....	.....
34	Land drained by ditches only ².....acres	76,340	33,632	98,200	91,000	83,400	58,872	10,030	139,053
35	Length of ditches.....miles	392.1	53.3	427.5	76.3	415.7	217.0	25.6	346.3
36	Land drained by tile only ².....acres	52,400	2,340	59,000	.....	85,600	66,600	.....	14,312
37	Length of tile.....miles	164.9	3.1	165.7	.....	326.9	199.3	.....	30.1
38	Land drained by ditches and tile ².....acres	63,600	1,980	53,715	24,140	42,000	74,800	.....	47,000
39	Length of ditches.....miles	93.3	4.0	128.3	24.8	143.4	132.3	.....	50.8
40	Length of tile.....miles	107.4	2.6	144.4	22.3	118.5	129.3	.....	39.6
41	Land having ditches and levees ³.....acres	.....	9,040	.....	.....	9,132	.....	7,161	.....
42	Length of ditches.....miles	.....	23.9	.....	.....	8.5	.....	10.9	.....
43	Length of levees.....miles	.....	10.6	.....	.....	0.3	.....	2.3	.....
44	Land having ditches, tile drains, and levees.....acres	.....	.....	.....	.....	.....	.....	.....	.....
45	Length of ditches.....miles	.....	.....	.....	.....	.....	.....	.....	.....
46	Length of tile.....miles	.....	.....	.....	.....	.....	.....	.....	.....
47	Length of levees.....miles	.....	.....	.....	.....	.....	.....	.....	.....
48	Land drained by pumps and other drainage works ⁴.....acres	.....	.....	.....	.....	.....	.....	.....	.....
49	Length of ditches.....miles	.....	.....	.....	.....	.....	.....	.....	.....
50	Length of tile.....miles	.....	.....	.....	.....	.....	.....	.....	.....
51	Length of levees.....miles	.....	.....	.....	.....	.....	.....	.....	.....
52	Land protected by levees of an outside agency.....acres	.....	8,715	.....	.....	595	.....	.....	.....
CAPITAL INVESTED AND COST PER ACRE									
53	Capital invested in enterprises to Jan. 1, 1930.....dollars	1,044,571	347,368	1,309,692	255,593	1,607,279	984,640	93,973	463,814
54	.....1920.....dollars	960,800	380,223	224,420	104,304	841,020	422,035	60,697	523,692
55	Increase, ¹ 1920-1930.....per cent..	8.7	-8.6	522.4	145.0	101.8	133.3	54.8	-11.4
56	Estimated cost of enterprises when completed.....1930.....dollars	1,044,571	347,368	1,309,692	261,799	1,607,279	984,640	93,973	463,814
57	.....1920.....dollars	960,800	301,223	224,420	104,304	879,466	422,035	60,697	523,692
58	Average, per acre when completed.....1930.....dollars	5.43	7.25	6.92	2.27	7.71	4.92	5.28	2.31
59	.....1920.....dollars	4.40	6.63	2.57	2.59	4.07	1.70	7.24	1.88
Invested in and required for completion of—									
60	Enterprises having ditches only.....1930.....dollars	370,448	263,958	537,397	199,114	608,984	282,625	50,599	328,891
61	Average, per acre.....dollars	4.85	7.55	5.47	2.19	7.30	4.80	4.70	2.37
62	Enterprises having tile drains only.....1930.....dollars	259,864	18,090	362,043	.....	640,547	257,329	.....	37,244
63	Average, per acre.....dollars	4.96	7.60	6.14	.....	7.59	3.86	.....	2.60
64	Enterprises having ditches and tile drains.....1930.....dollars	414,259	21,364	497,252	62,015	389,516	444,636	.....	97,679
65	Average, per acre.....dollars	6.51	10.70	9.26	2.59	9.28	5.95	.....	2.08
66	Enterprises having ditches and levees.....1930.....dollars	.....	54,040	.....	.....	48,932	.....	43,874	.....
67	Average, per acre.....dollars	.....	5.44	.....	.....	5.30	.....	6.00	.....
68	Enterprises having ditches, tile drains, and levees.....1930.....dollars	.....	.....	.....	.....	.....	.....	.....	.....
69	Average, per acre.....dollars	.....	.....	.....	.....	.....	.....	.....	.....
70	Enterprises having pumps and other drainage works.....1930.....dollars	.....	.....	.....	.....	.....	.....	.....	.....
71	Average, per acre.....dollars	.....	.....	.....	.....	.....	.....	.....	.....

¹ A minus sign (-) denotes decrease. A plus sign (+) denotes increase. Per cent not shown when more than 1,000.
² Office estimate; the reported figures exceeded the improved acreage in all farms in the county as determined by the census of agriculture.
³ When works under construction have been completed.
⁴ Area of enterprises having some land served by pumps.

DRAINAGE—INDIANA

COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER ACRE,

ITEM (See definitions in Introduction)		Jay	Jennings	Johnson	Knox	Kosciusko	Lagrange	Lake	La Porte
LAND AREA									
1	Approximate land area..... 1930..... acres.....	240,000	245,120	206,080	326,400	340,240	247,680	314,880	380,800
2	Land in enterprises..... 1930..... acres.....	237,104	3,315	82,746	186,120	314,700	133,104	144,373	241,000
3	..... 1920..... acres.....	179,712	4,000	33,544	112,496	308,708	192,212	112,008	180,843
4	Increase, ¹ 1920-1930..... per cent.....	32.0	-17.1	146.7	65.4	2.0	-30.8	28.9	33.3
5	Area of all enterprises (overlapping areas included)..... 1930..... acres.....	808,266	3,315	88,891	262,200	763,314	198,657	298,665	552,180
6	Excess over land in enterprises (total areas overlapping)..... acres.....	671,072	.....	6,145	76,080	448,524	65,553	154,292	311,180
CONDITION AND USE OF LAND									
7	Land unfit to raise any crop..... 1930..... acres.....	639	.....	.....	.....	3,509	3,220	600	18,702
8	Land unfit to raise a normal crop prior to drainage..... acres.....	41,432	2,600	67,944	30,270	77,069	18,461	25,182	73,670
9	Decrease since drainage..... per cent.....	98.5	100.0	100.0	100.0	66.4	82.6	97.6	74.5
10	Land fit to raise a normal crop..... 1930..... acres.....	233,852	2,915	82,746	186,120	308,924	118,400	137,904	105,323
11	Land fit to raise a normal crop prior to drainage..... acres.....	164,954	715	11,132	155,850	190,120	82,819	88,710	93,803
12	Increase since drainage..... per cent.....	50.9	307.7	643.3	19.4	57.5	43.0	55.5	108.2
13	Land fit to raise a partial crop..... 1930..... acres.....	2,703	400	.....	.....	2,357	11,484	5,800	26,885
14	Land fit to raise a partial crop prior to drainage..... acres.....	40,808	.....	3,670	.....	41,610	31,824	30,481	78,518
15	Decrease since drainage ¹ per cent.....	98.4	.....	100.0	.....	94.3	63.9	80.8	83.4
16	Improved land..... 1930..... acres.....	222,743	2,885	82,264	186,120	298,994	131,702	143,660	210,508
17	..... 1920..... acres.....	161,262	3,080	31,709	95,209	220,035	141,370	82,614	102,759
18	Increase, ¹ 1920-1930..... per cent.....	38.1	-6.3	159.4	95.3	30.5	-6.8	73.7	34.9
Unimproved land—									
19	Woodland..... 1930..... acres.....	14,414	430	202	.....	12,371	900	210	17,288
20	Other..... 1930..... acres.....	37	.....	200	.....	3,425	442	685	4,204
21	Land in occupied farms..... 1930..... acres.....	236,844	3,315	82,746	186,120	314,700	133,097	144,373	236,580
22	Land in planted crops..... 1930..... acres.....	172,898	2,360	78,895	171,540	273,768	110,144	130,722	105,547
23	Woodland cleared and cultivated since drainage..... 1930..... acres.....	32,848	35	2,880	12,110	28,400	638	.....	837
24	Land idle..... 1930..... acres.....	1,488	825	625	.....	20,852	605	2,613	28,211
25	Land available for settlement..... 1930..... acres.....	.....	.....	.....	.....	.....	.....	.....	.....
DRAINAGE WORKS, 1930									
26	Ditches—								
27	Completed..... miles.....	452.2	8.2	124.5	300.2	596.0	343.6	268.6	418.5
28	Additional under construction..... miles.....	.....	.....	.....	.....	.....	.....	.....	1.3
29	Tile drains—								
30	Completed..... miles.....	210.9	.....	50.8	13.3	445.8	157.9	33.6	27.5
31	Additional under construction..... miles.....	.....	.....	.....	.....	.....	.....	.....	.....
32	Levees and dikes—								
33	Completed..... miles.....	.....	.....	.....	1.0	.....	.....	11.4	3.0
34	Pumping plants—								
35	Engine or motor capacity..... horsepower.....	.....	.....	.....	.....	25	.....	.....	.....
36	Pump capacity..... gals. per min.....	.....	.....	.....	.....	6,900	.....	.....	.....
37	Land served by pumps..... acres.....	.....	.....	.....	.....	600	.....	.....	.....
38	Land drained by ditches only ² acres.....	170,600	3,315	53,000	181,148	116,310	78,365	102,330	214,300
39	Length of ditches..... miles.....	336.8	8.2	101.2	295.1	380.3	278.9	182.6	372.9
40	Land drained by tile only ³ acres.....	21,600	.....	12,750	3,500	94,980	24,530	3,940	3,060
41	Length of tile..... miles.....	104.4	.....	33.4	6.5	240.7	93.5	11.7	6.8
42	Land drained by ditches and tile ³ acres.....	35,994	.....	10,350	562	103,500	30,200	27,403	8,340
43	Length of ditches..... miles.....	115.4	.....	23.3	2.1	176.7	64.7	64.4	25.9
44	Length of tile..... miles.....	100.5	.....	17.4	3.1	205.1	64.4	21.9	20.7
45	Land having ditches and levees ³ acres.....	.....	.....	.....	.....	.....	.....	10,700	15,300
46	Length of ditches..... miles.....	.....	.....	.....	.....	.....	.....	21.6	21.6
47	Length of levees..... miles.....	.....	.....	.....	.....	.....	.....	11.4	3.0
48	Land having ditches, tile drains, and levees ³ acres.....	.....	.....	.....	310	.....	.....	.....	.....
49	Length of ditches..... miles.....	.....	.....	.....	1.0	.....	.....	.....	.....
50	Length of tile..... miles.....	.....	.....	.....	0.7	.....	.....	.....	.....
51	Length of levees..... miles.....	.....	.....	.....	1.0	.....	.....	.....	.....
52	Land drained by pumps and other drainage works ⁴ acres.....	.....	.....	.....	.....	600	.....	.....	.....
53	Length of ditches..... miles.....	.....	.....	.....	.....	2.0	.....	.....	.....
54	Length of tile..... miles.....	.....	.....	.....	.....	3.0	.....	.....	.....
55	Length of levees..... miles.....	.....	.....	.....	.....	.....	.....	.....	.....
56	Land protected by levees of an outside agency..... acres.....	.....	.....	.....	6,500	.....	.....	.....	.....
CAPITAL INVESTED AND COST PER ACRE									
57	Capital invested in enterprises to Jan. 1, 1930..... dollars.....	1,186,132	4,070	141,430	992,587	1,122,332	612,990	1,020,742	1,382,887
58	..... 1920..... dollars.....	940,130	22,800	42,843	549,729	1,054,797	410,242	613,174	768,462
59	Increase, ¹ 1920-1930..... per cent.....	26.2	-82.1	230.1	80.6	6.4	47.3	68.9	80.0
60	Estimated cost of enterprises when completed..... 1930..... dollars.....	1,186,132	4,070	141,430	992,587	1,122,332	612,990	1,020,742	1,384,787
61	..... 1920..... dollars.....	940,204	22,800	42,843	549,729	1,054,797	427,102	627,837	770,362
62	Average, per acre when completed..... 1930..... dollars.....	5.00	1.23	1.71	5.33	3.57	4.61	7.07	5.75
63	..... 1920..... dollars.....	5.23	5.70	1.28	4.89	3.42	2.22	4.71	4.20
Invested in and required for completion of—									
64	Enterprises having ditches only..... 1930..... dollars.....	781,445	4,070	70,767	956,006	350,801	275,477	505,075	1,025,934
65	Average, per acre..... dollars.....	4.35	1.23	1.32	5.28	3.62	5.52	4.70	4.70
66	Enterprises having tile drains only..... 1930..... dollars.....	128,326	.....	31,925	15,000	329,584	118,935	66,372	134,545
67	Average, per acre..... dollars.....	5.96	.....	2.50	4.46	3.47	4.85	10.85	43.07
68	Enterprises having ditches and tile drains..... 1930..... dollars.....	275,861	.....	38,738	13,550	441,947	218,587	301,860	100,763
69	Average, per acre..... dollars.....	7.66	.....	2.37	24.11	4.27	7.24	11.02	12.80
70	Enterprises having ditches and levees..... 1930..... dollars.....	.....	.....	.....	.....	.....	.....	87,435	117,555
71	Average, per acre..... dollars.....	.....	.....	.....	.....	.....	.....	8.17	7.68
72	Enterprises having ditches, tile drains, and levees..... 1930..... dollars.....	.....	.....	.....	2,431	.....	.....	.....	.....
73	Average, per acre..... dollars.....	.....	.....	.....	7.84	.....	.....	.....	.....
74	Enterprises having pumps and other drainage works..... 1930..... dollars.....	.....	.....	.....	5,000	.....	.....	.....	.....
75	Average, per acre..... dollars.....	.....	.....	.....	8.33	.....	.....	.....	.....

¹ A minus sign (—) denotes decrease. Per cent not shown when more than 1,000.
² Office estimate; the reported figures exceeded the improved acreage in all farms in the county as determined by the census of agriculture.
³ When works under construction have been completed.
⁴ Area of enterprises having some land served by pumps.

COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER ACRE.

ITEM (See definitions in Introduction)		Ran- dolph	Rush	St. Joseph	Scott	Shelby	Spencer	Starke	Steuben
LAND AREA									
1	Approximate land area.....1930.....acres..	286,080	261,760	294,400	121,000	260,480	257,920	195,200	195,200
2	Land in enterprises.....1930.....acres..	187,725	103,074	224,034	15,877	84,863	68,209	193,707	133,635
3	.....1920.....acres..	69,618	101,373	198,571	11,895	80,508	88,143	181,208	133,743
4	Increase, ² 1920-1930.....per cent..	214.0	1.7	12.8	31.8	5.4	-22.6	6.9	-0.1
5	Area of all enterprises (overlapping areas included).....1930.....acres..	257,082	130,283	526,235	15,677	80,029	74,655	884,537	242,820
6	Excess over land in enterprises (total areas overlapping).....acres..	69,357	27,209	302,201	-----	1,166	6,446	690,770	169,191
CONDITION AND USE OF LAND									
7	Land unfit to raise any crop.....1930.....acres..	160	2,167	12,867	1,270	4,295	6,483	2,758	1,698
8	Land fit to raise any crop prior to drainage.....acres..	7,060	6,702	87,327	5,327	11,854	46,020	44,062	31,028
9	Decrease since drainage.....per cent..	97.7	67.7	85.3	78.0	63.8	85.9	93.7	94.1
10	Land fit to raise a normal crop.....1930.....acres..	187,162	65,132	183,037	12,336	72,982	30,702	166,583	129,700
11	Land fit to raise a normal crop prior to drainage.....acres..	163,455	84,331	85,067	8,691	59,759	13,715	77,328	67,987
12	Increase since drainage.....per cent..	14.5	12.8	115.2	41.9	22.1	189.5	115.4	90.8
13	Land fit to raise a partial crop.....1930.....acres..	403	5,775	28,050	2,062	7,586	22,024	24,426	2,028
14	Land fit to raise a partial crop prior to drainage.....acres..	17,204	12,041	51,040	1,059	13,250	8,468	72,377	33,720
15	Decrease since drainage ².....per cent..	97.7	52.0	45.6	-24.3	42.7	-100.1	66.3	94.0
16	Improved land.....1930.....acres..	176,673	96,229	196,611	9,895	80,323	53,281	158,389	120,353
17	.....1920.....acres..	53,659	87,669	170,703	10,707	75,630	86,109	110,310	80,495
18	Increase, ² 1920-1930.....per cent..	229.3	9.4	15.1	-7.6	6.2	-37.4	32.8	30.1
19	Unimproved land—								
20	Woodland.....1930.....acres..	10,954	6,599	13,478	5,516	4,540	8,779	30,617	9,377
21	Other.....1930.....acres..	98	240	13,945	200	-----	6,149	4,761	3,905
22	Land in occupied farms.....1930.....acres..	187,725	103,057	222,747	15,677	84,483	67,040	180,012	133,628
23	Land in planted crops.....1930.....acres..	144,461	94,503	170,224	8,100	75,492	51,259	126,619	118,414
24	Woodland cleared and cultivated since drainage.....1930.....acres..	937	13,306	56,418	1,048	14,314	100	14,048	7,774
25	Land idle.....1930.....acres..	279	1,852	27,997	6,621	2,475	5,746	61,867	3,404
25	Land available for settlement.....1930.....acres..	-----	-----	434	-----	-----	-----	140	-----
DRAINAGE WORKS, 1930									
26	Ditches—								
27	Completed.....miles..	245.2	187.0	455.7	20.0	194.6	188.0	741.2	345.4
28	Additional under construction.....miles..	-----	1.0	-----	-----	-----	-----	-----	-----
29	Tile drains—								
30	Completed.....miles..	304.3	167.2	60.0	-----	62.3	16.4	15.3	301.6
31	Additional under construction.....miles..	-----	1.0	-----	-----	-----	-----	-----	-----
32	Levees and dikes—								
33	Completed.....miles..	-----	-----	-----	-----	-----	-----	20.0	-----
34	Pumping plants—								
35	Engine or motor capacity.....horsepower..	-----	-----	-----	-----	-----	-----	-----	-----
36	Pump capacity.....gals. per min..	-----	-----	-----	-----	-----	-----	-----	-----
37	Land served by pumps.....acres..	-----	-----	-----	-----	-----	-----	-----	-----
38	Land drained by ditches only ¹.....acres..	32,400	35,400	172,300	15,677	53,460	50,430	162,308	55,751
39	Length of ditches.....miles..	129.0	149.3	343.5	29.0	165.7	161.1	679.9	273.3
40	Land drained by tile only ¹.....acres..	49,724	51,373	8,200	-----	21,563	-----	1,984	59,784
41	Length of tile.....miles..	149.6	135.0	20.0	-----	50.5	-----	0.4	269.3
42	Land drained by ditches and tile ¹.....acres..	105,601	16,301	43,534	-----	9,840	8,779	7,555	18,100
43	Length of ditches.....miles..	116.2	38.7	112.2	-----	28.9	27.8	44.3	72.1
44	Length of tile.....miles..	154.7	32.6	40.0	-----	11.8	16.4	5.9	92.3
45	Land having ditches and levees ¹.....acres..	-----	-----	-----	-----	-----	-----	21,920	-----
46	Length of ditches.....miles..	-----	-----	-----	-----	-----	-----	17.0	-----
47	Length of levees.....miles..	-----	-----	-----	-----	-----	-----	20.0	-----
48	Land having ditches, tile drains, and levees ¹.....acres..	-----	-----	-----	-----	-----	-----	-----	-----
49	Length of ditches.....miles..	-----	-----	-----	-----	-----	-----	-----	-----
50	Length of tile.....miles..	-----	-----	-----	-----	-----	-----	-----	-----
51	Length of levees.....miles..	-----	-----	-----	-----	-----	-----	-----	-----
52	Land drained by pumps and other drainage works ².....acres..	-----	-----	-----	-----	-----	-----	-----	-----
53	Capital invested in enterprises to Jan. 1, 1930.....dollars..	730,033	411,277	751,488	99,698	140,639	101,631	1,816,442	733,238
54	.....1920.....dollars..	139,112	462,811	498,706	78,689	142,627	200,239	718,185	504,041
55	Increase, ² 1920-1930.....per cent..	424.8	-11.1	50.7	26.7	4.7	-34.0	152.9	45.5
56	Estimated cost of enterprises when completed.....1930.....dollars..	730,033	416,697	751,488	99,698	140,639	101,631	1,816,442	733,238
57	.....1920.....dollars..	142,965	462,811	498,706	78,689	142,627	200,239	755,124	516,751
58	Average, per acre when completed.....1930.....dollars..	3.89	4.04	3.35	6.36	1.76	2.81	9.37	5.49
59	.....1920.....dollars..	2.40	4.57	2.51	6.62	1.78	3.29	4.17	3.80
60	Invested in and required for completion of—								
61	Enterprises having ditches only.....1930.....dollars..	84,129	110,957	456,400	99,698	67,007	169,205	1,543,285	279,005
62	Average, per acre.....dollars..	2.60	3.13	2.65	6.30	1.25	2.85	9.51	5.00
63	Enterprises having tile drains only.....1930.....dollars..	200,849	222,872	40,768	-----	57,512	-----	11,967	283,311
64	Average, per acre.....dollars..	4.04	4.34	4.97	-----	2.67	-----	6.03	4.74
65	Enterprises having ditches and tile drains.....1930.....dollars..	445,065	82,868	254,320	-----	25,120	22,426	86,190	170,922
66	Average, per acre.....dollars..	4.21	5.08	5.84	-----	2.55	2.55	11.41	9.44
67	Enterprises having ditches and levees.....1930.....dollars..	-----	-----	-----	-----	-----	-----	175,000	-----
68	Average, per acre.....dollars..	-----	-----	-----	-----	-----	-----	7.98	-----
69	Enterprises having ditches, tile drains, and levees.....1930.....dollars..	-----	-----	-----	-----	-----	-----	-----	-----
70	Average, per acre.....dollars..	-----	-----	-----	-----	-----	-----	-----	-----
71	Enterprises having pumps and other drainage works.....1930.....dollars..	-----	-----	-----	-----	-----	-----	-----	-----
72	Average, per acre.....dollars..	-----	-----	-----	-----	-----	-----	-----	-----

¹ Includes Decatur, Harrison, Martin, Monroe, Ohio, and Perry Counties in 1930; and Decatur, Martin, Monroe, Ohio, and Perry Counties for 1920.
² A minus sign (-) denotes decrease. A plus sign (+) denotes increase.
³ Office estimate; the reported figures exceeded the improved acreage in all farms in the county as determined by the census of agriculture.
⁴ When works under construction have been completed.
⁵ Area of enterprises having some land served by pumps.

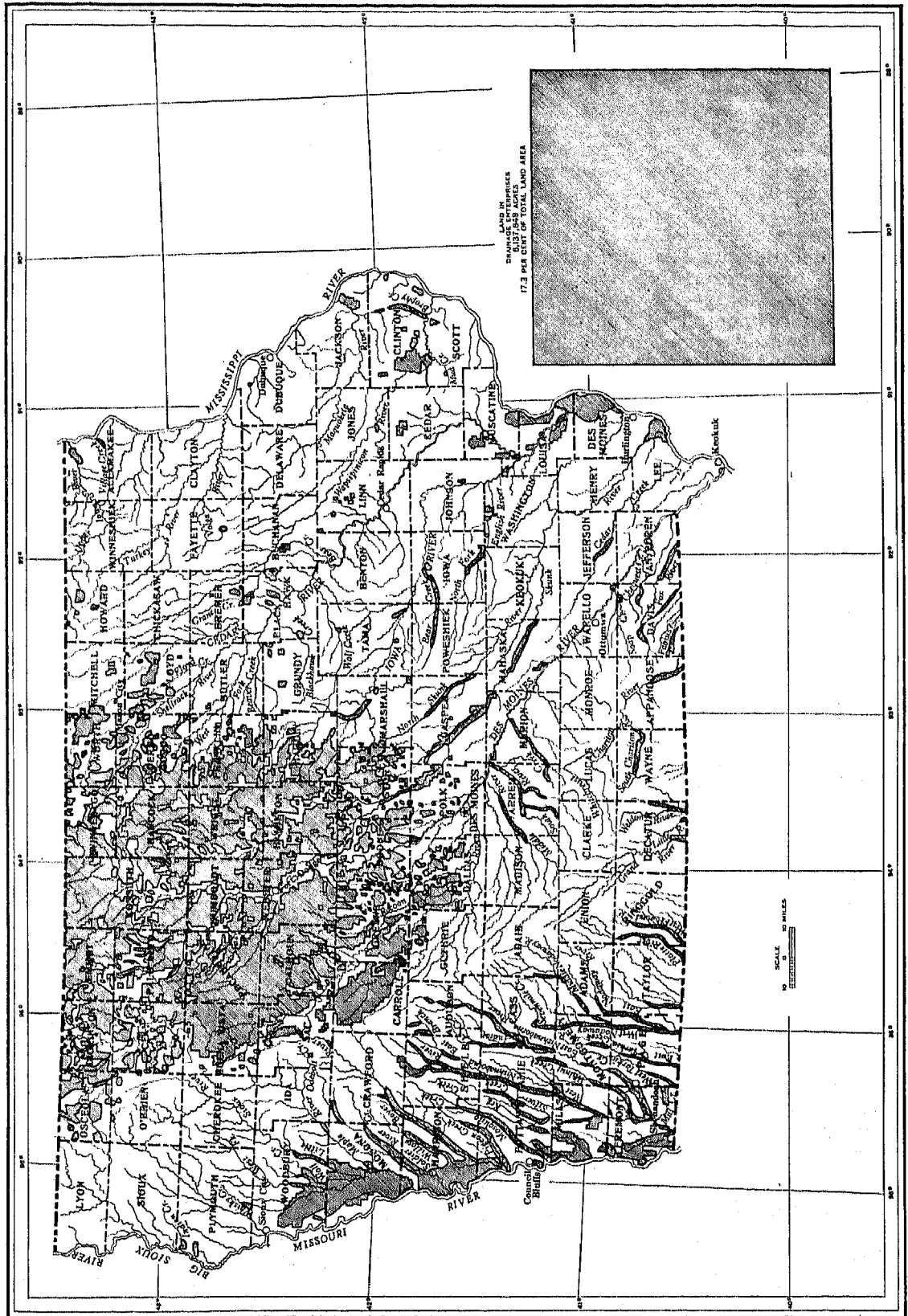
DRAINAGE—INDIANA

AND CONDITION AND USE OF LAND, 1930 AND 1920; AND DRAINAGE WORKS, 1930—Continued

Sullivan	Tippecanoe	Tipton	Union	Vanderburgh	Vermillion	Vigo	Wabash	Warren	Warrick	Washington	Wayne	Wells	White	Whitley	Other counties ¹	
204,400	321,920	166,400	103,680	140,120	162,560	201,760	272,000	235,520	250,880	332,160	263,040	233,600	324,480	216,320	1,336,320	1
44,663	112,047	162,700	8,459	67,735	0,120	42,196	100,530	52,819	114,322	11,420	12,380	211,415	308,493	200,971	7,012	2
22,958	91,705	155,109	4,640	53,014	0,548	50,835	150,886	48,174	85,501	11,121	0,065	100,377	238,020	172,685	3,945	3
94.5	22.1	4.0	82.3	27.8	39.3	-17.0	0.4	0.6	33.7	2.7	36.0	27.1	29.6	16.4	93.0	4
48,697	150,552	783,341	8,589	93,410	10,220	61,949	235,309	68,007	143,091	11,420	13,266	633,701	1,099,032	448,362	7,012	5
4,034	44,505	020,641	130	25,075	1,100	10,753	74,839	15,788	28,769	-----	880	422,376	701,149	247,301	-----	6
300	1,404	109	7	2,081	-----	625	4,388	48	1,711	3,920	119	1,327	5,851	311	7	
8,732	10,890	5,015	2,038	8,142	010	8,338	9,062	4,335	31,098	5,500	2,397	22,638	100,005	57,367	3,001	8
96.0	87.1	07.8	99.7	07.1	100.0	92.5	51.6	08.9	94.6	28.7	95.0	94.1	100.0	80.8	89.6	9
38,236	100,836	162,571	7,547	55,630	0,100	40,237	143,077	51,189	98,769	5,500	10,935	207,481	308,453	180,240	0,701	10
11,964	53,492	145,355	4,892	44,524	5,800	16,349	124,003	40,003	51,445	2,000	4,060	143,284	112,280	100,873	827	11
210.9	88.5	11.8	54.3	25.0	56.0	140.1	15.4	25.8	92.0	175.0	134.7	44.8	174.7	78.7	710.3	12
6,127	9,807	20	905	0,418	20	1,334	13,065	1,682	13,842	2,000	1,332	2,007	30	14,880	600	13
23,977	47,665	12,330	1,529	15,069	2,410	17,509	27,405	7,701	31,170	3,920	5,329	45,493	90,101	42,731	3,784	14
74.4	79.4	00.8	40.8	37.5	90.2	02.4	52.4	70.7	55.0	40.0	75.0	94.3	09.9	05.2	84.1	15
38,508	100,776	153,774	8,157	57,792	0,120	41,972	145,303	50,475	107,575	5,500	11,304	194,017	278,671	175,845	7,052	16
21,001	78,622	140,851	3,748	48,080	5,292	48,019	115,590	35,927	81,800	10,009	7,705	130,130	222,495	145,687	3,422	17
82.9	30.0	9.2	117.6	18.7	72.3	-12.6	25.8	40.5	31.4	-45.0	47.5	40.1	25.2	20.7	100.1	18
3,968	5,146	8,776	202	6,285	-----	124	14,981	1,312	4,052	2,000	1,022	15,997	29,708	10,345	249	19
2,127	125	150	100	3,658	-----	100	150	1,032	1,795	3,920	-----	501	104	5,781	311	20
44,803	112,047	162,569	8,459	64,033	0,120	42,196	100,530	52,819	114,202	11,420	12,380	210,443	308,483	200,971	7,012	21
32,102	100,470	144,475	6,856	42,522	8,300	31,241	144,180	45,727	80,532	3,500	6,010	168,056	271,029	102,973	0,521	22
4,397	7,749	10,303	618	2,053	-----	3,142	3,600	955	7,258	-----	2,150	47,869	34,887	15,577	315	23
2,805	2,887	7,700	-----	0,413	-----	7,010	375	780	13,310	7,700	-----	11,593	230	1,573	311	24
-----	-----	-----	-----	567	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	25
90.2	100.7	540.3	0.0	134.4	17.8	104.2	372.9	52.2	230.5	0.0	23.4	072.7	071.3	208.4	19.3	26
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	2.6	-----	-----	27
20.8	305.8	282.1	42.8	4.0	6.1	3.7	121.8	68.1	-----	-----	13.3	384.2	478.3	807.0	2.5	28
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	29
22.5	-----	-----	-----	-----	-----	15.9	-----	-----	-----	-----	-----	-----	-----	-----	-----	30
125	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	31
40,000	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	32
2,033	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	33
24,700	9,970	87,450	-----	66,245	4,530	23,680	97,486	0,070	114,322	11,420	5,000	78,835	132,883	35,820	0,877	34
61.3	37.3	480.1	-----	127.8	0.1	51.9	202.5	28.8	236.5	9.0	17.5	507.0	698.9	121.4	17.3	35
-----	45,773	50,700	5,959	700	285	47,224	22,000	47,224	22,000	2,554	73,130	73,200	93,400	515	36	
-----	157.4	233.8	27.0	4.0	1.8	08.0	52.2	08.0	52.2	6.2	251.9	300.7	232.8	2.0	37	
2,303	50,804	24,550	2,500	1,400	3,800	300	15,820	20,780	-----	4,232	59,450	102,400	71,761	220	38	
0.1	72.4	63.2	0.0	6.6	8.7	1.0	80.4	23.4	-----	5.9	105.1	74.9	177.0	2.0	39	
15.9	148.4	48.3	15.8	4.0	2.1	0.0	23.2	15.9	-----	7.1	132.2	168.0	165.1	0.5	40	
14,040	-----	-----	-----	-----	-----	17,321	-----	-----	-----	-----	-----	-----	-----	-----	-----	41
16.3	-----	-----	-----	-----	-----	50.8	-----	-----	-----	-----	-----	-----	-----	-----	-----	42
15.5	-----	-----	-----	-----	-----	13.0	-----	-----	-----	-----	-----	-----	-----	-----	-----	43
187	-----	-----	-----	-----	-----	544	-----	-----	-----	-----	-----	-----	-----	-----	-----	44
0.1	-----	-----	-----	-----	-----	0.5	-----	-----	-----	-----	-----	-----	-----	-----	-----	45
4.5	-----	-----	-----	-----	-----	1.8	-----	-----	-----	-----	-----	-----	-----	-----	-----	46
0.5	-----	-----	-----	-----	-----	2.3	-----	-----	-----	-----	-----	-----	-----	-----	-----	47
2,773	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	48
0.4	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	49
0.4	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	50
6.6	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	51
3,683	-----	-----	-----	-----	-----	1,000	-----	-----	-----	-----	-----	-----	-----	-----	-----	52
322,898	728,132	1,433,676	80,500	189,000	24,462	395,662	722,953	205,010	509,875	86,700	43,685	1,503,918	2,510,900	1,103,913	24,687	53
204,499	424,771	746,053	19,634	107,874	11,957	279,453	627,043	102,247	305,980	79,000	10,040	806,817	501,777	883,249	19,954	54
57.9	71.4	92.2	310.0	12.6	104.6	41.0	15.3	100.5	06.0	9.7	102.5	73.6	347.0	25.0	23.7	55
322,898	728,132	1,433,676	80,500	189,000	24,462	395,662	722,953	205,010	509,875	86,700	43,685	1,503,918	2,515,720	1,103,913	25,687	56
200,490	433,931	746,053	19,634	107,874	11,957	289,453	640,543	102,247	305,980	79,000	17,705	1,018,035	501,777	970,936	19,954	57
7.23	0.50	8.31	0.52	2.79	2.68	0.38	4.60	3.88	4.46	7.59	3.53	7.11	8.16	5.49	8.37	58
8.99	4.73	4.81	4.23	3.17	1.83	5.09	4.25	2.12	3.58	7.10	1.90	0.12	2.36	5.67	5.06	59
104,150	40,775	813,208	-----	189,557	9,962	180,153	458,022	33,711	509,875	86,700	13,713	411,949	1,000,257	213,905	23,327	60
4.22	4.09	9.30	-----	2.82	2.20	7.61	4.70	3.38	4.46	7.50	2.45	5.28	8.20	5.97	3.30	61
-----	289,168	379,080	49,505	5,000	5,000	2,800	174,303	95,073	-----	-----	10,708	434,881	544,508	352,025	1,700	62
-----	0.32	7.49	8.32	7.14	7.14	0.82	3.00	4.34	-----	-----	4.22	5.95	7.44	3.73	3.42	63
16,349	398,189	240,422	30,035	2,503	9,500	2,424	90,628	75,026	-----	-----	19,204	667,088	880,961	537,383	600	64
6.92	7.07	0.70	12.37	1.68	2.44	0.62	6.73	3.04	-----	-----	4.54	11.05	8.60	7.40	2.73	65
106,808	-----	-----	-----	-----	-----	180,285	-----	-----	-----	-----	-----	-----	-----	-----	-----	66
7.30	-----	-----	-----	-----	-----	10.75	-----	-----	-----	-----	-----	-----	-----	-----	-----	67
5,591	-----	-----	-----	-----	-----	24,000	-----	-----	-----	-----	-----	-----	-----	-----	-----	68
29.90	-----	-----	-----	-----	-----	44.12	-----	-----	-----	-----	-----	-----	-----	-----	-----	69
90,000	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	70
32.46	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	71

IOWA

APPROXIMATE LOCATION OF LAND IN DRAINAGE ENTERPRISES



IOWA

Introduction.—Statistics concerning the drainage of lands for agricultural purposes are presented in the following pages. The data relate to drainage conditions as of January 1, 1930, and the crop year 1929. The first drainage census for the United States was that of 1920 and statistics from that census are shown for purposes of comparison.

An organized drainage enterprise may include timbered and other unimproved land not yet in farms. The statistics for drainage on farms were collected in 1930 on the general farm schedule and are shown in the first section of State Table 1 and in County Table I; while those for drainage enterprises were obtained on a special drainage schedule.

Since farm lands provided with drains may be either within or without an organized enterprise, and since these drains may be either supplemental to or independent of the works installed by an enterprise, the figures for the two parts of the drainage census are shown separately.

Summary and condition of land in enterprises.—Most of the land in drainage enterprises in Iowa is located in the rather flat areas of the north central part of the State. There is also considerable land in enterprises located along the Missouri River and in the alluvial bottoms of its tributary streams, whose natural channels had become insufficient to carry flood waters without frequent damage to crops.

Nearly all the land served by pumps is located in the southeastern part of the State, along or near the Mississippi River. However, there is one small pump-

ing enterprise in Fremont County in the southwestern corner of the State, and another in Allamakee County in the northeastern corner.

Approximately 97 per cent of all land in enterprises was reported as improved and 3 per cent as unimproved. Of the total, 1.1 per cent was unfit to raise any crop for lack of drainage; and 1.3 per cent was idle in 1929.

The average cost of drainage was \$12.62 per acre, but if the land fit to raise a normal crop prior to drainage were deducted, the cost per acre for the remaining portion would be about \$23.

A large number of enterprises, located principally in Warren, Story, and Carroll Counties, reported high or ridge land which did not require artificial drainage. This amounted to approximately 1 per cent of all land in enterprises, and although reported as not assessed probably bore a nominal assessment as required by the Iowa drainage law.

The total precipitation for 1929 was 30.2 inches which was about 2 inches less than normal.

The usual purpose of an organized drainage enterprise is to provide adequate outlets into which the farms of the district may be drained, and to afford relief from overflow for the district as a unit. Therefore, the fact that an enterprise which has completed its drainage works contains land still unfit to raise any crop, or land fit only for a partial crop, does not necessarily show that the works are inadequate. State Table 1 includes a summary of the condition of lands in drainage enterprises.

STATE TABLE 1.—SUMMARY FOR THE STATE: 1930 AND 1920

ITEM (See definitions in Introduction)	CENSUS OF—		INCREASE ¹	
	1930	1920	Amount	Per cent
FARMS AND DRAINAGE ON FARMS				
All farms.....number.....	214,928	213,430	1,498	0.7
Farms reporting drainage.....number.....	73,420	86,806	-13,486	-17.4
All land in farms.....acres.....	34,019,332	33,474,806	544,526	1.6
Farm land provided with drainage.....acres.....	7,210,240	7,334,404	-124,164	-1.7
AREA, DRAINS, AND INVESTMENT IN ENTERPRISES				
Approximate land area of State.....acres.....	35,576,040	35,576,040		
Land in drainage enterprises.....acres.....	6,137,640	5,224,478	913,171	17.5
Improved land.....acres.....	5,061,454	4,493,407	1,468,047	32.7
Unimproved land:				
Woodland.....acres.....	88,802	74,652	14,150	19.0
Other.....acres.....	87,393	656,419	-569,026	-65.7
Land unfit to raise any crop for lack of drainage.....acres.....	68,371	² 320,893	-252,522	-78.7
Land drained, fit to raise normal crop.....acres.....	5,846,118	³		
Land partly drained, fit for partial crop.....acres.....	223,160	⁴ 157,542	65,618	41.7
Land in occupied farms.....acres.....	6,105,496	³		
Land in planted crops.....acres.....	5,376,805	³		
Land idle.....acres.....	78,303	³		
Ditches, completed.....miles.....	4,800.0	3,998.0	802.0	20.1
Tile drains, completed.....miles.....	13,382.4	10,384.9	2,997.5	28.9
Capital invested in enterprises.....dollars.....	77,478,893	49,627,304	27,851,589	56.1
Average, per acre.....dollars.....	12.62	9.50	3.12	32.8

¹ A minus sign (-) denotes decrease.
² "Swampy or subject to overflow."

³ Not called for on schedule.
⁴ "Suffering a loss of crops from defective drainage."

AREA AND CAPITAL

Area of enterprises.—Statistics by counties require that an enterprise located in more than one county be divided, and the part in each county be considered as a separate enterprise. In this way, 3,730 drainage enterprises are shown for Iowa with an average area of 1,983 acres. There are 306 such enterprises of 5,000 acres or more, 2,217 of between 500 and 5,000 acres, and 1,207 of less than 500 acres.

The area of enterprises exceeds the land in enterprises by 1,259,995 acres, which is the amount of overlap.

STATE TABLE 2.—AREA OF ENTERPRISES, BY SIZE: 1930 AND 1920

SIZE GROUP	AREA OF ENTERPRISES ¹				Land in enterprises, 1930
	1930		1920		
	Acres	Per cent	Acres	Per cent	
All enterprises.....	7,397,644	100.0	5,905,743	100.0	6,137,040
Less than 100 acres.....	8,604	0.1	31,250	0.5	4,027
100 to 199 acres.....	38,501	0.5	222,770	3.8	22,086
200 to 499 acres.....	276,093	3.7	500,458	8.5	198,342
500 to 999 acres.....	663,537	9.0	2,085,762	35.0	520,900
1,000 to 4,999 acres.....	2,030,362	27.5	1,095,124	17.0	2,157,020
5,000 to 9,999 acres.....	1,295,465	17.5	1,895,407	32.1	1,143,475
10,000 to 49,999 acres.....	2,054,594	27.8	184,867	3.1	1,723,300
50,000 to 99,999 acres.....	270,498	3.8	—	—	228,118
100,000 acres and over.....	142,080	1.9	—	—	138,800

¹ The sum of the areas of individual enterprises, including overlap.

Character of enterprise.—Organized drainage enterprises having executive officers exclusively their own, chosen according to the State drainage laws, are classed as *drainage districts*.

Under the State drainage laws it is possible for a drainage enterprise, originally under the control of county officials, to replace these officers by their own elected trustees, but as the reports do not clearly show that any enterprises have made this change, all are here classed as county drains.

Enterprises which, in common with others, are under the control of State, county, or township officials, are classed as *State projects*, *county drains*, or *township drains*, according to the public officials in control.

Enterprises under the control of individuals or organizations engaged in the draining of land for purposes of development, subdivision, and sale are classed as *commercial developments*.

Enterprises without legal organization, as such, belonging to individuals, partnerships, or agricultural companies, are classed as *individually owned projects*. Projects of this type are included only when the area drained is 500 acres or more.

STATE TABLE 3.—LAND AND CAPITAL, BY CHARACTER OF ENTERPRISE, 1930

CHARACTER OF ENTERPRISE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	6,137,040	100.0	77,478,803	100.0
County drains.....	6,116,092	99.6	77,223,285	99.7
Commercial developments.....	880	(¹)	16,207	(¹)
Individually owned projects.....	20,077	0.3	239,311	0.3

¹ Less than one-tenth of 1 per cent.

Type of drainage.—There were 3,718 enterprises, covering 6,096,819 acres of land, with an invested capital of \$76,553,396, which reported their works as

completed; while 12 enterprises, covering 40,830 acres of land, with an invested capital of \$925,497, estimated that \$211,302 would be required to complete the drainage works under construction.

The works completed to January 1, 1930, included 4,800 miles of ditches, and approximately 13,382 miles of tile drains, and 113 miles of levees. These figures do not include drains or levees installed by individual farmers supplemental to the works of an enterprise.

STATE TABLE 4.—LAND AND CAPITAL, BY TYPE OF DRAINAGE, 1930

TYPE OF DRAINAGE (See definitions in Introduction)	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	6,137,040	100.0	77,478,803	100.0
Gravily drainage only.....	6,040,328	98.0	75,350,036	97.3
Ditches and levees.....	1,044,100	26.8	17,221,358	22.3
Tile drains.....	2,310,828	37.7	28,610,550	36.9
Ditches, tile drains, and levees.....	2,088,391	34.1	20,518,128	38.1
Drainage, all or part by pumping.....	88,321	1.4	2,128,857	2.7
All drainage by pumping.....	30,858	0.6	847,535	1.1
Part gravity and part pumping.....	51,463	0.8	1,281,322	1.6

Pumping plants.—There were 11 pumping plants in Iowa serving land in 10 main districts and 1 sub-district. Of these plants 2 were located in a single district which also included the subdistrict.

Of these plants, 9 were located in the southeastern part of the State near the Mississippi River. Of the 2 remaining plants, 1 was located in the southwestern corner of the State in Fremont County, and the other in the northeastern corner in Allamakee County.

The total area served by pumps was 84,801 acres, which is somewhat smaller than the area tributary to the pumps, for some outside lands drain into the area served. The total capacity of the engines and motors was 4,625 horsepower, and that of the pumps was 881,500 gallons per minute. All pumps were of the centrifugal type. The mean lift of pumps varied from 6 feet to 11 feet and averaged 8.4 feet for the 11 plants.

STATE TABLE 5.—PUMPING PLANTS AND LAND SERVED, BY KIND OF POWER: 1930 AND 1920

KIND OF POWER	Enterprises	Engine or motor capacity		Pump capacity	Land served
		H. p.	Per cent		
All enterprises.....	1930.....	11	4,625	881,500	84,801
	1920.....	6	3,153	530,800	134,016
Electric.....	1930.....	1	600	95,000	8,815
	1920.....	2	1,700	302,500	100,201
Internal combustion.....	1930.....	5	225	20,500	5,219
	1920.....	2	53	10,000	1,450
Steam.....	1930.....	2	1,250	250,000	18,500
	1920.....	2	1,400	200,300	63,005
Steam and electric.....	1930.....	3	2,550	510,000	52,267

¹ Includes 32,213 acres of tributary area outside of drainage enterprises.

STATE TABLE 6.—PUMPING PLANTS AND LAND SERVED, BY KIND OF PUMP, 1930

KIND OF PUMP	Pumps	Pump capacity		Engine or motor capacity	Land served
		G. p. m.	Per cent		
All enterprises, centrifugal only.....	21	881,500	100.0	4,625	84,801

Arrears and delinquency.—There were 74 enterprises, with approximately 5 per cent of the invested capital and covering about 5 per cent of the land in organized districts, reported as in arrears in payment of principal or interest on bonds or other obligations; while the remaining 3,656 enterprises were reported as not in arrears. Reports of 27 enterprises, covering 194,054 acres, show a total of 20,595 acres delinquent in drainage taxes; 3,648 enterprises, covering 5,766,249 acres, reported no delinquency; while 55 enterprises failed to report.

STATE TABLE 7.—LAND, CAPITAL INVESTED, AND AREA DELINQUENT IN DRAINAGE TAXES, ACCORDING TO ARREARAGE IN PAYMENT OF PRINCIPAL OR INTEREST ON BONDS OR OTHER OBLIGATIONS, 1930

FINANCIAL STATUS	Land		Capital invested to Jan. 1, 1930		Area delinquent
	Acres	Per cent 100.0	Dollars	Per cent 100.0	
All enterprises.....	6,137,649		77,478,893		20,595
Enterprises in arrears.....	318,637	5.2	3,801,885	4.9	10,615
With some delinquent land.....	54,370	0.9	1,501,081	1.9	10,615
With no delinquent land.....	166,900	2.7	1,223,332	1.6	
With no report on delinquency..	97,367	1.6	1,077,472	1.4	
Enterprises not in arrears.....	5,819,012	94.8	73,677,008	95.1	9,980
With some delinquent land.....	139,684	2.3	3,136,657	4.1	9,980
With no delinquent land.....	5,599,349	91.2	69,765,502	90.0	
With no report on delinquency..	79,979	1.3	783,759	1.0	

Purpose of drainage.—In some cases the drainage development accomplished two or more purposes. An enterprise, prior to drainage, may contain swamp land, improved land in farms, and land subject to overflow. The object in drainage may be to reclaim or benefit all such lands. However, the land is classified according to the principal purpose reported.

Most of the land in Iowa enterprises was in use prior to drainage; hence, the purpose of drainage was principally the "Improvement of land already in farms" rather than the reclamation of swampy or overflowed areas previously unfit for cultivation. About 79 per cent of the land in enterprises was fit to raise either a normal or a partial crop prior to drainage.

STATE TABLE 8.—LAND AND CAPITAL, BY PURPOSE OF DRAINAGE, 1930

PURPOSE OF DRAINAGE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0	Dollars	Per cent 100.0
All enterprises.....	6,137,649		77,478,893	
Reclamation of swamp land not previously in farms.....	500,732	8.1	6,783,023	8.7
Improvement of land already in farms.....	5,209,038	84.9	65,823,707	85.0
Protection against overflow.....	427,879	7.0	4,872,163	6.3

Date of organization.—A period of one or more years may elapse between the date of organization and the beginning of actual construction, and in large enterprises the work may extend over a period of several years. For these reasons the original drainage was accomplished somewhat later than the dates shown. It was not feasible to secure dates of beginning and ending of construction work, so the date of establishment of each enterprise was used.

STATE TABLE 9.—LAND AND CAPITAL, BY DATE OF ORGANIZATION, 1930

DATE OF ORGANIZATION	Land		Area of enterprises ¹		Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0	Acres	Overlapped acres	Dollars	Per cent 100.0
All enterprises.....	6,137,649		7,307,644	1,259,995	77,478,893	
1870-1879.....	22,540	0.4	22,540		33,887	(?)
1880-1889.....	13,844	0.2	26,844	13,000	58,184	0.1
1890-1899.....	8,204	0.1	8,204		16,555	(?)
1900-1904.....	414,204	6.8	418,014	4,020	3,010,878	3.9
1905-1909.....	1,766,870	28.8	1,632,347	165,477	12,079,256	15.4
1910-1914.....	1,810,000	29.5	2,072,205	262,205	19,628,432	25.3
1915-1919.....	1,481,280	24.1	2,000,701	528,481	29,707,372	38.4
1920-1924.....	487,778	7.9	711,635	223,857	10,256,699	13.2
1925-1929.....	132,830	2.2	195,194	62,365	1,997,730	2.6

¹ Includes overlap.
² Less than one-tenth of 1 per cent.

STATE TABLE 10.—CONDITION OF LAND AND LAND AVAILABLE FOR SETTLEMENT, BY DATE OF ORGANIZATION, 1930

DATE OF ORGANIZATION	LAND IN ENTERPRISES					
	Total	Condition of land			Land available for settlement	
		Improved land	Wood-land	Other unimproved land		
All enterprises.....	6,137,649	5,991,454	97.1	88,802	87,393	16,104
1870-1879.....	22,540	22,300	98.9		240	
1880-1889.....	13,844	13,402	97.5	442	200	
1890-1899.....	8,204	7,920	96.5	284		
1900-1904.....	414,204	385,347	93.0	6,654	22,203	
1905-1909.....	1,766,870	1,748,193	98.9	7,495	11,182	6,880
1910-1914.....	1,810,000	1,764,603	97.5	23,000	22,388	5,100
1915-1919.....	1,481,280	1,446,255	97.6	22,000	12,020	2,080
1920-1924.....	487,778	457,422	93.8	17,250	13,106	744
1925-1929.....	132,830	116,022	87.3	10,878	5,030	300

Method of maintenance.—Some enterprises reported more than one method of maintenance, but in such cases the principal method is shown.

Systematic maintenance was reported by 2,221 enterprises, covering 3,981,778 acres of land and having an invested capital of \$49,302,509; while 1,509 enterprises, covering 2,155,871 acres of land, with an invested capital of \$28,176,384, did not have systematic maintenance.

There were 397 enterprises, with an invested capital of \$11,756,728 and covering 863,305 acres of land, that reported ownership of excavators or other power equipment used principally for maintenance; while 3,333 enterprises, with an invested capital of \$65,722,165 and covering 5,274,344 acres of land, did not report any such equipment.

STATE TABLE 11.—LAND AND CAPITAL, BY METHOD OF MAINTENANCE, 1930

METHOD OF MAINTENANCE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0	Dollars	Per cent 100.0
All enterprises.....	6,137,649		77,478,893	
By district forces.....	3,883,063	63.3	52,164,305	67.3
By contract.....	1,802,608	29.4	18,580,880	24.0
By work apportioned to landowners.....	136,655	2.2	2,321,094	3.0
Other, none, and not reported.....	315,323	5.1	4,411,954	5.7

Cost of operation and maintenance.—Since many enterprises do not have annual maintenance, it is necessary to include those that reported no cost as well as those that reported some cost for 1929, in order to determine a fair average cost of maintenance for the State. Approximately 44 per cent of the land reporting showed some cost, while 56 per cent reported no cost in 1929. The average cost for all enterprises was 7 cents per acre, while that for enterprises drained all or part by pumping was \$1.33 per acre. This latter figure may be higher than normal as the rainfall in the southeastern part of the State in March and April was excessive. Expenditures for operation and maintenance vary greatly from year to year.

STATE TABLE 12.—LAND AND COST OF OPERATION AND MAINTENANCE, 1929, BY TYPE OF DRAINAGE

TYPE OF DRAINAGE (See definitions in Introduction)	Land reporting on cost	COST REPORTED	
		Total	Per acre
		Dollars	Dollars
All enterprises reporting.....	Acres 6, 137, 640	430, 830	0.07
Gravity drainage only.....	6, 040, 328	313, 503	0.05
Ditches and levees.....	1, 044, 100	172, 270	0.10
Tile drains.....	2, 315, 823	60, 302	0.03
Ditches, tile drains, and levees.....	2, 088, 391	71, 865	0.03
Drainage, all or part by pumping.....	88, 321	117, 330	1.33

COUNTY TABLE I.—FARMS REPORTING DRAINAGE AND FARM LAND DRAINED, 1930 AND 1920; FARMS, ALL LAND IN FARMS, AND APPROXIMATE LAND AREA, 1930

STATE AND COUNTY	FARMS REPORTING DRAINAGE ¹		FARM LAND PROVIDED WITH DRAINAGE		All farms, 1930	FARM LAND, 1930			Approximate land area, 1930
						All land in farms	Crop land	Woodland	
	1930	1920	1930	1920		Acres	Acres	Acres	
The State.....	Number 73, 420	Number 88, 805	Acres 7, 210, 240	Acres 7, 334, 404	Number 214, 028	Acres 34, 010, 332	Acres 22, 738, 377	Acres 2, 213, 504	Acres 85, 675, 040
Adair.....	820	1, 124	48, 044	47, 230	2, 108	358, 130	222, 502	9, 414	300, 720
Adams.....	368	017	10, 517	20, 700	1, 030	257, 900	152, 208	14, 157	273, 280
Allamakee.....	34	(²)	1, 467	(²)	2, 103	370, 635	150, 108	114, 215	408, 060
Appanoose.....	58	85	1, 005	3, 701	2, 123	302, 159	145, 916	42, 228	328, 320
Audubon.....	641	718	15, 370	13, 701	1, 823	281, 075	180, 646	6, 117	283, 620
Benton.....	1, 582	1, 012	143, 032	155, 257	2, 505	442, 004	310, 520	18, 768	455, 680
Black Hawk.....	040	1, 031	57, 355	60, 001	2, 384	336, 043	235, 501	17, 549	361, 000
Boone.....	1, 833	1, 030	173, 016	181, 302	2, 540	340, 230	258, 053	27, 409	804, 100
Bremer.....	443	307	12, 207	7, 083	2, 021	207, 620	178, 449	10, 130	277, 730
Buchanan.....	692	061	30, 720	41, 200	2, 205	348, 219	235, 037	14, 803	362, 880
Buena Vista.....	1, 431	1, 725	105, 032	100, 011	2, 002	358, 655	281, 808	4, 212	305, 440
Butler.....	577	577	28, 542	22, 265	2, 282	362, 507	245, 682	14, 417	360, 280
Calhoun.....	1, 532	1, 064	234, 335	240, 105	2, 174	357, 051	288, 642	3, 497	363, 520
Carroll.....	841	1, 105	78, 706	73, 020	2, 224	357, 039	250, 340	0, 480	305, 440
Cass.....	700	703	20, 071	20, 878	2, 108	353, 837	240, 001	12, 578	300, 000
Cedar.....	897	1, 050	87, 007	117, 017	2, 207	348, 880	220, 507	10, 848	364, 800
Cerro Gordo.....	060	1, 224	05, 505	94, 446	2, 004	346, 300	247, 178	0, 019	362, 880
Cherokee.....	352	729	12, 057	34, 582	1, 834	350, 540	201, 002	7, 495	360, 720
Chickasaw.....	303	368	12, 051	3, 608	1, 070	303, 810	106, 859	15, 372	318, 050
Clay.....	1, 070	1, 230	152, 084	120, 885	1, 800	346, 577	235, 037	6, 720	360, 320
Clayton.....	07	71	2, 110	1, 385	2, 002	404, 000	245, 621	04, 053	487, 080
Clinton.....	746	1, 222	40, 080	50, 844	2, 748	410, 083	255, 075	17, 427	442, 240
Crawford.....	115	07	3, 832	2, 501	2, 550	449, 377	304, 100	15, 124	457, 000
Dallas.....	1, 403	1, 007	170, 577	160, 194	2, 386	363, 774	254, 220	20, 800	370, 000
Davis.....	117	79	5, 718	3, 204	1, 952	305, 015	140, 470	50, 328	320, 040
Decatur.....	40	61	3, 653	2, 770	1, 909	318, 864	173, 020	41, 020	341, 120
Delaware.....	535	045	27, 470	22, 804	2, 254	354, 020	225, 071	21, 077	365, 440
Des Moines.....	872	1, 002	85, 073	100, 314	1, 730	230, 758	141, 324	30, 930	201, 600
Dickinson.....	814	804	104, 394	84, 430	1, 224	232, 177	175, 220	2, 821	360, 640
Dubuque.....	183	156	0, 197	3, 530	2, 276	302, 012	203, 321	48, 004	364, 640
Emmet.....	828	1, 051	123, 182	145, 888	1, 285	247, 052	180, 703	4, 403	251, 520
Fayette.....	653	007	25, 020	20, 688	3, 038	443, 147	271, 856	31, 021	463, 300
Floyd.....	621	031	42, 155	31, 002	1, 858	303, 035	210, 003	11, 308	318, 500
Franklin.....	1, 300	1, 481	147, 007	150, 456	2, 082	361, 801	209, 957	8, 031	300, 020
Fremont.....	239	304	31, 405	25, 653	1, 921	304, 008	228, 502	17, 015	324, 480
Greene.....	1, 448	1, 750	101, 844	201, 075	2, 002	352, 722	268, 104	13, 402	367, 300
Grundy.....	944	1, 173	75, 840	73, 008	1, 780	315, 008	228, 307	2, 154	320, 640
Guthrie.....	583	1, 027	30, 858	57, 065	2, 370	361, 202	227, 838	84, 010	380, 800
Hamilton.....	1, 721	1, 090	210, 500	264, 872	2, 213	362, 481	278, 870	10, 170	364, 800
Hancock.....	1, 658	1, 354	224, 353	154, 493	1, 930	352, 073	207, 447	3, 045	364, 800
Hardin.....	1, 170	1, 470	111, 542	145, 748	2, 170	351, 001	255, 350	14, 807	364, 160
Harrison.....	406	311	54, 247	27, 570	2, 000	430, 152	303, 216	41, 227	442, 240
Henry.....	777	810	78, 026	70, 030	1, 975	262, 307	148, 801	23, 007	273, 280
Howard.....	238	320	0, 403	10, 178	1, 717	284, 102	182, 073	11, 500	200, 520
Humboldt.....	1, 171	1, 253	150, 518	156, 801	1, 475	297, 008	214, 145	4, 711	275, 840
Ida.....	144	246	5, 344	6, 473	1, 425	270, 448	204, 101	1, 228	275, 200
Iowa.....	1, 180	1, 509	112, 601	102, 511	2, 152	350, 455	217, 315	31, 337	373, 120
Jackson.....	42	07	1, 060	3, 272	2, 207	383, 230	170, 882	78, 533	404, 480
Jasper.....	1, 122	1, 541	82, 028	92, 707	3, 054	448, 065	292, 158	20, 651	467, 200
Jefferson.....	428	683	23, 227	44, 337	1, 887	250, 087	144, 645	30, 587	275, 840
Johnson.....	1, 102	1, 409	98, 074	105, 130	2, 561	373, 007	227, 008	32, 811	300, 400
Jones.....	855	1, 043	60, 200	61, 870	2, 124	345, 304	190, 726	37, 246	364, 160
Keokuk.....	1, 305	1, 670	103, 305	124, 007	2, 065	351, 838	216, 153	34, 301	369, 020
Kossuth.....	2, 069	2, 605	438, 541	342, 681	3, 053	602, 421	471, 261	7, 001	622, 720
Lee.....	109	306	11, 404	12, 876	2, 031	280, 870	143, 578	60, 635	327, 040

¹ Drainage on farms was reported in all counties in 1930 and also in 1920.

² Included in "All other counties."

DRAINAGE—IOWA

COUNTY TABLE I.—FARMS REPORTING DRAINAGE AND FARM LAND DRAINED, 1930 AND 1920; FARMS, ALL LAND IN FARMS, AND APPROXIMATE LAND AREA, 1930—Continued

STATE AND COUNTY	FARMS REPORTING DRAINAGE ¹		FARM LAND PROVIDED WITH DRAINAGE		All farms, 1930	FARM LAND, 1930			Approximate land area, 1930
	1930	1920	1930	1920		All land in farms	Crop land	Woodland	
	Number	Number	Acres	Acres	Number	Acres	Acres	Acres	Acres
Linn.....	1,372	1,781	85,867	79,505	3,615	413,994	207,000	30,401	453,760
Louisia.....	633	818	73,592	83,013	1,801	228,654	144,381	28,352	253,440
Lyon.....	195	780	8,940	34,013	1,820	362,212	238,304	3,461	372,480
Madison.....	717	1,020	54,341	70,023	2,152	346,790	137,602	34,406	369,320
Mahaska.....	1,153	1,411	94,717	100,093	2,702	346,278	219,577	24,800	363,520
Marion.....	617	633	40,240	38,910	2,413	339,958	104,015	30,142	360,320
Marshall.....	1,121	1,365	82,722	87,391	2,352	354,128	248,750	14,002	360,080
Mills.....	77	86	8,570	4,727	1,640	292,574	189,391	13,403	280,320
Mitchell.....	294	472	19,307	20,835	1,717	281,780	198,310	11,331	299,320
Monona.....	234	277	42,158	33,457	2,170	405,596	292,070	34,013	439,040
Monroe.....	42	107	1,223	3,874	1,005	253,470	117,274	42,205	360,340
Montgomery.....	360	322	11,381	8,497	1,615	268,379	184,743	9,765	271,360
Muscatine.....	593	953	59,008	60,204	1,843	256,033	160,348	26,252	270,450
O'Brien.....	922	1,307	89,743	97,253	1,905	356,785	275,520	2,422	364,160
Osceola.....	488	917	62,682	60,170	1,278	249,000	107,481	1,020	252,800
Pago.....	705	870	20,440	30,643	2,181	329,260	222,553	10,407	339,340
Palo Alto.....	1,366	1,464	109,775	172,700	1,883	347,147	275,100	4,251	359,040
Plymouth.....	67	(?)	1,188	(?)	2,779	523,811	304,810	7,070	647,840
Pocahontas.....	1,880	1,873	288,330	268,758	2,086	363,634	297,893	1,068	368,040
Polk.....	1,087	1,440	104,865	98,808	3,132	330,227	232,893	31,211	372,450
Pottawattamie.....	327	297	22,577	17,683	4,073	570,704	413,285	25,042	602,850
Poweshiek.....	1,220	1,668	129,502	169,942	2,236	302,213	233,603	11,470	371,200
Ringgold.....	94	88	6,213	1,649	1,040	330,314	189,912	20,534	345,000
Sac.....	749	1,044	72,150	87,309	1,874	344,047	262,451	4,260	367,360
Scott.....	718	1,213	54,177	81,023	2,263	273,106	181,649	12,417	287,360
Shelby.....	427	274	15,142	6,718	2,188	374,168	260,473	9,044	376,660
Stout.....	280	841	10,179	41,150	2,040	478,094	382,022	3,942	486,400
Story.....	1,507	1,871	180,325	197,633	2,348	354,434	273,422	15,873	362,880
Tama.....	1,128	1,088	81,196	48,193	2,700	436,099	282,927	24,048	400,800
Taylor.....	252	388	11,558	17,107	2,178	320,399	109,310	10,810	341,700
Union.....	277	323	19,040	14,842	1,620	256,780	142,927	14,172	273,280
Van Buren.....	163	142	9,455	8,165	1,893	287,018	133,330	50,770	306,280
Wapello.....	462	630	41,012	47,432	2,013	254,044	139,121	36,685	273,920
Warren.....	791	860	45,048	54,260	2,521	362,136	201,067	33,068	364,800
Washington.....	1,215	1,722	124,865	157,957	2,337	337,094	204,194	28,437	357,760
Wayne.....	40	(?)	2,781	(?)	1,863	320,395	185,002	18,715	335,360
Webster.....	2,135	2,210	270,300	295,854	2,637	435,127	337,944	20,393	456,000
Winnebago.....	1,101	1,016	91,421	97,350	1,041	247,520	182,162	8,214	255,360
Winneshiek.....	127	135	3,097	2,429	2,893	423,400	252,665	53,440	430,040
Woodbury.....	142	150	13,981	24,042	3,227	517,091	384,274	23,030	552,900
Worth.....	704	894	48,023	50,100	1,472	248,422	173,880	6,202	255,360
Wright.....	1,643	1,721	252,225	224,700	1,933	304,789	283,065	7,474	368,000
All other counties.....	32	80	788	2,032	3,109	514,456	277,418	68,350	550,400

¹ Drainage on farms was reported in all counties in 1930 and also in 1920.
² Included in "All other counties."

DRAINAGE—IOWA

COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER ACRE, AND CONDITION AND USE OF LAND, 1930 AND 1920; AND DRAINAGE WORKS, 1930

ITEM (See definitions in Introduction)		THE STATE	Adams	Alla- mahee	Audubon	Black Hawk	Boone	Bramer	Buchan- an
LAND AREA									
1	Approximate land area..... 1930..... acres.....	35,575,040	273,280	408,060	283,520	301,000	364,100	277,700	302,880
2	Land in enterprises..... 1930..... acres.....	6,137,640	11,484	6,197	7,807	17,444	139,853	4,280	4,007
3	..... 1920..... acres.....	6,224,478	4,707			(1)	90,030		(1)
4	Increase, 1920-1930..... per cent.....	17.5	139.4				55.3		
5	Area of all enterprises (overlapping areas included)..... 1930..... acres.....	7,397,044	11,484	6,197	7,807	17,444	102,007	4,280	4,007
6	Excess over land in enterprises (total areas overlapping)..... acres.....	1,259,995					22,154		
CONDITION AND USE OF LAND									
7	Land unfit to raise any crop..... 1930..... acres.....	68,371		250					
8	Land unfit to raise any crop prior to drainage..... acres.....	1,312,603	3,518	3,447		2,195	10,652	1,527	40
9	Decrease since drainage..... per cent.....	94.8	100.0	92.7		100.0	100.0	100.0	100.0
10	Land fit to raise a normal crop..... 1930..... acres.....	5,840,118	11,484	5,700	7,807	17,444	139,045	4,200	3,927
11	Land fit to raise a normal crop prior to drainage..... acres.....	2,826,486	6,018	300	5,900	15,240	48,579	1,803	321
12	Increase since drainage 1..... per cent.....	106.8	90.8		31.3	14.4	187.5	125.8	
13	Land fit to raise a partial crop..... 1930..... acres.....	223,160		247			208	80	80
14	Land fit to raise a partial crop prior to drainage..... acres.....	1,998,470	1,948	2,450	1,877		74,022	896	3,640
15	Decrease since drainage..... per cent.....	88.8	100.0	89.9	100.0		99.7	91.1	97.8
16	Improved land..... 1930..... acres.....	5,051,454	10,734	4,700	7,807	17,444	139,853	4,200	3,927
17	..... 1920..... acres.....	4,493,407	2,050			(1)	80,089		(1)
18	Increase, 1920-1930..... per cent.....	32.7	306.1				62.5		
Unimproved land—									
19	Woodland..... 1930..... acres.....	88,802	750	851					
20	Other..... 1930..... acres.....	87,393		640				80	80
21	Land in occupied farms..... 1930..... acres.....	6,105,406	11,484	6,197	7,807	17,444	139,853	4,280	3,927
22	Land in planted crops..... 1930..... acres.....	5,376,805	6,398	4,700	7,440	10,308	127,487	3,068	3,330
23	Woodland cleared and cultivated since drainage..... 1930..... acres.....	106,369	1,350	50					
24	Land idle..... 1930..... acres.....	78,393	850	1,030				100	500
25	Land available for settlement..... 1930..... acres.....	15,104							80
DRAINAGE WORKS, 1930									
Ditches—									
26	Completed..... miles.....	4,800.0	21.3	19.9	36.0	1.8	16.6	0.3	
27	Additional under construction..... miles.....	23.4		1.0					
Tile drains—									
28	Completed..... miles.....	13,382.4				77.5	580.4	20.0	7.0
29	Additional under construction..... miles.....	1,893.0							
Levees and dikes—									
30	Completed..... miles.....	113.4		3.0					
Pumping plants—									
31	Engine or motor capacity..... horsepower.....	4,625		25					
32	Pump capacity..... gals. per min.....	881,500		1,000					
33	Land served by pumps..... acres.....	84,801		100					
34	Land drained by ditches only 2..... acres.....	1,010,195	11,484	5,550	7,807				
35	Length of ditches..... miles.....	2,571.3	21.3	15.9	36.0				
36	Land drained by tile only 3..... acres.....	2,316,828				8,824	100,973	3,890	4,007
37	Length of tile..... miles.....	10,036.3				37.8	395.8	19.0	7.9
38	Land drained by ditches and tile 3..... acres.....	2,084,570				8,020	38,880	396	
39	Length of ditches..... miles.....	2,101.7				1.8	16.0	0.3	
40	Length of tile..... miles.....	5,114.0				30.7	184.0	1.0	
41	Land having ditches and levees 3..... acres.....	33,914							
42	Length of ditches..... miles.....	53.0							
43	Length of levees..... miles.....	30.3							
44	Land having ditches, tile drains, and levees..... acres.....	3,812							
45	Length of ditches..... miles.....	4.7							
46	Length of tile..... miles.....	9.5							
47	Length of levees..... miles.....	3.6							
48	Land drained by pumps and other drainage works 4..... acres.....	88,321		647					
49	Length of ditches..... miles.....	92.1		5.0					
50	Length of tile..... miles.....	25.0							
51	Length of levees..... miles.....	70.5		3.0					
52	Land protected by levees of an outside agency..... acres.....	43,473							
CAPITAL INVESTED AND COST PER ACRE									
53	Capital invested in enterprises to Jan. 1, 1930..... dollars.....	77,478,893	100,432	141,501	238,226	455,201	2,181,393	82,706	50,321
54	..... 1920..... dollars.....	49,627,304	102,700			(1)	1,516,735		(1)
55	Increase, 1920-1930..... per cent.....	56.1	56.1				43.8		
56	Estimated cost of enterprises when completed..... 1930..... dollars.....	77,090,105	100,432	142,561	238,226	455,201	2,181,393	82,706	50,321
57	..... 1920..... dollars.....	54,169,878	102,700			(1)	1,551,773		(1)
58	Average, per acre when completed..... 1930..... dollars.....	12.90	13.97	23.00	30.28	20.09	15.00	19.32	14.06
59	..... 1920..... dollars.....	10.37	21.42			(1)	17.23		(1)
Invested in and required for completion of—									
60	Enterprises having ditches only..... 1930..... dollars.....	10,095,768	100,432	110,393	238,226				
61	Average, per acre..... dollars.....	10.37	13.97	21.61	30.28				
62	Enterprises having tile drains only..... 1930..... dollars.....	28,011,001				177,320	1,329,024	79,234	50,321
63	Average, per acre..... dollars.....	12.35				20.10	13.16	20.37	14.06
64	Enterprises having ditches and tile drains..... 1930..... dollars.....	20,500,007				277,875	852,869	3,502	
65	Average, per acre..... dollars.....	14.15				32.24	21.92	8.00	
66	Enterprises having ditches and levees..... 1930..... dollars.....	607,925							
67	Average, per acre..... dollars.....	20.58							
68	Enterprises having ditches, tile drains, and levees..... 1930..... dollars.....	25,742							
69	Average, per acre..... dollars.....	6.75							
70	Enterprises having pumps and other drainage works..... 1930..... dollars.....	2,149,887		23,168					
71	Average, per acre..... dollars.....	24.34		35.81					

1 Included in "Other counties."
2 Per cent not shown when more than 1,000.

3 When works under construction have been completed.
4 Area of enterprises having some land served by pumps.

COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER

ITEM (See definitions in Introduction)		Buena Vista	Calhoun	Carroll	Cass	Cedar	Cerro Gordo	Clay	Clinton
LAND AREA									
1	Approximate land area..... 1930..... acres..	365,440	363,520	305,440	360,900	304,800	362,880	360,320	442,240
2	Land in enterprises..... 1930..... acres..	251,805	278,293	73,787	24,982	6,333	115,331	131,323	46,656
3	..... 1920..... acres..	116,826	246,559	78,040	(1)	6,333	108,300	105,912	68,270
4	Increase, ² 1920-1930..... per cent..	115.5	12.9	-5.4			6.5	24.0	-31.7
5	Area of all enterprises (overlapping areas included)..... 1930..... acres..	370,215	397,532	108,638	25,862	6,333	119,514	132,407	46,656
6	Excess over land in enterprises (total areas overlapping)..... acres..	118,410	119,239	34,851	890		4,183	1,084	
CONDITION AND USE OF LAND									
7	Land unfit to raise any crop..... 1930..... acres..			160			382	850	1,750
8	Land unfit to raise any crop prior to drainage..... acres..	27,380	57,780	12,582	11,832	800	28,712	21,985	18,695
9	Decrease since drainage..... per cent..	100.0	100.0	98.7	100.0	100.0	98.7	96.1	90.6
10	Land fit to raise a normal crop..... 1930..... acres..	249,005	277,013	73,027	24,982	6,333	86,172	130,308	40,503
11	Land fit to raise a normal crop prior to drainage..... acres..	120,765	116,109	39,788	12,610	1,000	26,234	46,046	15,810
12	Increase since drainage ² per cent..	106.2	139.1	85.3	98.1	633.3	228.5	183.0	156.0
13	Land fit to raise a partial crop..... 1930..... acres..	2,800	680				28,777	105	4,403
14	Land fit to raise a partial crop prior to drainage..... acres..	103,000	104,398	21,467	540	4,533	60,385	63,292	12,142
15	Decrease since drainage ² per cent..	97.3	99.3	100.0	100.0	100.0	52.3	90.7	63.7
16	Improved land..... 1930..... acres..	247,405	278,293	73,787	24,982	6,333	115,254	131,323	46,656
17	..... 1920..... acres..	114,264	123,377	72,531	(1)	6,206	95,386	103,553	51,010
18	Increase, ² 1920-1930..... per cent..	116.5	125.6	1.7		2.0	20.8	26.8	-10.1
19	Unimproved land—								
20	Woodland..... 1930..... acres..						77		
20	Other..... 1930..... acres..	4,400							
21	Land in occupied farms..... 1930..... acres..	250,205	278,293	73,647	24,982	6,333	115,331	131,323	46,656
22	Land in planted crops..... 1930..... acres..	206,924	217,840	68,217	24,550	6,200	105,373	117,207	43,012
23	Woodland cleared and cultivated since drainage..... 1930..... acres..						160		
24	Land idle..... 1930..... acres..			180					1,750
25	Land available for settlement..... 1930..... acres..								
DRAINAGE WORKS, 1930									
26	Ditches—								
27	Completed..... miles..	80.0	183.0	40.5	52.4	3.8	35.8	43.1	108.0
27	Additional under construction..... miles..								
28	Tile drains—								
28	Completed..... miles..	581.5	508.0	278.0	0.4	3.0	530.7	480.0	21.5
29	Additional under construction..... miles..								
30	Levees and dikes—								
30	Completed..... miles..								
31	Pumping plants—								
31	Engine or motor capacity..... horsepower..								
32	Pump capacity..... gals. per min..								
33	Land served by pumps..... acres..								
34	Land drained by ditches only ³ acres..	111,872	30,304	2,005	23,865		2,123	13,103	23,138
35	Length of ditches..... miles..	69.0	81.5	2.5	48.6		2.8	15.2	49.0
36	Land drained by tile only ³ acres..	123,705	150,094	60,758			60,840	60,020	2,451
37	Length of tile..... miles..	477.0	374.4	237.0			333.4	252.2	8.8
38	Land drained by ditches and tile ³ acres..	11,228	97,895	10,424	1,117	6,333	52,350	58,200	21,087
39	Length of ditches..... miles..	20.9	102.4	38.0	3.8	3.8	33.0	27.9	59.6
40	Length of tile..... miles..	104.5	133.6	36.0	0.4	3.0	206.3	231.7	12.7
41	Land having ditches and levees ³ acres..								
42	Length of ditches..... miles..								
43	Length of levees..... miles..								
44	Land having ditches, tile drains, and levees..... acres..								
45	Length of ditches..... miles..								
46	Length of tile..... miles..								
47	Length of levees..... miles..								
48	Land drained by pumps and other drainage works ⁴ acres..								
49	Length of ditches..... miles..								
50	Length of tile..... miles..								
51	Length of levees..... miles..								
52	Land protected by levees of an outside agency..... acres..								
CAPITAL INVESTED AND COST PER ACRE									
53	Capital invested in enterprises to Jan. 1, 1930..... dollars..	1,753,024	2,356,536	1,133,545	430,803	22,646	2,324,779	1,487,424	664,607
54	..... 1920..... dollars..	1,485,798	2,042,110	677,815	(1)	31,773	1,064,892	879,678	306,600
55	Increase, ² 1920-1930..... per cent..	18.0	15.4	67.2		-28.7	118.3	69.1	67.0
56	Estimated cost of enterprises when completed..... 1930..... dollars..	1,753,024	2,356,536	1,133,545	430,803	22,646	2,324,779	1,487,424	664,607
57	..... 1920..... dollars..	1,508,798	2,182,582	728,624	(1)	31,773	1,809,193	1,024,852	400,500
58	Average, per acre when completed..... 1930..... dollars..	6.96	8.47	15.36	17.24	3.58	20.16	11.33	14.25
59	..... 1920..... dollars..	21.91	8.85	9.34	(1)	5.02	16.71	9.68	5.95
60	Invested in and required for completion of—								
60	Enterprises having ditches only..... 1930..... dollars..	435,003	350,680	30,200	419,042		3,940	54,663	144,177
61	Average, per acre..... dollars..	3.90	11.57	15.05	17.56		1.86	4.17	6.23
62	Enterprises having tile drains only..... 1930..... dollars..	1,046,337	1,296,682	664,620			843,717	666,421	38,988
63	Average, per acre..... dollars..	8.13	8.64	10.94			13.87	11.10	15.01
64	Enterprises having ditches and tile drains..... 1930..... dollars..	270,784	700,165	429,725	11,761	22,646	1,477,113	766,340	481,562
65	Average, per acre..... dollars..	24.12	7.24	41.22	10.53	3.58	28.21	13.17	22.86
66	Enterprises having ditches and levees..... 1930..... dollars..								
67	Average, per acre..... dollars..								
68	Enterprises having ditches, tile drains, and levees..... 1930..... dollars..								
69	Average, per acre..... dollars..								
70	Enterprises having pumps and other drainage works..... 1930..... dollars..								
71	Average, per acre..... dollars..								

¹ Included in "Other counties."

² A minus sign (-) denotes decrease. Per cent not shown when more than 1,000.

³ When works under construction have been completed.

⁴ Area of enterprises having some land served by pumps.

DRAINAGE—IOWA

COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER

ITEM (See definitions in Introduction)		Hardin	Harrison	Howard	Humboldt	Iowa	Jasper	Jefferson	Kossuth
LAND AREA									
1	Approximate land area.....1930.....acres..	304,100	442,240	290,520	275,840	373,120	407,200	275,840	622,720
2	Land in enterprises.....1930.....acres..	152,545	125,038	7,419	183,826	10,048	40,344	5,200	505,404
3	.....1920.....acres..	121,223	60,951	(¹)	187,425	(¹)	25,170	-----	488,207
4	Increase, ² 1920-1930.....per cent.	25.8	86.8	-----	-1.9	-----	96.0	-----	3.5
5	Area of all enterprises (overlapping areas included).....1930.....acres..	108,720	168,811	7,419	214,725	19,048	40,344	5,200	594,045
6	Excess over land in enterprises (total areas overlapping).....acres..	16,175	43,773	-----	30,899	-----	-----	-----	88,641
CONDITION AND USE OF LAND									
7	Land unfit to raise any crop.....1930.....acres..	97	2,280	35	27	1,750	900	500	1,000
8	Land unfit to raise any crop prior to drainage.....acres..	37,444	34,405	960	33,947	7,488	6,054	500	123,035
9	Decrease since drainage.....per cent.	99.7	93.4	96.4	99.9	70.6	85.1	-----	99.2
10	Land fit to raise a normal crop.....1930.....acres..	152,368	116,403	7,042	173,748	15,248	48,444	4,200	503,038
11	Land fit to raise a normal crop prior to drainage.....acres..	54,295	81,740	5,526	116,384	9,143	31,621	500	176,409
12	Increase since drainage ³.....per cent.	180.6	42.4	27.4	49.3	00.8	53.2	740.0	186.8
13	Land fit to raise a partial crop.....1930.....acres..	80	6,355	342	10,051	2,050	-----	500	1,366
14	Land fit to raise a partial crop prior to drainage.....acres..	60,806	8,884	933	33,495	2,417	11,689	4,200	206,000
15	Decrease since drainage.....per cent.	99.9	28.5	03.3	70.0	15.2	100.0	88.1	99.3
16	Improved land.....1930.....acres..	152,423	103,530	7,419	183,709	16,358	47,487	4,200	503,684
17	.....1920.....acres..	117,860	31,402	(¹)	176,091	(¹)	23,690	-----	459,084
18	Increase, ² 1920-1930.....per cent.	29.3	228.8	-----	4.0	-----	100.5	-----	0.6
Unimproved land—									
19	Woodland.....1930.....acres..	-----	3,470	-----	30	2,600	1,274	1,000	-----
20	Other.....1930.....acres..	122	18,038	-----	27	90	583	-----	1,720
21	Land in occupied farms.....1930.....acres..	152,640	123,422	7,419	183,610	18,865	48,444	5,200	505,404
22	Land in planted crops.....1930.....acres..	141,119	87,333	6,026	113,313	16,135	40,085	4,000	456,388
23	Woodland cleared and cultivated since drainage.....1930.....acres..	100	20,080	-----	20	1,100	-----	-----	-----
24	Land idle.....1930.....acres..	233	750	331	27	1,050	1,100	500	-----
25	Land available for settlement.....1930.....acres..	-----	-----	-----	207	-----	244	-----	-----
DRAINAGE WORKS, 1930									
Ditches—									
26	Completed.....miles..	41.4	123.8	0.8	123.4	35.5	67.4	9.3	337.3
27	Additional under construction.....miles..	-----	-----	-----	-----	-----	-----	-----	-----
Tile drains—									
28	Completed.....miles..	387.0	8.0	23.5	367.5	7.0	-----	-----	1,503.2
29	Additional under construction.....miles..	-----	-----	-----	-----	-----	-----	-----	-----
Levees and dikes—									
30	Completed.....miles..	-----	-----	-----	-----	2.0	-----	-----	-----
Pumping plants—									
31	Engine or motor capacity.....horsepower..	-----	-----	-----	-----	-----	-----	-----	-----
32	Pump capacity.....gals. per min.	-----	-----	-----	-----	-----	-----	-----	-----
33	Land served by pumps.....acres..	-----	-----	-----	-----	-----	-----	-----	-----
34	Land drained by ditches only ⁴.....acres..	-----	120,681	-----	34,394	15,341	40,344	5,200	20,080
35	Length of ditches.....miles..	-----	119.8	-----	43.2	33.5	67.4	9.3	35.0
36	Land drained by tile only ⁴.....acres..	94,620	-----	2,372	55,010	1,807	-----	-----	154,112
37	Length of tile.....miles..	300.0	-----	13.2	217.1	7.0	-----	-----	573.0
38	Land drained by ditches and tile ⁴.....acres..	57,916	4,407	5,047	93,522	-----	-----	-----	324,312
39	Length of ditches.....miles..	41.4	4.0	0.8	80.2	-----	-----	-----	302.3
40	Length of tile.....miles..	86.4	8.0	10.3	150.4	-----	-----	-----	633.2
41	Land having ditches and levees ⁴.....acres..	-----	-----	-----	-----	1,000	-----	-----	-----
42	Length of ditches.....miles..	-----	-----	-----	-----	2.0	-----	-----	-----
43	Length of levees.....miles..	-----	-----	-----	-----	2.0	-----	-----	-----
44	Land having ditches, tile drains, and levees.....acres..	-----	-----	-----	-----	-----	-----	-----	-----
45	Length of ditches.....miles..	-----	-----	-----	-----	-----	-----	-----	-----
46	Length of tile.....miles..	-----	-----	-----	-----	-----	-----	-----	-----
47	Length of levees.....miles..	-----	-----	-----	-----	-----	-----	-----	-----
48	Land drained by pumps and other drainage works ⁴.....acres..	-----	-----	-----	-----	-----	-----	-----	-----
49	Length of ditches.....miles..	-----	-----	-----	-----	-----	-----	-----	-----
50	Length of tile.....miles..	-----	-----	-----	-----	-----	-----	-----	-----
51	Length of levees.....miles..	-----	-----	-----	-----	-----	-----	-----	-----
52	Land protected by levees of an outside agency.....acres..	-----	-----	-----	-----	-----	-----	-----	-----
CAPITAL INVESTED AND COST PER ACRE									
53	Capital invested in enterprises to Jan. 1, 1930.....dollars..	1,559,358	1,070,681	117,566	2,167,197	375,626	385,150	76,250	7,566,140
54	.....1920.....dollars..	931,232	693,221	(¹)	1,437,381	(¹)	142,635	-----	5,738,533
55	Increase, ² 1920-1930.....per cent.	67.5	54.4	-----	50.8	-----	170.0	-----	31.8
56	Estimated cost of enterprises when completed.....1930.....dollars..	1,559,358	1,070,681	117,566	2,167,197	375,626	385,150	77,250	7,566,140
57	.....1920.....dollars..	950,141	693,221	(¹)	1,437,527	(¹)	142,635	-----	6,220,769
58	Average, per acre when completed.....1930.....dollars..	10.22	8.56	15.85	11.79	19.72	7.81	14.86	14.97
59	.....1920.....dollars..	7.84	10.36	(¹)	7.67	(¹)	5.67	-----	12.74
Invested in and required for completion of—									
60	Enterprises having ditches only.....1930.....dollars..	-----	1,024,621	-----	116,857	348,003	385,150	77,250	594,227
61	Average, per acre.....dollars..	-----	8.49	-----	3.40	22.68	7.81	14.86	22.02
62	Enterprises having tile drains only.....1930.....dollars..	993,571	-----	58,470	728,231	6,800	-----	-----	1,978,045
63	Average, per acre.....dollars..	10.50	-----	24.65	13.03	3.76	-----	-----	12.84
64	Enterprises having ditches and tile drains.....1930.....dollars..	565,787	40,060	59,096	1,322,109	-----	-----	-----	4,993,874
65	Average, per acre.....dollars..	9.77	10.45	11.71	14.14	-----	-----	-----	15.40
66	Enterprises having ditches and levees.....1930.....dollars..	-----	-----	-----	-----	20,823	-----	-----	-----
67	Average, per acre.....dollars..	-----	-----	-----	-----	10.00	-----	-----	-----
68	Enterprises having ditches, tile drains, and levees.....1930.....dollars..	-----	-----	-----	-----	-----	-----	-----	-----
69	Average, per acre.....dollars..	-----	-----	-----	-----	-----	-----	-----	-----
70	Enterprises having pumps and other drainage works.....1930.....dollars..	-----	-----	-----	-----	-----	-----	-----	-----
71	Average, per acre.....dollars..	-----	-----	-----	-----	-----	-----	-----	-----

¹ Included in "Other counties."

² A minus sign (-) denotes decrease. Per cent not shown when more than 1,000.

³ Pumps located in Louisa County.

⁴ When works under construction have been completed.

⁵ Area of enterprises having some land served by pumps.

DRAINAGE—IOWA

ACRE, AND CONDITION AND USE OF LAND, 1930 AND 1920; AND DRAINAGE WORKS, 1930—Continued

Lee	Linn	Louisa	Mahaska	Marion	Marshall	Mills	Mitchell	Monona	Mont-gomery	Muscataine	O'Brien	Osceola	Page	
327,040	453,760	253,440	363,520	360,320	300,080	280,320	200,320	480,040	271,300	276,480	364,160	252,800	330,840	1
13,786	4,370	33,888	13,000	15,827	18,050	78,225	11,007	185,871	22,207	25,167	6,752	90,248	42,632	2
15,781	(1)	52,113	10,415	8,707	9,000	55,420	7,875	120,004	6,777	43,022	5,453	63,342	31,412	3
-12.6		-35.0	-20.8	81.8	110.6	41.1	52.0	44.1	220.0	-42.7	23.8	42.5	35.7	4
13,786	4,370	36,400	13,000	17,027	18,050	88,255	11,007	259,300	22,207	27,080	6,752	94,408	45,231	5
		2,521		1,800		10,030		73,528		2,813		4,160	2,599	6
	2,183	1,430	1,500	020	23	1,080	222	760	200	560			4,323	7
	100.0	14,400	4,000	1,700	1,038	10,877	0,200	64,109	5,500	12,464		1,887	25,854	8
		90.1	02.5	45.9	07.8	90.1	06.4	98.8	96.4	05.5		100.0	83.3	9
13,786	3,935	27,847	11,500	12,707	18,650	70,077	10,014	185,111	21,857	24,007	6,752	90,248	38,251	10
400	1,747	4,487	8,900	4,200	10,027	52,622	2,500	120,234	15,547	12,430	3,782	70,075	8,500	11
	125.2	520.6	29.2	204.7	11.6	33.2	336.0	54.0	40.6	98.0	78.5	17.7	840.5	12
	435	4,611		2,110	368	7,068	881		240				68	13
13,386	440	15,001	100	0,027	1,255	14,726	3,207	1,528	1,100	273	2,070	11,086	8,200	14
100.0	1.1	90.3	100.0	78.7	71.4	62.0	74.0	100.0	79.3	100.0	100.0	100.0	99.3	15
13,786	3,934	20,125	10,500	10,020	18,850	72,927	11,017	185,111	18,937	23,035	6,752	90,248	34,236	16
14,070	(1)	48,572	14,203	3,272	5,730	27,045	6,040	69,751	2,711	40,770	5,453	60,151	13,900	17
-0.1		-40.0	-20.1	32.0	115.9	100.7	70.5	105.4	598.5	-42.0	23.8	50.0	144.7	18
	430	4,183	2,500	3,000	50	2,080	50		3,300	1,532			8,270	19
13,786	4,370	33,888	13,000	15,127	18,050	78,225	11,007	185,101	21,497	25,167	6,752	90,248	42,574	21
13,720	3,932	27,554	8,200	0,500	18,220	68,441	11,002	168,070	18,010	21,225	6,260	80,001	34,202	22
		6,000	800			2,200	550		2,300	750			12,667	23
		3,000	1,000	4,055	18	2,400	440	700	1,410	532			8,250	24
									300					25
8.5		05.2	32.0	12.2	10.7	72.5	1.9	132.5	50.0	50.0	2.5	41.0	132.1	26
				15.4										27
1.0	19.9	10.3	5.0		22.5		62.2			2.0	22.0	203.3		28
														29
14.5		18.1	3.0							4.0			2.3	30
625		1,050												31
96,500		200,000								(1)				32
9,265		27,881								(2)				33
										8,055				34
		3,333	11,500	15,827	12,200	78,225		185,871	22,207	7,591	2,300	6,605	42,433	35
		8.5	20.0	27.0	15.0	72.5		132.5	50.0	17.0	2.5	19.0	130.0	36
	4,370	1,000			2,233		7,345				4,452	44,401		37
	10.9	1.0			8.0		47.2				22.0	131.0		38
		0,689			4,517		4,022			1,077		80,042		39
		20.3			1.7		1.0			4.0		22.0		40
		7.8			14.5		15.0			2.0		181.4		41
		601								0,546			109	42
		0.8								18.0			1.2	43
		3.1								4.0			2.3	44
			1,500											45
			8.0											46
			5.0											47
			3.0											48
13,786		19,205								9,953				49
8.5		20.6								11.0				50
1.0		7.5												51
14.5		15.0												52
		11,250								15,953				53
600,200	60,769	613,505	280,000	70,584	276,110	556,401	203,671	1,200,505	300,003	383,684	70,294	800,010	552,046	54
551,888	(1)	300,401	88,175	44,151	200,000	302,201	85,499	1,551,571	88,613	201,039	51,558	548,945	292,804	55
21.3		07.4	217.0	59.9	38.0	41.9	208.4	-18.2	317.5	90.0	30.3	48.3	88.8	56
800,200	60,769	613,505	280,000	156,319	276,110	556,401	203,671	1,200,505	300,003	438,684	70,294	800,010	552,046	57
551,888	(1)	300,401	100,542	44,151	260,000	302,201	96,620	1,551,571	88,613	201,939	51,558	722,847	292,804	58
48.55	13.91	18.11	21.54	9.88	14.57	7.11	22.03	6.83	10.59	17.23	10.41	8.04	12.95	59
34.97	(1)	7.03	11.01	5.07	28.89	7.08	12.27	12.03	13.08	4.60	9.45	11.41	9.81	60
		18,185	270,000	156,319	192,850	556,401		1,200,505	300,003	61,021	9,505	75,907	550,046	61
		5.45	23.48	9.88	15.81	7.11		0.83	10.59	8.12	4.18	11.10	12.96	62
	60,769	10,000			41,055		200,041				60,789	348,904		63
	13.91	10.00			18.39		28.05				13.65	7.80		64
		90,000			42,211		57,680			6,522		382,048		65
		0.29			9.34		12.47			0.06		0.79		66
		20,500								145,886			2,000	67
		40.09								22.20			10.06	68
			10,000											69
			6.07											70
600,200		468,880								219,655				71
48.55		24.41								22.07				

COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER

ITEM (See definitions in Introduction)		Palo Alto	Plymouth	Pocahontas	Polk	Pottawattamie	Poweshiek	Ringgold
LAND AREA								
1	Approximate land area..... 1930..... acres..	350,040	547,840	368,640	372,480	602,880	371,200	345,600
2	Land in enterprises..... 1930..... acres..	227,004	7,300	201,180	34,810	108,312	6,715	18,634
3	..... 1920..... acres..	221,389		205,904	20,019	41,036		9,530
4	Increase, ³ 1920-1930..... per cent..	2.6		0.5	33.8	163.0		95.5
5	Area of all enterprises (overlapping areas included)..... 1930..... acres..	244,044	7,300	424,340	38,075	113,301	6,715	20,784
6	Excess over land in enterprises (total areas overlapping)..... acres..	16,956		133,160	3,856	4,989		2,150
CONDITION AND USE OF LAND								
7	Land unfit to raise any crop..... 1930..... acres..	1,110	1,000	30		7,449		557
8	Land unfit to raise any crop prior to drainage..... acres..	59,909	1,700	61,178	8,205	25,265		3,353
9	Decrease since drainage..... per cent..	93.1	41.2	90.9	100.0	70.5		83.4
10	Land fit to raise a normal crop..... 1930..... acres..	193,407	3,800	201,150	34,810	92,669	3,000	10,214
11	Land fit to raise a normal crop prior to drainage..... acres..	35,107	3,100	125,107	24,790	50,882	1,000	11,737
12	Increase since drainage ³ per cent..	405.1	22.6	132.6	40.5	63.0	200.0	38.1
13	Land fit to raise a partial crop..... 1930..... acres..	27,577	2,500			8,164	3,715	1,893
14	Land fit to raise a partial crop prior to drainage..... acres..	132,078	2,500	104,805	1,824	20,165	5,715	3,544
15	Decrease since drainage ³ per cent..	79.1		100.0	100.0	68.8		47.4
16	Improved land..... 1930..... acres..	219,874	6,300	290,430	34,810	104,302	0,715	13,974
17	..... 1920..... acres..	105,471		205,001	24,275	20,800		3,812
18	Increase, ³ 1920-1930..... per cent..	12.5		10.4	43.4	300.3		200.0
19	Unimproved land—							
20	Woodland..... 1930..... acres..	6,600		720		1,200		3,355
21	Other..... 1930..... acres..	620	1,000	30		2,810		1,305
22	Land in occupied farms..... 1930..... acres..	228,004	7,300	201,150	34,810	107,712	6,715	18,634
23	Land in planted crops..... 1930..... acres..	215,117	4,800	285,105	31,754	94,750	4,500	12,483
24	Woodland cleared and cultivated since drainage..... 1930..... acres..	2,000		1,640			150	1,488
25	Land idle..... 1930..... acres..	1,025	2,100	550		8,760		
25	Land available for settlement..... 1930..... acres..							
DRAINAGE WORKS, 1930								
26	Ditches—							
27	Completed..... miles..	152.2	19.0	221.2	30.0	171.6	14.2	40.2
28	Additional under construction..... miles..							
29	Tile drains—							
30	Completed..... miles..	472.4		462.0	51.2	3.0		
31	Additional under construction..... miles..							
32	Levees and dikes—							
33	Completed..... miles..					6.1		
34	Pumping plants—							
35	Engine or motor capacity..... horsepower..							
36	Pump capacity..... gals. per min..							
37	Land served by pumps..... acres..							
38	Land drained by ditches only ⁴ acres..	34,284	7,300	85,400	20,839	94,025	6,715	18,634
39	Length of ditches..... miles..	36.5	19.0	51.2	30.9	162.6	14.2	40.2
40	Land drained by tile only ⁴ acres..	53,101		85,740	13,980	200		
41	Length of tile..... miles..	183.8		101.8	51.2	2.0		
42	Land drained by ditches and tile ⁴ acres..	139,709		170,040		2,822		
43	Length of ditches..... miles..	115.7		170.0		2.0		
44	Length of tile..... miles..	288.0		270.2		0.5		
45	Land having ditches and levees ⁴ acres..					8,887		
46	Length of ditches..... miles..					5.8		
47	Length of levees..... miles..					6.0		
48	Land having ditches, tile drains, and levees..... acres..					1,778		
49	Length of ditches..... miles..					1.2		
50	Length of tile..... miles..					0.5		
51	Length of levees..... miles..					0.1		
52	Land drained by pumps and other drainage works..... acres..							
53	Length of ditches..... miles..							
54	Length of tile..... miles..							
55	Length of levees..... miles..							
56	Land protected by levees of an outside agency..... acres..					11,520		
CAPITAL INVESTED AND COST PER ACRE								
57	Capital invested in enterprises to Jan. 1, 1930..... dollars..	2,210,842	54,800	3,123,424	570,743	1,500,196	107,500	293,170
58	..... 1920..... dollars..	1,547,570		2,041,778	203,507	502,302		125,000
59	Increase, ³ 1920-1930..... per cent..	43.2		53.0	180.5	163.4		184.6
60	Estimated cost of enterprises when completed..... 1930..... dollars..	2,210,842	54,800	3,123,424	570,743	1,500,196	107,500	293,170
61	..... 1920..... dollars..	1,040,040		2,041,778	473,500	502,302		125,000
62	Average, per acre when completed..... 1930..... dollars..	0.76	7.51	10.73	16.39	14.40	29.41	15.73
63	..... 1920..... dollars..	7.45		7.68	18.20	14.43		13.12
64	Invested in and required for completion of—							
65	Enterprises having ditches only..... 1930..... dollars..	250,079	54,800	214,502	371,164	1,355,304	107,500	293,170
66	Average, per acre..... dollars..	7.20	7.51	6.06	17.81	14.32	29.41	15.73
67	Enterprises having tile drains only..... 1930..... dollars..	508,020		713,184	199,579	3,561		
68	Average, per acre..... dollars..	9.58		8.32	14.28	17.81		
69	Enterprises having ditches and tile drains..... 1930..... dollars..	1,458,143		2,105,738		11,890		
70	Average, per acre..... dollars..	10.44		12.91		4.22		
71	Enterprises having ditches and levees..... 1930..... dollars..					176,390		
72	Average, per acre..... dollars..					19.85		
73	Enterprises having ditches, tile drains, and levees..... 1930..... dollars..					13,045		
74	Average, per acre..... dollars..					7.34		
75	Enterprises having pumps and other drainage works..... 1930..... dollars..							
76	Average, per acre..... dollars..							

¹ Includes only Adair, Appanoose, Butler, Dubuque, Fayette, Jackson, Johnson, Jones, Madison, Scott, Tama, and Wapello Counties in 1930; and Appanoose, Black Hawk, Buchanan, Butler, Cass, Grundy, Howard, Iowa, Johnson, Linn, Madison, Scott, Tama, and Washington Counties for 1920.

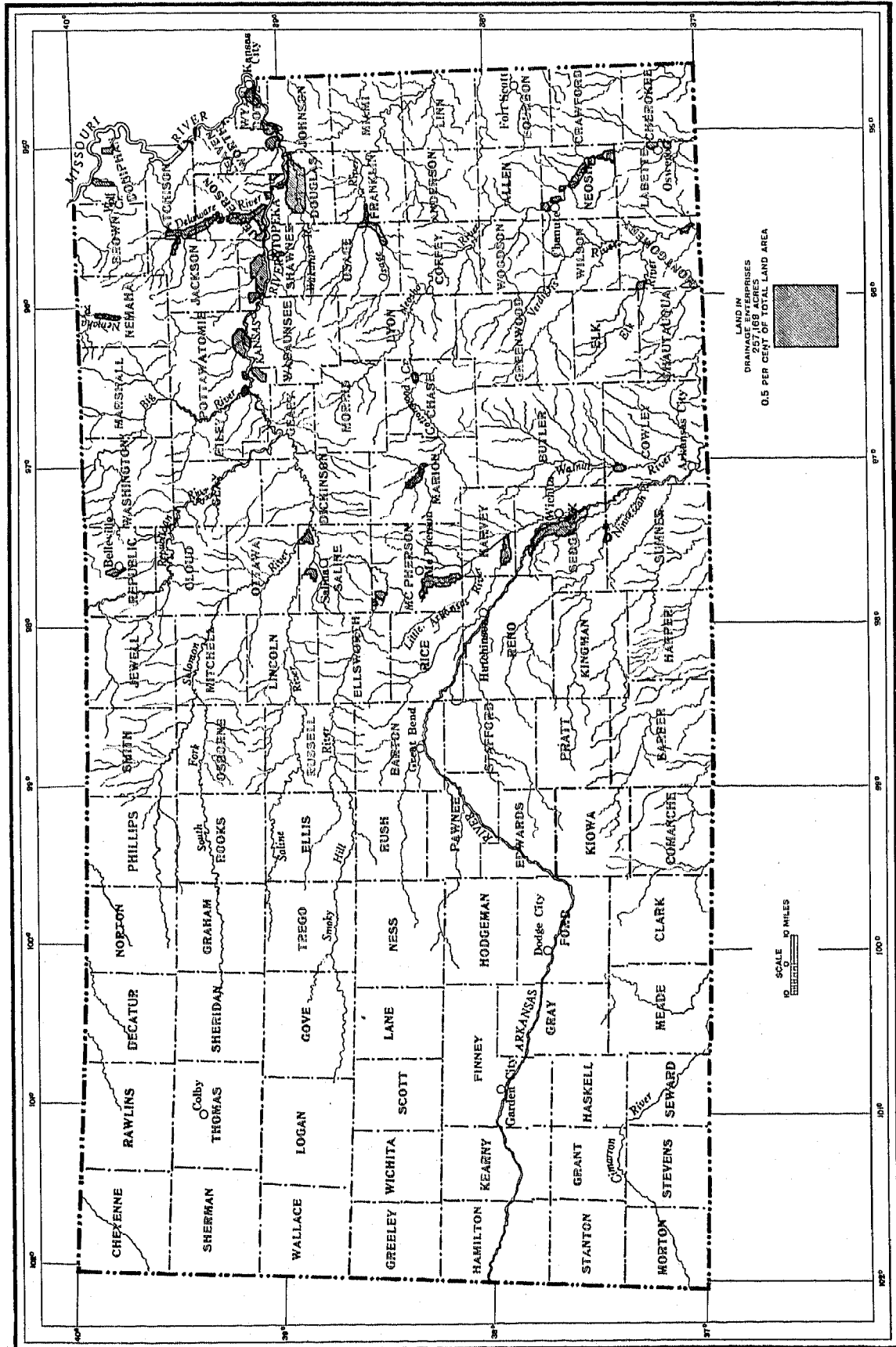
² Included in "Other counties."

³ A minus sign (—) denotes decrease. Per cent not shown when more than 1,000 or when less than one-tenth of 1 per cent.

⁴ When works under construction have been completed.

KANSAS

APPROXIMATE LOCATION OF LAND IN DRAINAGE ENTERPRISES



KANSAS

Introduction.—Statistics concerning the drainage of lands for agricultural purposes are presented in the following pages. The data relate to drainage conditions as of January 1, 1930, and the crop year 1929. The first drainage census for the United States was that of 1920 and statistics from that census are shown for purposes of comparison.

An organized drainage enterprise may include timbered and other unimproved land not yet in farms. The statistics for drainage on farms were collected in 1930 on the general farm schedule and are shown in the first section of State Table 1 and in County Table I; while those for drainage enterprises were obtained on a special drainage schedule.

Since farm lands provided with drains may be either within or without an organized enterprise, and since these drains may be either supplemental to or independent of the works installed by an enterprise, the

figures for the two parts of the drainage census are shown separately.

Summary and condition of land in enterprises.—The drainage enterprises in Kansas are all located in the eastern part of the State, and the larger portion of the drained land is in the Kansas River Valley in the northeastern section.

As most of the enterprises are located along streams which often overflow the adjacent lands, a major purpose of drainage is protection against floods.

The usual purpose of an organized enterprise is to provide adequate outlets into which the farms of the district may be drained, and to afford relief for the district as a unit. Therefore, the fact that an enterprise which has completed its drainage works contains land still unfit to raise any crop, or land fit only for a partial crop, does not necessarily show that the works are inadequate. State Table 1 includes a summary of the condition of lands in drainage enterprises.

STATE TABLE 1.—SUMMARY FOR THE STATE: 1930 AND 1920

ITEM (See definitions in Introduction)	CENSUS OF—		INCREASE ¹	
	1930	1920	Amount	Per cent
FARMS AND DRAINAGE ON FARMS				
All farms.....number.....	100,042	165,286	756	0.4
Farms reporting drainage.....number.....	2,100	2,806	-706	-25.2
All land in farms.....acres.....	46,975,047	45,425,179	1,550,408	3.4
Farm land provided with drainage.....acres.....	109,651	106,985	2,666	2.5
AREA, DRAINS, AND INVESTMENT IN ENTERPRISES				
Approximate land area of State.....acres.....	52,335,300	52,335,300		
Land in drainage enterprises.....acres.....	257,169	93,856	163,313	174.0
Improved land.....acres.....	248,241	87,440	160,702	183.9
Unimproved land:				
Woodland.....acres.....	4,260	4,135	125	3.0
Other.....acres.....	4,088	2,272	2,806	105.4
Land unfit to raise any crop for lack of drainage.....acres.....	3,592	26,704	-3,112	-40.4
Land drained, fit to raise normal crop.....acres.....	242,216	(?)		
Land partly drained, fit for partial crop.....acres.....	11,361	6,088	5,273	80.6
Land in occupied farms.....acres.....	253,845	(?)		
Land in planted crops.....acres.....	219,736	(?)		
Land idle.....acres.....	3,131	(?)		
Ditches, completed.....miles.....	324.7	138.4	186.3	134.6
Tile drains, completed.....miles.....	212.1	213.0	-0.9	-0.4
Capital invested in enterprises.....dollars.....	2,701,032	930,508	1,704,574	188.4
Average, per acre.....dollars.....	10.50	0.98	0.52	5.2

¹ A minus sign (-) denotes decrease. ² "Swampy or subject to overflow." ³ Not called for on schedule. ⁴ "Suffering a loss of crops from defective drainage."

AREA AND CAPITAL

Area of enterprises.—Statistics by counties require that an enterprise located in more than one county be divided, and the part in each county be considered as a separate enterprise. In this way, 88 drainage enterprises, with an average area of 2,929 acres, are shown for Kansas. There are 15 such enterprises of 5,000 acres or more, 60 of between 500 and 5,000 acres, and 13 of less than 500 acres. Projects of 10,000 acres or more cover approximately one-third the land in drainage enterprises.

The area of enterprises exceeds the land in enterprises by 557 acres, which is the amount of overlap.

STATE TABLE 2.—AREA OF ENTERPRISES, BY SIZE: 1930 AND 1920

SIZE GROUP	AREA OF ENTERPRISES ¹				Land in enterprises, 1930 Acres
	1930		1920		
	Acres	Per cent	Acres	Per cent	
All enterprises.....	257,726	100.0	93,856	100.0	257,169
100 to 199 acres.....	172	0.1	575	0.6	172
200 to 499 acres.....	4,235	1.6	4,419	4.7	4,235
500 to 999 acres.....	15,227	5.9	11,044	12.7	14,670
1,000 to 4,999 acres.....	75,425	30.4	33,086	35.3	78,425
5,000 to 9,999 acres.....	74,962	29.1	22,792	24.3	74,962
10,000 to 49,999 acres.....	84,705	32.9	21,040	22.4	84,705

¹ The sum of the areas of individual enterprises, including overlap.

Character of enterprise.—Organized drainage enterprises having executive officers exclusively their own, chosen according to the State drainage laws, are classed as *drainage districts*.

Enterprises which, in common with others, are under the control of State, county, or township officials, are classed as *State projects, county drains, or township drains*, according to the public officials in control.

Enterprises without legal organization, as such, belonging to individuals, partnerships, or agricultural companies, are classed as *individually owned projects*. Projects of this type are included only when the area drained is 500 acres or more.

STATE TABLE 3.—LAND AND CAPITAL, BY CHARACTER OF ENTERPRISE, 1930

CHARACTER OF ENTERPRISE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0	Dollars	Per cent 100.0
All enterprises.....	257,169	100.0	2,701,082	100.0
Drainage districts.....	204,503	79.5	2,240,191	83.3
County drains.....	30,500	15.4	303,411	13.4
Township drains.....	7,460	2.9	30,180	1.1
Individually owned projects.....	5,550	2.2	58,300	2.2

Type of drainage.—There were 87 enterprises, covering 244,369 acres of land, with an invested capital of \$2,655,082, which reported their works as completed; while 1 enterprise, covering 12,800 acres of land, with an invested capital of \$46,000, estimated that \$20,000 would be required to complete the drainage works under construction.

The works completed to January 1, 1930, included approximately 325 miles of ditches, 212 miles of tile drains, and 227 miles of levees. These figures do not include drains or levees installed by individual farmers supplemental to the works of an enterprise. There was 1 enterprise that reported land served by pumps.

STATE TABLE 4.—LAND AND CAPITAL, BY TYPE OF DRAINAGE, 1930

TYPE OF DRAINAGE (See definitions in Introduction)	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0	Dollars	Per cent 100.0
All enterprises.....	257,169	100.0	2,701,082	100.0
Gravity drainage only.....	254,069	99.0	2,651,082	98.1
Ditches and levees.....	219,742	97.1	2,385,040	88.3
Ditches, tile drains, and levees.....	4,027	1.9	200,030	0.8
Drainage, part gravity and part pumping.....	2,500	1.0	50,000	1.0

Pumping plants.—There was 1 enterprise that reported 2,000 acres served by pumps with a total capacity of 12,000 gallons per minute. This is the same enterprise reported in 1920, but some change has been made both in the pumping plant and the area served.

STATE TABLE 5.—PUMPING PLANTS AND LAND SERVED, BY KIND OF POWER: 1930 AND 1920

KIND OF POWER	Enterprises	Engine or motor capacity		Pump capacity	Land served
		Number	H. p.			Per cent 100.0
All enterprises.....	1930..	1	120	100.0	2,000
	1920..	1	65	100.0	2,200
Electric.....	1930..	1	120	100.0	2,000
	1920..	1	65	100.0	2,200

STATE TABLE 6.—PUMPING PLANTS AND LAND SERVED, BY KIND OF PUMP, 1930

KIND OF PUMP	Pumps	Pump capacity		Engines or motor capacity	Land served
		G. p. m.	Per cent 100.0		
All enterprises, centrifugal only.....	Number 2	12,000	100.0	H. p. 120	Acres 2,000

Arrears and delinquency.—There was 1 enterprise, with less than 1 per cent of the invested capital and covering approximately 1 per cent of the land in organized districts, reported as in arrears in payment of principal or interest on bonds or other obligations; while the remaining 87 enterprises reported no arrearage. Reports of 2 enterprises, covering 8,320 acres, show a total of 360 acres delinquent in drainage taxes; while the remaining 86 enterprises, covering 248,849 acres, reported no delinquency.

STATE TABLE 7.—LAND, CAPITAL INVESTED, AND AREA DELINQUENT IN DRAINAGE TAXES, ACCORDING TO ARREARAGE IN PAYMENT OF PRINCIPAL OR INTEREST ON BONDS OR OTHER OBLIGATIONS, 1930

FINANCIAL STATUS	Land		Capital invested to Jan. 1, 1930		Area delinquent
	Acres	Per cent 100.0	Dollars	Per cent 100.0	
All enterprises.....	257,169	100.0	2,701,082	100.0	360
Enterprises in arrears.....	3,000	1.2	10,780	0.7	-----
With no delinquent land.....	3,000	1.2	10,780	0.7	-----
Enterprises not in arrears.....	254,169	98.8	2,681,302	99.3	360
With some delinquent land.....	8,320	3.2	65,621	2.4	360
With no delinquent land.....	245,849	95.6	2,615,681	96.9	-----

Purpose of drainage.—In some cases the drainage development accomplished two or more purposes, as an enterprise may contain swamp land, land in farms, and land subject to overflow, all of which are benefited. However, the land is classified according to the principal purpose reported. There is some irrigated land in the southwestern part of the State, but no drainage was reported in this section. Most of the drained lands lie along streams so that protection against overflow is an important object in many enterprises.

STATE TABLE 8.—LAND AND CAPITAL, BY PURPOSE OF DRAINAGE, 1930

PURPOSE OF DRAINAGE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0	Dollars	Per cent 100.0
All enterprises.....	257,169	100.0	2,701,082	100.0
Improvement of land already in farms.....	114,597	44.6	1,175,560	43.5
Protection against overflow.....	142,572	55.4	1,525,522	56.5

Date of organization.—A period of one or more years may elapse between the date of organization and the beginning of actual construction, and in large enterprises the work may extend over a period of several years. For these reasons the original drainage was accomplished somewhat later than the dates shown. It was not feasible to secure dates of beginning and ending of construction work, so the date of establishment of each enterprise was used.

STATE TABLE 9.—LAND AND CAPITAL, BY DATE OF ORGANIZATION, 1930

DATE OF ORGANIZATION	Land		Area of enter-prises ¹		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Acres	Over-lapped acres	Dollars	Per cent
All enterprises.....	257, 169	100.0	257, 726	657	2, 701, 082	100.0
1880-1889.....	365	0.2	365	-----	5, 375	0.2
1890-1899.....	12, 800	5.0	12, 860	-----	197, 681	7.3
1900-1904.....	9, 029	3.5	9, 029	-----	182, 490	6.8
1905-1909.....	43, 473	16.9	43, 473	-----	997, 521	36.9
1910-1914.....	52, 270	20.3	52, 270	-----	330, 408	12.2
1915-1919.....	96, 410	37.5	96, 076	657	685, 506	25.4
1920-1924.....	29, 120	11.3	29, 120	-----	125, 030	4.6
1925-1929.....	13, 633	5.3	13, 633	-----	177, 011	6.6

¹ Includes overlap.

STATE TABLE 10.—CONDITION OF LAND, BY DATE OF ORGANIZATION, 1930

DATE OF ORGANIZATION	LAND IN ENTERPRISES ¹				
	Total	Condition of land			
		Improved land	Wood-land	Other unim-proved land	
All enterprises.....	Acres 257, 169	Acres 248, 241	Per cent 96.5	Acres 4, 260	Acres 4, 668
1880-1889.....	365	350	95.9	15	-----
1890-1899.....	12, 800	12, 117	94.2	513	230
1900-1904.....	9, 029	9, 004	99.7	-----	25
1905-1909.....	43, 473	41, 521	95.5	1, 360	592
1910-1914.....	52, 270	50, 150	95.9	1, 320	800
1915-1919.....	96, 410	94, 869	98.4	750	800
1920-1924.....	29, 120	28, 680	98.5	128	312
1925-1929.....	13, 633	11, 550	84.7	174	1, 000

¹ No land available for settlement.

Method of maintenance.—Some enterprises reported more than one method of maintenance, but in such cases the principal method is shown. Township drains are repaired by the township trustee upon notice of landowners that repairs are needed and the costs are assessed against the lands benefited. Laws effective only in Jefferson and Neosho Counties allow the use, for repair purposes, of surplus funds left after payment of construction costs, and the county commissioner may levy other assessments for maintenance apportioned according to the cost of original construction.

Directors of drainage districts organized under the laws of 1905 may establish a maintenance fund by levying annually a general tax, not exceeding 5 mills, upon all taxable property in the district. Supervisors of districts organized under the laws of 1911 are authorized to levy assessments for maintenance purposes,

apportioned according to the original assessments of benefits.

Systematic maintenance was reported by 66 enterprises, covering 213,013 acres of land and having an invested capital of \$2,055,619. There were 22 enterprises, with an invested capital of \$645,463 and covering 44,156 acres of land, that did not have systematic maintenance.

There were 4 enterprises, with an invested capital of \$151,188 and covering 16,648 acres of land, that reported ownership of excavators or other power equipment used principally for maintenance; and 84 enterprises, with an invested capital of \$2,549,894 and covering 240,521 acres of land, that did not report any such equipment.

STATE TABLE 11.—LAND AND CAPITAL, BY METHOD OF MAINTENANCE, 1930

METHOD OF MAINTENANCE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	257, 169	100.0	2, 701, 082	100.0
By district forces.....	64, 738	25.2	1, 507, 835	55.8
By contract.....	141, 890	55.2	764, 548	28.3
By work apportioned to landowners.....	38, 650	15.0	383, 368	14.2
Other, none, and not reported.....	11, 891	4.6	45, 331	1.7

Cost of operation and maintenance.—Since many enterprises do not have annual maintenance, it is necessary to include those that reported no cost as well as those that reported some cost for 1929, in order to determine a fair average cost of maintenance for the State. Approximately 66 per cent of the land reported some cost in 1929, 18 per cent reported no cost, and 16 per cent failed to report. The average cost was 37 cents per acre. The expenditures for operation and maintenance vary greatly from year to year.

STATE TABLE 12.—LAND AND COST OF OPERATION AND MAINTENANCE, 1929, BY TYPE OF DRAINAGE

TYPE OF DRAINAGE (See definitions in Introduction)	Land reporting on cost	COST REPORTED	
		Total	Per acre
All enterprises reporting.....	Acres 215, 434	Dollars 79, 529	Dollars 0.37
Gravity drainage only.....	212, 934	79, 529	0.37
Ditches and levees.....	208, 007	78, 212	0.38
Ditches, tile drains, and levees.....	4, 927	1, 317	0.27
Drainage, part gravity and part pumping.....	2, 500	-----	-----

DRAINAGE—KANSAS

COUNTY TABLE I.—FARMS REPORTING DRAINAGE AND FARM LAND DRAINED, 1930 AND 1920; FARMS, ALL LAND IN FARMS, AND APPROXIMATE LAND AREA, 1930

STATE AND COUNTY	FARMS REPORTING DRAINAGE ¹		FARM LAND PROVIDED WITH DRAINAGE		All farms, 1930	FARM LAND, 1930			Approximate land area, 1930
	1930	1920	1930	1920		All land in farms	Crop land	Woodland	
	Number 2, 100	Number 2, 806	Acres 109, 651	Acres 106, 085		Number 109, 042	Acres 46, 975, 647	Acres 26, 535, 054		Acres 1, 109, 506	Acres 52, 335, 300
The State.....									
Allen.....	34	69	644	1, 631	1, 058	300, 131	171, 654	7, 505	325, 120
Anderson.....	30	98	1, 084	2, 286	1, 015	340, 179	170, 850	12, 034	360, 280
Atchison.....	51	156	1, 518	4, 410	1, 755	253, 224	160, 989	23, 776	263, 680
Barton.....	8	(²)	741	(²)	1, 693	543, 771	420, 615	4, 116	670, 880
Bourbon.....	28	59	914	3, 183	2, 131	355, 153	193, 953	23, 057	419, 840
Brown.....	122	167	2, 104	5, 300	2, 204	354, 493	250, 129	20, 135	305, 440
Butler.....	25	24	710	1, 014	2, 657	832, 854	330, 093	10, 749	917, 700
Chase.....	9	20	801	1, 447	2, 839	402, 000	91, 205	9, 362	492, 160
Chautauqua.....	10	10	1, 104	563	1, 231	333, 001	105, 417	51, 465	417, 280
Cherokee.....	24	83	1, 983	3, 076	2, 174	302, 408	190, 197	19, 918	387, 200
Clay.....	5	13	535	753	1, 925	401, 220	257, 899	9, 355	408, 320
Coffey.....	37	(²)	1, 356	(²)	2, 170	307, 064	211, 085	10, 300	412, 160
Cowley.....	20	42	2, 085	1, 082	2, 894	642, 000	280, 457	10, 010	725, 120
Crawford.....	33	43	857	1, 702	2, 588	324, 290	200, 058	13, 030	397, 200
Doniphan.....	45	65	1, 007	1, 804	1, 707	220, 020	156, 070	22, 070	241, 020
Douglas.....	72	160	3, 549	7, 887	1, 852	275, 485	140, 760	27, 240	300, 160
Franklin.....	32	118	1, 410	3, 084	2, 388	346, 777	171, 802	24, 306	374, 400
Geary.....	19	(²)	600	(²)	700	223, 400	67, 728	9, 400	241, 600
Greenwood.....	33	30	1, 268	1, 198	1, 005	501, 420	107, 344	15, 021	741, 120
Harvey.....	23	65	2, 138	4, 801	1, 740	333, 036	254, 779	2, 407	345, 600
Jackson.....	41	71	3, 603	2, 924	2, 440	394, 803	242, 002	20, 050	432, 000
Jefferson.....	82	81	3, 699	3, 588	2, 100	333, 464	194, 330	34, 130	347, 620
Johnson.....	68	250	2, 381	8, 353	2, 376	271, 142	152, 718	22, 570	311, 040
Labette.....	50	84	2, 070	4, 118	2, 400	377, 455	230, 307	14, 353	411, 620
Leavenworth.....	112	80	2, 807	2, 300	2, 001	261, 420	149, 101	41, 341	281, 000
Linn.....	34	48	2, 486	812	2, 210	360, 464	173, 412	50, 974	392, 320
Lyon.....	20	(²)	830	(²)	2, 609	404, 378	241, 001	16, 153	640, 800
McPherson.....	57	36	7, 529	4, 092	2, 689	572, 121	407, 009	6, 873	676, 000
Marion.....	68	(²)	0, 008	(²)	2, 400	560, 241	352, 646	6, 058	609, 920
Marshall.....	17	12	818	1, 850	2, 852	558, 331	356, 009	27, 357	579, 200
Miami.....	72	283	2, 609	0, 150	2, 282	353, 803	182, 070	24, 436	385, 280
Montgomery.....	33	60	2, 438	2, 350	2, 522	355, 700	198, 455	23, 011	412, 160
Nemaha.....	24	22	754	703	2, 471	432, 734	273, 453	20, 058	458, 240
Neosho.....	85	55	5, 123	1, 388	2, 155	325, 593	195, 370	15, 075	371, 200
Osage.....	46	32	1, 640	1, 058	2, 005	434, 364	217, 112	15, 850	459, 520
Pottawatomie.....	10	22	1, 112	1, 447	2, 143	408, 442	217, 033	26, 815	530, 560
Reno.....	28	10	1, 073	557	3, 137	770, 630	553, 087	10, 034	704, 880
Rice.....	5	(²)	1, 450	(²)	1, 427	425, 451	305, 931	3, 505	452, 430
Riley.....	21	15	1, 512	980	1, 568	349, 610	156, 498	16, 261	380, 560
Saline.....	59	20	6, 112	1, 916	1, 839	457, 221	271, 937	5, 503	460, 800
Sedgwick.....	214	20	11, 594	1, 132	3, 520	604, 507	458, 382	0, 995	636, 160
Shawnee.....	65	63	3, 532	2, 040	2, 173	316, 093	178, 806	16, 122	348, 160
Sumner.....	34	18	1, 920	2, 036	2, 052	725, 570	530, 632	11, 085	754, 560
Wabasha.....	8	(²)	927	(²)	1, 020	440, 777	158, 120	16, 430	508, 800
Wilson.....	43	125	1, 575	5, 598	1, 845	321, 216	107, 519	19, 178	371, 840
Woodson.....	23	14	813	432	1, 100	284, 399	140, 020	16, 008	321, 020
All other counties.....	97	142	4, 271	5, 321	97, 719	27, 800, 091	15, 754, 178	280, 564	31, 430, 080

¹ No drainage on farms reported in Clark, Comanche, Decatur, Finney, Gove, Graham, Grant, Gray, Greeley, Hamilton, Haskell, Hodgeman, Jewell, Kearny, Lane, Logan, Morton, Ness, Norton, Rawlins, Rooks, Rush, Russell, Seward, Sheridan, Sherman, Smith, Stanton, Stevens, Thomas, Trego, Wallace, and Wichita Counties in 1930; nor in Barber, Cheyenne, Clark, Comanche, Decatur, Ellis, Ellsworth, Finney, Ford, Gove, Grant, Gray, Greeley, Hamilton, Haskell, Hodgeman, Kiowa, Lane, Logan, Mitchell, Morton, Ness, Norton, Russell, Scott, Seward, Sheridan, Sherman, Stafford, Stanton, Stevens, Thomas, Trego, Wallace, and Wichita Counties for 1920.

² Included in "All other counties."

DRAINAGE—KANSAS

COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER ACRE, AND CONDITION AND USE OF LAND, 1930 AND 1920; AND DRAINAGE WORKS, 1930

ITEM (See definitions in Introduction)		THE STATE	Atchison	Douglas	Harvey	Jefferson	Leavenworth	McPherson	Marion
LAND AREA									
1	Approximate land area.....1930.....acres..	52,335,360	263,080	300,160	345,600	347,520	281,600	576,000	609,020
2	Land in enterprises.....1930.....acres..	257,169	7,400	48,370	6,500	24,486	4,624	16,400	6,500
3	.....1920.....acres..	93,858	8,009	(¹)		14,147		4,760	5,216
4	Increase, ² 1920-1930.....per cent..	174.0	-7.6			73.1		244.5	24.6
5	Area of all enterprises (overlapping areas included).....1930.....acres..	257,726	7,400	48,370	6,500	25,043	4,624	16,400	6,500
6	Excess over land in enterprises (total areas overlapping).....acres..	557				557			
CONDITION AND USE OF LAND									
7	Land unfit to raise any crop.....1930.....acres..	3,592	500			529	63	250	
8	Land unfit to raise any crop prior to drainage.....acres..	87,307	2,600	48,370	1,500	6,855	2,720	2,500	
9	Decrease since drainage.....per cent..	95.9	80.8	100.0	100.0	92.3	97.7	90.0	
10	Land fit to raise a normal crop.....1930.....acres..	242,216	3,500	48,370	6,500	21,930	3,841	15,350	6,500
11	Land fit to raise a normal crop prior to drainage.....acres..	108,898	1,000		3,000	11,388	320	7,820	6,500
12	Increase since drainage ².....per cent..	122.4	250.0		116.7	92.6		90.3	
13	Land fit to raise a partial crop.....1930.....acres..	11,361	3,400	200		2,027	720	800	
14	Land fit to raise a partial crop prior to drainage.....acres..	60,964	3,800	200	2,000	6,243	1,584	6,080	
15	Decrease since drainage.....per cent..	81.4	10.5		100.0	67.5	54.5	86.8	
16	Improved land.....1930.....acres..	248,241	5,800	48,370	6,500	22,016	4,130	16,100	6,500
17	.....1920.....acres..	87,440	7,208	(¹)		14,040		4,760	5,216
18	Increase, ³ 1920-1930.....per cent..	183.9	-19.6			63.1		238.2	24.6
Unimproved land—									
19	Woodland.....1930.....acres..	4,260	800	200		1,160	400		
20	Other.....1930.....acres..	4,668	800			410	94	300	
21	Land in occupied farms.....1930.....acres..	253,845	7,169	48,370	6,500	24,486	4,230	16,400	6,000
22	Land in planted crops.....1930.....acres..	210,736	5,800	43,600	5,000	22,403	3,725	14,700	5,000
23	Woodland cleared and cultivated since drainage.....1930.....acres..	2,840	250	200		600	1,280		
24	Land idle.....1930.....acres..	3,131	600						
DRAINAGE WORKS, 1930									
25	Ditches—								
26	Completed.....miles..	324.7	4.0	9.8	18.0	28.6	8.7	30.9	7.0
27	Additional under construction.....miles..	5.5							
Tile drains—									
28	Completed.....miles..	212.1		0.5		1.5			
Levees and dikes—									
29	Completed.....miles..	227.0	3.5	5.3	1.5	6.0	6.9	6.0	
Pumping plants—									
30	Engine or motor capacity.....horsepower..	120							
31	Pump capacity.....gals. per min..	12,000							
32	Land served by pumps.....acres..	2,000							
33	Land drained by ditches only ⁴.....acres..	123,332		5,000		10,285		14,520	6,500
34	Length of ditches.....miles..	178.7		4.0		21.2		24.9	7.0
35	Land drained by ditches and tile.....acres..	2,792				2,792			
36	Length of ditches.....miles..	5.1				5.1			
37	Length of tile.....miles..	1.5				1.5			
38	Land having ditches and levees.....acres..	126,410	7,400	42,435	6,500	5,409	4,624	1,880	
39	Length of ditches.....miles..	139.6	4.0	2.3	18.0	2.3	8.7	6.0	
40	Length of levees.....miles..	208.5	3.5	2.3	1.5	6.0	6.9	6.0	
41	Land having ditches, tile drains, and levees.....acres..	2,135		1,135					
42	Length of ditches.....miles..	3.8		3.5					
43	Length of tile.....miles..	0.6		0.5					
44	Length of levees.....miles..	7.0		3.0					
45	Land drained by pumps and other drainage works ⁴.....acres..	2,500							
46	Length of ditches.....miles..	3.0							
47	Length of tile.....miles..	210.0							
48	Length of levees.....miles..	11.5							
49	Land protected by levees of an outside agency.....acres..	1,965		640			450		
CAPITAL INVESTED AND COST PER ACRE									
50	Capital invested in enterprises to Jan. 1, 1930.....dollars..	2,701,082	63,521	53,275	6,500	238,940	50,100	175,200	300,000
51	.....1920.....dollars..	936,508	90,000	(¹)		127,692		28,500	53,155
52	Increase, ³ 1920-1930.....per cent..	188.4	-29.4			87.1		514.7	404.4
53	Estimated cost of enterprises when completed.....1930.....dollars..	2,721,082	63,521	53,275	6,500	238,940	50,100	175,200	300,000
54	.....1920.....dollars..	1,210,363	90,000	(¹)		127,692		43,500	300,000
55	Average, per acre when completed.....1930.....dollars..	10.58	8.58	1.10	1.00	9.76	10.83	10.68	46.15
56	.....1920.....dollars..	12.90	11.24	(¹)		9.03		9.14	67.62
Invested in—									
57	Enterprises having ditches only, when completed.....1930.....dollars..	1,079,776		6,775		143,785		165,200	300,000
58	Average, per acre.....dollars..	8.76		1.36		8.83		10.69	46.15
59	Enterprises having ditches and tile drains.....1930.....dollars..	20,155				20,155			
60	Average, per acre.....dollars..	7.22				7.22			
61	Enterprises having ditches and levees.....1930.....dollars..	1,325,270	63,521	31,500	6,500	75,000	50,100	20,000	
62	Average, per acre.....dollars..	10.48	8.58	0.74	1.00	13.86	10.83	10.64	
63	Enterprises having ditches, tile drains, and levees.....1930.....dollars..	245,881		15,000					
64	Average, per acre.....dollars..	115.17		13.22					
65	Enterprises having pumps and other drainage works.....1930.....dollars..	50,000							
66	Average, per acre.....dollars..	20.00							

¹ Included in "Other counties."

² A minus sign (-) denotes decrease. Per cent not shown when more than 1,000.

³ When works under construction have been completed.

⁴ Area of enterprises having some land served by pumps.

DRAINAGE—KANSAS

151

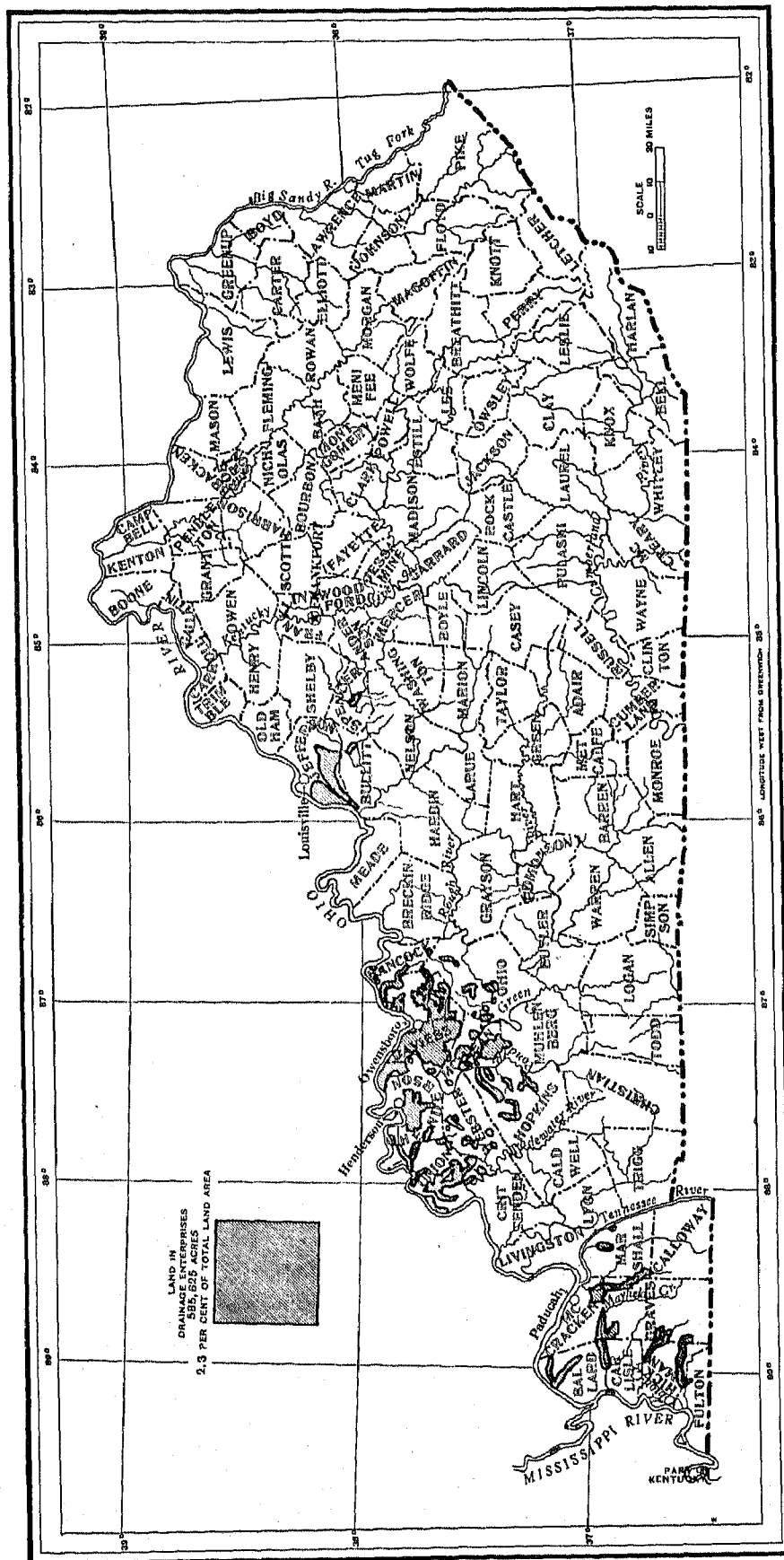
COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER ACRE, AND CONDITION AND USE OF LAND, 1930 AND 1920; AND DRAINAGE WORKS, 1930—Continued

ITEM (See definitions in Introduction)		Neosho	Osage	Pottawatomie	Riley	Saline	Sedgwick	Shawnee	Wyandotte	Other counties ¹
LAND AREA										
1	Approximate land area.....1930.....acres..	371,200	459,520	530,560	380,560	460,800	630,100	348,160	91,520	5,261,440
2	Land in enterprises.....1930.....acres..	22,434	7,407	13,800	5,210	5,800	31,700	22,510	7,200	26,028
3	.....1920.....acres..	21,758		9,567	(?)	4,636	(?)	12,516		13,247
4	Increase, ³ 1920-1930.....per cent..	3.1		44.2		25.1		79.8		101.0
5	Area of all enterprises (overlapping areas included).....1930.....acres..	22,434	7,407	13,800	5,210	5,800	31,700	22,510	7,200	26,028
6	Excess over land in enterprises (total areas overlapping).....acres..									
CONDITION AND USE OF LAND										
7	Land unfit to raise any crop.....1930.....acres..	300		40	920			600		300
8	Land unfit to raise any crop prior to drainage.....acres..	2,020		740	1,105		5,500	4,075		8,063
9	Decrease since drainage.....per cent..	85.2		94.0	21.0		100.0	85.3		90.5
10	Land fit to raise a normal crop.....1930.....acres..	21,602	7,407	13,760	3,910	5,800	31,700	20,811	7,200	24,035
11	Land fit to raise a normal crop prior to drainage.....acres..	17,536	7,407	9,960	3,610	5,800	20,500	12,200		7,561
12	Increase since drainage ³.....per cent..	23.2		38.2	8.3		54.0	69.2		217.9
13	Land fit to raise a partial crop.....1930.....acres..	442			380			1,000		2,203
14	Land fit to raise a partial crop prior to drainage.....acres..	2,260		3,100	435	5,800	5,700	6,130	7,200	10,414
15	Decrease since drainage.....per cent..	80.5		100.0	12.0	100.0	100.0	82.1	100.0	78.0
16	Improved land.....1930.....acres..	21,583	7,407	13,800	4,410	5,800	31,700	21,600	7,170	24,305
17	.....1920.....acres..	17,550		9,567	(?)	4,636	(?)	11,281		13,170
18	Increase, ³ 1920-1930.....per cent..	22.9		44.2		25.1		92.0		85.1
Unimproved land—										
19	Woodland.....1930.....acres..	308			100			550	28	624
20	Other.....1930.....acres..	453			700			300	2	1,609
21	Land in occupied farms.....1930.....acres..	22,434	7,407	13,800	5,110	5,800	31,700	22,510	7,200	24,400
22	Land in planted crops.....1930.....acres..	20,095	6,607	12,420	4,200	5,220	21,250	21,200	6,530	21,080
23	Woodland cleared and cultivated since drainage.....1930.....acres..	200						50		170
24	Land idle.....1930.....acres..	738						1,160		643
DRAINAGE WORKS, 1930										
25	Ditches—									
26	Completed.....miles..	50.9	9.0	12.5	6.0	12.8	30.0	18.0	2.6	63.9
27	Additional under construction.....miles..			5.5						
28	Tile drains—									
29	Completed.....miles..									210.1
30	Levees and dikes—									
31	Completed.....miles..	111.6						35.5	14.2	30.5
32	Pumping plants—									
33	Engine or motor capacity.....horsepower..									120
34	Pump capacity.....gals. per min..									12,000
35	Land served by pumps.....acres..									2,000
36	Land drained by ditches only ⁴.....acres..	1,200	7,407	13,800	5,210	5,800	31,700	3,000		12,910
37	Length of ditches.....miles..	8.0	9.0	18.0	6.0	12.8	30.0	4.5		32.3
38	Land drained by ditches and tile.....acres..									
39	Length of ditches.....miles..									
40	Length of tile.....miles..									
41	Land having ditches and levees.....acres..	21,234						10,510	7,200	10,218
42	Length of ditches.....miles..	53.9						13.5	2.0	28.3
43	Length of levees.....miles..	111.6						35.5	14.2	21.0
44	Land having ditches, tile drains, and levees.....acres..									1,000
45	Length of ditches.....miles..									0.3
46	Length of tile.....miles..									0.1
47	Length of levees.....miles..									4.0
48	Land drained by pumps and other drainage works ⁵.....acres..									2,500
49	Length of ditches.....miles..									3.0
50	Length of tile.....miles..									210.0
51	Length of levees.....miles..									11.5
52	Land protected by levees of an outside agency.....acres..								800	75
CAPITAL INVESTED AND COST PER ACRE										
53	Capital invested in enterprises to Jan. 1, 1930.....dollars..	383,915	45,068	70,000	11,995	51,000	70,627	310,541	308,200	555,600
54	.....1920.....dollars..	122,450		74,439	(?)	23,730	(?)	220,500		190,042
55	Increase, ³ 1920-1930.....per cent..	213.5		2.1		114.9		40.8		183.4
56	Estimated cost of enterprises when completed.....1930.....dollars..	383,915	45,068	90,000	11,995	51,000	70,627	310,541	308,200	555,600
57	.....1920.....dollars..	122,450		74,439	(?)	23,730	(?)	232,500		190,042
58	Average, per acre when completed.....1930.....dollars..	17.11	6.10	6.56	2.30	8.79	2.23	13.80	42.80	20.83
59	.....1920.....dollars..	5.63		7.78	(?)	6.12	(?)	18.58		14.80
60	Invested in—									
61	Enterprises having ditches only, when completed.....1930.....dollars..	1,140	45,068	90,000	11,995	51,000	70,627	10,780		177,806
62	Average, per acre.....dollars..	0.95	6.16	0.90	2.30	8.79	2.23	6.59		13.77
63	Enterprises having ditches and tile drains.....1930.....dollars..									
64	Average, per acre.....dollars..									
65	Enterprises having ditches and levees.....1930.....dollars..	382,775						290,761	308,200	90,013
66	Average, per acre.....dollars..	18.03						14.90	42.80	9.48
67	Enterprises having ditches, tile drains, and levees.....1930.....dollars..									230,881
68	Average, per acre.....dollars..									230.88
69	Enterprises having pumps and other drainage works.....1930.....dollars..									60,000
70	Average, per acre.....dollars..									20.00

¹ Includes Chase, Cowley, Doniphan, Franklin, Jackson, Labette, Montgomery, Nemaha, Republic, Sumner, and Wabaunsee Counties in 1930; and Chase, Doniphan, Douglas, Jackson, Labette, Riley, and Sedgwick Counties for 1920. ² Included in "Other counties." ³ Per cent not shown when more than 1,000. ⁴ When works under construction have been completed. ⁵ Area of enterprises having some land served by pumps.

KENTUCKY

APPROXIMATE LOCATION OF LAND IN DRAINAGE ENTERPRISES



KENTUCKY

Introduction.—Statistics concerning the drainage of lands for agricultural purposes are presented in the following pages. The data relate to drainage conditions as of January 1, 1930, and the crop year 1929. The first drainage census for the United States was that of 1920 and statistics from that census are shown for purposes of comparison.

An organized drainage enterprise may include timbered and other unimproved land not yet in farms. The statistics for drainage on farms were collected in 1930 on the general farm schedule and are shown in the first section of State Table 1 and in County Table I; while those for drainage enterprises were obtained on a special drainage schedule.

Summary and condition of land in enterprises.—Approximately 76 per cent of all land in drainage enterprises was reported as improved; 17 per cent, as woodland; and 7 per cent, as other unimproved land. Only 8 per cent of the land was unfit to raise any crop for lack of drainage. The usual purpose of an organized drainage enterprise is to provide adequate outlets into which the farms of the district may be drained, and to afford relief from overflow for the district as a unit. Therefore, the fact that an enterprise which has completed its drainage works contains land still unfit to raise any crop, or land fit only for a partial crop, does not necessarily show that the works are inadequate.

STATE TABLE 1.—SUMMARY FOR THE STATE: 1930 AND 1920

ITEM (See definitions in Introduction)	CENSUS OF—		INCREASE ¹	
	1930	1920	Amount	Per cent
FARMS AND DRAINAGE ON FARMS				
All farms.....number.....	246,499	270,626	-24,127	-8.9
Farms reporting drainage.....number.....	3,766	6,817	-2,021	-34.7
All land in farms.....acres.....	10,927,286	21,612,772	-1,685,486	-7.8
Farm land provided with drainage.....acres.....	195,274	225,228	-29,954	-13.3
AREA, DRAINS, AND INVESTMENT IN ENTERPRISES				
Approximate land area of State.....acres.....	25,715,840	25,715,840		
Land in drainage enterprises.....acres.....	585,625	358,480	227,145	63.4
Improved land.....acres.....	446,613	245,334	200,279	81.0
Unimproved land:				
Woodland.....acres.....	101,709	92,495	9,214	10.0
Other.....acres.....	38,303	20,651	17,652	86.5
Land unfit to raise any crop for lack of drainage.....acres.....	47,302	69,413	-22,111	-31.8
Land drained, fit to raise normal crop.....acres.....	428,883	(2)		
Land partly drained, fit for partial crop.....acres.....	100,440	30,723	72,717	198.0
Land in occupied farms.....acres.....	515,101	(2)		
Land in planted crops.....acres.....	320,084	(2)		
Land idle.....acres.....	223,064	(2)		
Ditches, completed.....miles.....	1,204.8	664.5	540.3	81.3
The drains, completed.....miles.....	71.0	86.2	-15.2	-17.6
Capital invested in enterprises.....dollars.....	5,357,633	1,621,725	3,835,908	252.1
Average, per acre.....dollars.....	9.15	4.24	4.91	115.8

¹ A minus sign (-) denotes decrease. ² "Swampy or subject to overflow." ³ Not called for on schedule. ⁴ "Suffering a loss of crops from defective drainage."

AREA AND CAPITAL

Area of enterprises.—Statistics by counties require that an enterprise located in more than one county be divided, and the part in each county be considered as a separate enterprise. In this way, there are 216 drainage enterprises in Kentucky, with an average area of 2,900 acres. There are 33 such enterprises of 5,000 acres or more, 154 of between 500 and 5,000 acres, and 29 of less than 500 acres.

STATE TABLE 2.—AREA OF ENTERPRISES, BY SIZE: 1930 AND 1920

SIZE GROUP	AREA OF ENTERPRISES ¹				Land in enterprises, 1930 Acres
	1930		1920		
	Acres	Per cent	Acres	Per cent	
All enterprises.....	629,408	100.0	358,480	100.0	585,625
100 to 199 acres.....	795	0.1	1,651	0.5	795
200 to 499 acres.....	7,538	1.2	16,637	4.6	7,538
500 to 999 acres.....	36,505	5.8	23,143	6.5	35,605
1,000 to 4,999 acres.....	202,222	32.3	130,176	36.3	198,470
5,000 to 9,999 acres.....	122,746	19.6	79,592	22.2	113,746
10,000 to 49,999 acres.....	200,998	32.1	107,381	30.0	183,787
50,000 to 99,999 acres.....	55,606	8.9			245,686

¹ The sum of the areas of individual enterprises, including overlap.
² Part of an enterprise containing 25,606 acres; remainder was overlap.

The area of enterprises exceeds the land in enterprises by 40,783 acres, which is the amount of overlap.

Character of enterprise.—Organized drainage enterprises having executive officers exclusively their own, chosen according to the State drainage laws, are classed as *drainage districts*.

Enterprises which, in common with others, are under the control of State, county, or township officials, are classed as *State projects, county drains, or township drains*, according to the public officials in control.

Enterprises without legal organization, as such, belonging to individuals, partnerships, or agricultural companies, are classed as *individually owned projects*. Projects of this type are included only when the area drained is 500 acres or more.

Some of the land in Kentucky shown as in *county drains* may be in *drainage districts*, as the laws of 1912 contain a proviso whereby a district may elect its own officers and retain them until the completion of the works and payment of all indebtedness, after which the enterprise automatically becomes a county drain. Such districts could not be clearly identified so no separation was attempted. All enterprises reported in Kentucky are included either in "County drains" or "Individually owned projects."

STATE TABLE 3.—LAND AND CAPITAL, BY CHARACTER OF ENTERPRISE, 1930

CHARACTER OF ENTERPRISE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0	Dollars	Per cent 100.0
All enterprises.....	585,625	100.0	5,357,633	100.0
County drains.....	582,125	99.4	5,331,701	99.5
Individually owned projects.....	3,500	0.6	25,932	0.5

Type of drainage.—All enterprises were considered complete, as no work under construction was reported. The works completed to January 1, 1930, comprised approximately 1,205 miles of ditches and 71 miles of tile drains. These figures do not include drains or levees installed by individual farmers supplemental to the works of an enterprise. No pumping districts were reported in Kentucky.

STATE TABLE 4.—LAND AND CAPITAL, BY TYPE OF DRAINAGE, 1930

TYPE OF DRAINAGE (See definitions in Introduction)	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0	Dollars	Per cent 100.0
All enterprises.....	585,625	100.0	5,357,633	100.0
Gravity drainage only.....	585,625	100.0	5,357,633	100.0
Ditches.....	503,025	96.1	5,065,717	94.0
Tile drains.....	117	(¹)	1,070	(¹)
Ditches and tile drains.....	22,483	3.8	280,937	5.4

¹ Less than one-tenth of 1 per cent.

Arrears and delinquency.—There were 40 enterprises, having half the invested capital and covering, approximately, one-third of the land in organized districts, reported as in arrears in payment of principal or interest on bonds or other obligations; the remaining 176 enterprises reported no arrears. Reports of 59 enterprises, covering 146,679 acres, show a total of 54,219 acres delinquent in drainage taxes; 145 enterprises, covering 385,564 acres, reported no delinquency; while 12 failed to report.

STATE TABLE 5.—LAND, CAPITAL INVESTED, AND AREA DELINQUENT IN DRAINAGE TAXES, ACCORDING TO ARREARAGE IN PAYMENT OF PRINCIPAL OR INTEREST ON BONDS OR OTHER OBLIGATIONS, 1930

FINANCIAL STATUS	Land		Capital invested to Jan. 1, 1930		Area delinquent
	Acres	Per cent 100.0	Dollars	Per cent 100.0	Acres
All enterprises.....	585,625	100.0	5,357,633	100.0	54,219
Enterprises in arrears.....	209,821	35.8	2,678,900	50.0	51,200
With some delinquent land.....	104,864	17.9	1,069,685	31.2	51,200
With no delinquent land.....	71,000	12.1	779,074	14.5	-----
With no report on delinquency.....	33,057	5.8	230,241	4.3	-----
Enterprises not in arrears.....	375,804	64.2	2,678,733	50.0	3,010
With some delinquent land.....	41,815	7.2	437,428	8.2	3,010
With no delinquent land.....	314,564	53.7	2,124,456	39.6	-----
With no report on delinquency.....	10,425	3.3	116,849	2.2	-----

Purpose of drainage.—In some cases the drainage development accomplished two or more purposes, as an enterprise may contain swamp land, land in farms, and land subject to overflow, all of which are benefited. However, the land is classified according to the principal purpose reported. The results here show that the "Improvement of land already in farms" was the main purpose in draining approximately 77 per cent of the land in enterprises.

STATE TABLE 6.—LAND AND CAPITAL, BY PURPOSE OF DRAINAGE, 1930

PURPOSE OF DRAINAGE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0	Dollars	Per cent 100.0
All enterprises.....	585,625	100.0	5,357,633	100.0
Reclamation of swamp land not previously in farms.....	106,064	18.3	1,314,486	24.5
Improvement of land already in farms.....	452,361	77.2	3,891,147	72.6
Protection against overflow.....	26,300	4.5	152,000	2.9

Date of organization.—A period of one or more years may elapse between the date of organization and the beginning of actual construction, and in large enterprises the work may extend over a period of several years. For these reasons the original drainage was accomplished somewhat later than the dates shown. It was not feasible to secure dates of beginning and ending of construction work, so the date of establishment of each enterprise was used.

In Jefferson County some enterprises began drainage between 1858 and 1890, but these are now included in projects of a later date.

STATE TABLE 7.—LAND AND CAPITAL, BY DATE OF ORGANIZATION, 1930

DATE OF ORGANIZATION	Land		Area of enterprises ¹		Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0	Acres	Over-lapped acres	Dollars	Per cent 100.0
All enterprises.....	585,625	100.0	626,408	40,783	5,357,633	100.0
1800-1890.....	10,617	2.8	10,617	-----	105,675	2.0
1900-1904.....	18,102	3.1	18,102	-----	46,838	0.9
1905-1909.....	35,694	6.1	35,694	-----	105,107	2.0
1910-1914.....	135,767	23.2	136,030	272	1,047,562	19.6
1915-1919.....	220,015	38.8	240,215	22,800	2,594,237	48.4
1920-1924.....	117,238	20.0	130,588	13,350	1,224,120	22.8
1925-1929.....	35,232	6.0	40,093	4,861	234,094	4.4

¹ Includes overlap.

STATE TABLE 8.—CONDITION OF LAND AND LAND AVAILABLE FOR SETTLEMENT, BY DATE OF ORGANIZATION, 1930

DATE OF ORGANIZATION	LAND IN ENTERPRISES					Land available for settlement
	Total	Condition of land			Land available for settlement	
		Improved land	Woodland	Other unimproved land		
All enterprises.....	585,625	445,618	76.1	101,700	33,803	8,274
1890-1899.....	10,617	14,690	88.2	1,282	675	-----
1900-1904.....	18,102	14,657	80.7	2,657	848	-----
1905-1909.....	35,694	28,790	80.6	5,460	1,454	-----
1910-1914.....	135,767	110,304	81.2	18,460	7,013	290
1915-1919.....	220,015	177,866	80.8	44,632	24,913	5,715
1920-1924.....	117,238	92,657	79.0	22,330	2,335	2,080
1925-1929.....	35,232	27,270	77.4	6,802	1,100	309

Method of maintenance.—Some enterprises reported more than one method of maintenance, but in such cases the principal method is shown.

All drainage improvements are under the supervision and control of the county drainage commissioner whose duty is to keep them in good repair. Assessments for maintenance and repair work are apportioned according to the original assessment for construction of the drainage system.

Systematic maintenance was reported by 179 enterprises, covering 494,639 acres of land and having an

DRAINAGE—KENTUCKY

invested capital of \$4,416,747. There were 37 enterprises, with an invested capital of \$940,886 and covering 90,986 acres of land that did not have systematic maintenance.

There were 82 enterprises, with an invested capital of \$1,621,797 and covering 218,625 acres of land, that reported ownership of excavators or other power equipment used principally for maintenance. There were 134 enterprises, with an invested capital of \$3,735,836 and covering 367,000 acres of land, that did not report any such equipment.

STATE TABLE 9.—LAND AND CAPITAL, BY METHOD OF MAINTENANCE, 1930

METHOD OF MAINTENANCE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent 100.0	Dollars	Per cent 100.0
All enterprises.....	685,625	100.0	5,357,633	100.0
By district forces.....	363,771	62.1	3,464,501	64.7
By contract.....	128,044	21.0	873,354	16.3
By work apportioned to landowners.....	40,482	0.0	283,585	5.3
Other, none, and not reported.....	53,328	9.1	736,103	13.7

Cost of operation and maintenance.—Since many enterprises do not have annual maintenance, it is necessary to include those that reported no cost as well as those that reported some cost for 1929, in order to determine a fair average cost of maintenance for the State. Expenditures for operation and maintenance vary greatly from year to year. This is partly due to the fact that the money available for the purpose depends somewhat on the yield and price of crops.

STATE TABLE 10.—LAND AND COST OF OPERATION AND MAINTENANCE, 1929, BY TYPE OF DRAINAGE

TYPE OF DRAINAGE (See definitions in Introduction)	Land reporting on cost	COST REPORTED	
		Total	Per acre
All enterprises reporting.....	Acres 585,625	Dollars 91,098	Dollars 0.16
Gravity drainage only.....	585,625	91,098	0.16
Ditches.....	563,025	88,580	0.16
Tile drains.....	117		
Ditches and tile drains.....	22,483	2,518	0.11

COUNTY TABLE I.—FARMS REPORTING DRAINAGE AND FARM LAND DRAINED, 1930 AND 1920; FARMS, ALL LAND IN FARMS, AND APPROXIMATE LAND AREA, 1930

STATE AND COUNTY	FARMS REPORTING DRAINAGE ¹		FARM LAND PROVIDED WITH DRAINAGE		All farms, 1930	FARM LAND, 1930			Approximate land area, 1930
	1930	1920	1930	1920		All land in farms	Crop land	Woodland	
	Number	Number	Acres	Acres		Acres	Acres	Acres	
The State.....	3,790	5,817	105,274	225,228	246,419	10,927,286	6,026,915	4,790,020	25,715,840
Brackenridge.....	10	(²)	593	(²)	2,763	309,130	99,983	73,188	303,520
Bullitt.....	74	77	3,474	4,303	1,229	138,066	41,027	50,023	197,120
Butler.....	131	102	4,740	4,625	2,160	228,517	91,478	72,055	266,580
Caldwell.....	22	57	820	885	1,708	180,605	76,318	29,400	200,080
Carlisle.....	7	18	723	713	1,163	90,816	48,760	16,378	126,720
Carroll.....	5	(²)	829	(²)	1,188	82,514	24,570	10,886	84,450
Davless.....	778	913	37,661	42,036	3,728	245,053	139,739	17,755	305,920
Fulton.....	19	110	811	4,074	1,197	91,233	50,347	8,867	123,520
Graves.....	191	32	7,861	997	4,633	308,320	153,030	35,138	352,040
Grayson.....	15	28	505	1,281	2,804	268,738	100,678	58,465	318,080
Hancock.....	24	163	874	5,122	1,075	90,705	34,777	10,104	123,520
Hardin.....	22	(²)	750	(²)	2,752	315,135	92,000	58,523	387,840
Henderson.....	451	403	30,265	21,757	2,625	243,558	142,227	10,420	278,400
Hickman.....	75	53	3,322	1,799	1,484	123,655	65,264	17,034	144,000
Hopkins.....	100	195	4,900	7,000	2,653	220,043	108,322	41,266	349,440
Jefferson.....	64	257	2,429	8,716	2,010	100,319	82,250	16,983	247,080
Lewis.....	23	45	1,049	1,181	2,196	220,264	50,080	118,205	314,240
Logan.....	43	42	948	808	3,379	309,324	142,364	54,060	411,520
McCracken.....	32	37	940	891	1,979	120,435	58,404	13,481	152,900
McLean.....	204	140	0,351	3,094	1,576	132,838	73,732	15,955	161,920
Madison.....	26	60	1,088	1,218	3,314	252,515	70,057	19,644	285,440
Marshall.....	60		2,348		2,417	170,210	80,308	31,270	209,280
Muhlenberg.....	59	141	3,562	5,384	2,409	193,010	70,592	48,168	302,080
Nelson.....	21	123	1,104	8,632	2,081	225,014	74,077	46,837	293,040
Ohio.....	99	229	3,993	8,280	3,191	275,434	115,037	50,547	373,700
Rockcastle.....	49	(²)	588	(²)	2,125	159,381	44,601	68,203	198,400
Union.....	520	292	55,752	25,554	1,342	131,129	102,050	10,399	209,000
Wayne.....	12	73	593	1,887	2,355	289,947	90,423	121,093	306,920
Webster.....	125	414	4,689	21,705	1,927	171,043	82,087	14,557	229,160
All other counties.....	499	1,803	8,877	41,760	179,875	14,162,161	4,537,751	3,651,417	18,433,280

¹ No drainage on farms reported in Anderson, Bourbon, Clark, Gallatin, Henry, Jessamine, Leslie, Letcher, Martin, Menifee, Nicholas, Robertson, Trimble, and Woodford Counties in 1930; nor in Bourbon, Breathitt, Fayette, Garrard, Grant, Harrison, Knott, Marshall, Martin, Mason, Menifee, Nicholas, Perry, Pike, and Robertson Counties for 1920.

² Included in "All other counties."

DRAINAGE—KENTUCKY

COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER ACRE, AND CONDITION AND USE OF LAND, 1930 AND 1920; AND DRAINAGE WORKS, 1930

	ITEM (See definitions in Introduction)	THE STATE	Ballard	Davless	Graves	Hancock	Hender- son	Hick- man	Hopkins
LAND AREA									
1	Approximate land area.....1930.....acres..	25,715,840	161,280	305,020	352,040	123,520	278,400	144,000	349,440
2	Land in enterprises.....1930.....acres..	585,625	30,049	170,265	15,807	12,959	78,880	11,328	22,003
3	.....1920.....acres..	368,480	8,560	61,477	(1)	10,758	48,304	4,870	15,219
4	Increase, 1920-1930.....per cent..	63.4	251.0	177.0	-----	20.4	63.3	132.2	48.5
5	Area of all enterprises (overlapping areas included).....1930.....acres..	620,408	30,049	193,565	15,807	12,959	83,750	11,000	22,003
6	Excess over land in enterprises (total areas overlapping).....acres..	40,783	-----	23,300	-----	-----	4,861	272	-----
CONDITION AND USE OF LAND									
7	Land unfit to raise any crop.....1930.....acres..	47,302	3,000	13,831	1,080	100	1,350	1,000	560
8	Land unfit to raise any crop prior to drainage.....acres..	254,413	4,700	86,593	3,652	8,200	12,600	4,381	6,400
9	Decrease since drainage.....per cent..	81.4	36.2	84.0	70.3	08.8	80.3	77.2	94.7
10	Land fit to raise a normal crop.....1930.....acres..	428,883	21,240	123,333	13,720	11,326	49,700	10,028	14,695
11	Land fit to raise a normal crop prior to drainage.....acres..	143,700	7,022	25,946	6,801	3,078	22,800	5,320	3,070
12	Increase since drainage.....per cent..	198.4	168.2	375.3	101.9	268.0	118.0	88.5	378.7
13	Land fit to raise a partial crop.....1930.....acres..	109,440	5,800	33,101	1,052	1,533	27,830	300	7,408
14	Land fit to raise a partial crop prior to drainage.....acres..	187,500	17,427	57,726	5,414	1,012	43,480	1,027	10,133
15	Decrease since drainage.....per cent..	41.6	66.7	42.0	80.6	4.9	36.0	81.6	26.0
16	Improved land.....1930.....acres..	445,613	26,499	110,027	9,412	11,244	69,052	3,172	16,848
17	.....1920.....acres..	245,334	2,822	56,004	(1)	3,087	33,403	1,952	6,888
18	Increase, 1920-1930.....per cent..	81.6	839.0	118.0	-----	182.0	106.4	62.5	144.6
Unimproved land—									
19	Woodland.....1930.....acres..	101,700	2,150	30,004	3,926	1,505	8,537	8,150	3,600
20	Other.....1930.....acres..	38,303	1,400	10,074	2,520	120	1,300	-----	2,155
21	Land in occupied farms.....1930.....acres..	515,101	29,040	135,003	14,170	12,521	78,880	7,383	15,425
22	Land in planted crops.....1930.....acres..	320,084	18,422	107,875	7,820	0,368	32,000	905	7,100
23	Woodland cleared and cultivated since drainage.....1930.....acres..	60,401	100	16,311	1,800	1,495	5,475	50	2,000
24	Land idle.....1930.....acres..	223,004	3,800	43,403	7,755	3,560	40,880	10,082	13,003
25	Land available for settlement.....1930.....acres..	8,274	-----	50	1,617	-----	-----	3,945	-----
DRAINAGE WORKS, 1930									
26	Ditches— Completed.....miles..	1,204.8	37.2	339.7	30.7	55.2	100.0	23.0	48.5
27	Tile drains— Completed.....miles..	71.0	-----	5.3	-----	-----	-----	-----	44.0
28	Land drained by ditches only.....acres..	563,025	30,040	106,108	15,807	12,959	78,880	11,328	21,633
29	Length of ditches.....miles..	1,148.7	37.2	328.5	36.7	55.2	100.0	23.0	43.0
30	Land drained by tile only.....acres..	117	-----	117	-----	-----	-----	-----	-----
31	Length of tile.....miles..	2.6	-----	2.0	-----	-----	-----	-----	-----
32	Land drained by ditches and tile.....acres..	22,483	-----	3,950	-----	-----	-----	-----	970
33	Length of ditches.....miles..	56.1	-----	11.2	-----	-----	-----	-----	5.5
34	Length of tile.....miles..	68.4	-----	2.7	-----	-----	-----	-----	44.0
CAPITAL INVESTED AND COST PER ACRE									
35	Capital invested in enterprises to Jan. 1, 1930.....dollars..	5,357,633	244,000	1,339,974	304,567	238,537	380,465	158,523	142,728
36	.....1920.....dollars..	1,521,725	51,172	246,560	(1)	37,942	180,820	30,106	31,016
37	Increase, 1920-1930.....per cent..	252.1	376.8	436.0	-----	528.7	105.2	425.0	360.2
38	Estimated cost of enterprises when completed.....1930.....dollars..	5,357,633	244,000	1,339,974	304,567	238,537	380,465	158,523	142,728
39	.....1920.....dollars..	1,820,990	66,172	280,555	(1)	222,129	107,571	30,106	52,447
40	Average, per acre when completed.....1930.....dollars..	0.15	8.12	7.87	10.19	18.41	4.94	13.99	6.81
41	.....1920.....dollars..	5.08	7.73	4.71	(1)	20.05	4.09	6.19	3.45
Invested in—									
42	Enterprises having ditches only.....1930.....dollars..	5,065,717	244,000	1,303,007	304,567	238,537	380,465	158,523	120,800
43	Average, per acre.....dollars..	0.00	8.12	7.84	10.19	18.41	4.94	13.99	5.86
44	Enterprises having tile drains only.....1930.....dollars..	1,970	-----	1,070	-----	-----	-----	-----	-----
45	Average, per acre.....dollars..	16.01	-----	16.91	-----	-----	-----	-----	-----
46	Enterprises having ditches and tile drains.....1930.....dollars..	289,937	-----	34,088	-----	-----	-----	-----	15,832
47	Average, per acre.....dollars..	12.00	-----	8.63	-----	-----	-----	-----	16.32

¹ Included in "Other counties."

DRAINAGE—KENTUCKY

COUNTY TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER ACRE, AND CONDITION AND USE OF LAND, 1930 AND 1920; AND DRAINAGE WORKS, 1930—Continued

ITEM (See definitions in Introduction)		Jefferson	Mc- Cracken	McLean	Marshall	Ohio	Union	Webster	Other counties ¹
LAND AREA									
1	Approximate land area.....1930.....acres	247,680	152,060	161,920	209,280	373,760	208,000	220,100	808,480
2	Land in enterprises.....1930.....acres	63,000	10,298	40,090	10,700	22,164	50,250	36,250	10,013
3	.....1920.....acres	90,000	(?)	18,485	5,180	10,320	32,722	42,291	10,285
4	Increase, ² 1920-1930.....per cent	-30.0	-----	116.9	106.6	114.8	53.6	-14.3	6.1
5	Area of all enterprises (overlapping areas included).....1930.....acres	63,000	10,298	40,090	10,700	22,164	50,250	48,000	10,013
6	Excess over land in enterprises (total areas overlapping).....acres	-----	-----	-----	-----	-----	-----	12,350	-----
CONDITION AND USE OF LAND									
7	Land unfit to raise any crop.....1930.....acres	3,000	2,361	8,407	4,700	-----	200	1,075	6,092
8	Land unfit to raise any crop prior to drainage.....acres	41,000	5,100	23,440	7,100	22,164	11,150	11,950	2,014
9	Decrease since drainage ³.....per cent	92.7	53.7	64.1	33.8	100.0	98.2	86.0	+109.0
10	Land fit to raise a normal crop.....1930.....acres	60,000	9,937	21,098	6,000	22,164	35,050	29,350	4,224
11	Land fit to raise a normal crop prior to drainage.....acres	17,000	3,777	8,900	2,250	-----	10,000	14,400	6,442
12	Increase since drainage ³.....per cent	252.9	33.7	137.0	166.7	-----	119.1	103.8	-34.4
13	Land fit to raise a partial crop.....1930.....acres	-----	1,000	10,585	-----	-----	15,000	5,225	597
14	Land fit to raise a partial crop prior to drainage.....acres	5,000	1,421	7,750	1,350	-----	23,100	9,900	1,557
15	Decrease since drainage ³.....per cent	100.0	29.6	+36.0	100.0	-----	35.1	47.2	61.0
16	Improved land.....1930.....acres	58,000	4,300	20,898	5,000	14,217	44,200	31,525	7,619
17	.....1920.....acres	45,000	(?)	13,700	4,980	7,657	29,294	32,984	6,594
18	Increase, ² 1920-1930.....per cent	24.4	-----	96.2	0.4	85.7	50.9	-4.4	15.5
Unimproved land--									
19	Woodland.....1930.....acres	6,000	3,600	11,079	3,700	5,723	6,050	4,275	2,354
20	Other.....1930.....acres	1,000	2,398	2,113	2,000	2,224	-----	460	940
21	Land in occupied farms.....1930.....acres	63,000	8,998	26,807	5,600	20,437	50,250	36,150	10,660
22	Land in planted crops.....1930.....acres	53,000	2,900	20,813	5,000	11,610	23,100	17,800	2,411
23	Woodland cleared and cultivated since drainage.....1930.....acres	23,000	2,500	585	1,450	6,575	4,150	4,500	-----
24	Land idle.....1930.....acres	6,000	6,398	14,241	5,300	8,654	27,150	17,850	8,319
25	Land available for settlement.....1930.....acres	-----	-----	309	2,100	-----	-----	-----	253
DRAINAGE WORKS, 1930									
26	Ditches-- Completed.....miles	85.0	18.8	120.6	25.0	81.3	73.5	132.2	22.1
27	Tile drains-- Completed.....miles	-----	-----	2.8	-----	-----	18.9	-----	-----
28	Land drained by ditches only.....acres	63,000	10,298	23,127	10,700	22,164	49,650	30,250	10,013
29	Length of ditches.....miles	85.0	18.8	82.7	25.0	81.3	72.0	132.2	22.1
30	Land drained by tile only.....acres	-----	-----	-----	-----	-----	-----	-----	-----
31	Length of tile.....miles	-----	-----	-----	-----	-----	-----	-----	-----
32	Land drained by ditches and tile.....acres	-----	-----	16,963	-----	-----	600	-----	-----
33	Length of ditches.....miles	-----	-----	87.9	-----	-----	1.5	-----	-----
34	Length of tile.....miles	-----	-----	2.8	-----	-----	18.9	-----	-----
CAPITAL INVESTED AND COST PER ACRE									
35	Capital invested in enterprises to Jan. 1, 1930.....dollars	753,000	144,680	542,601	208,200	230,286	311,801	151,470	197,795
36	.....1920.....dollars	175,000	(?)	104,076	77,366	45,500	207,568	129,609	42,891
37	Increase, 1920-1930.....per cent	330.3	-----	179.6	169.1	406.1	16.5	16.9	361.2
38	Estimated cost of enterprises when completed.....1930.....dollars	753,000	144,680	542,601	208,200	230,286	311,801	151,470	197,795
39	.....1920.....dollars	197,000	(?)	202,992	77,366	45,500	207,568	129,609	42,891
40	Average, per acre when completed.....1930.....dollars	11.95	14.05	13.53	19.46	10.39	6.20	4.18	18.12
41	.....1920.....dollars	2.19	(?)	10.98	14.94	4.41	8.18	3.06	4.17
42	Invested in-- Enterprises having ditches only.....1930.....dollars	753,000	144,680	303,184	208,200	230,286	311,201	151,470	197,795
43	Average, per acre.....dollars	11.95	14.05	13.11	19.46	10.39	6.27	4.18	18.12
44	Enterprises having tile drains only.....1930.....dollars	-----	-----	-----	-----	-----	-----	-----	-----
45	Average, per acre.....dollars	-----	-----	-----	-----	-----	-----	-----	-----
46	Enterprises having ditches and tile drains.....1930.....dollars	-----	-----	239,417	-----	-----	600	-----	-----
47	Average, per acre.....dollars	-----	-----	14.11	-----	-----	1.00	-----	-----

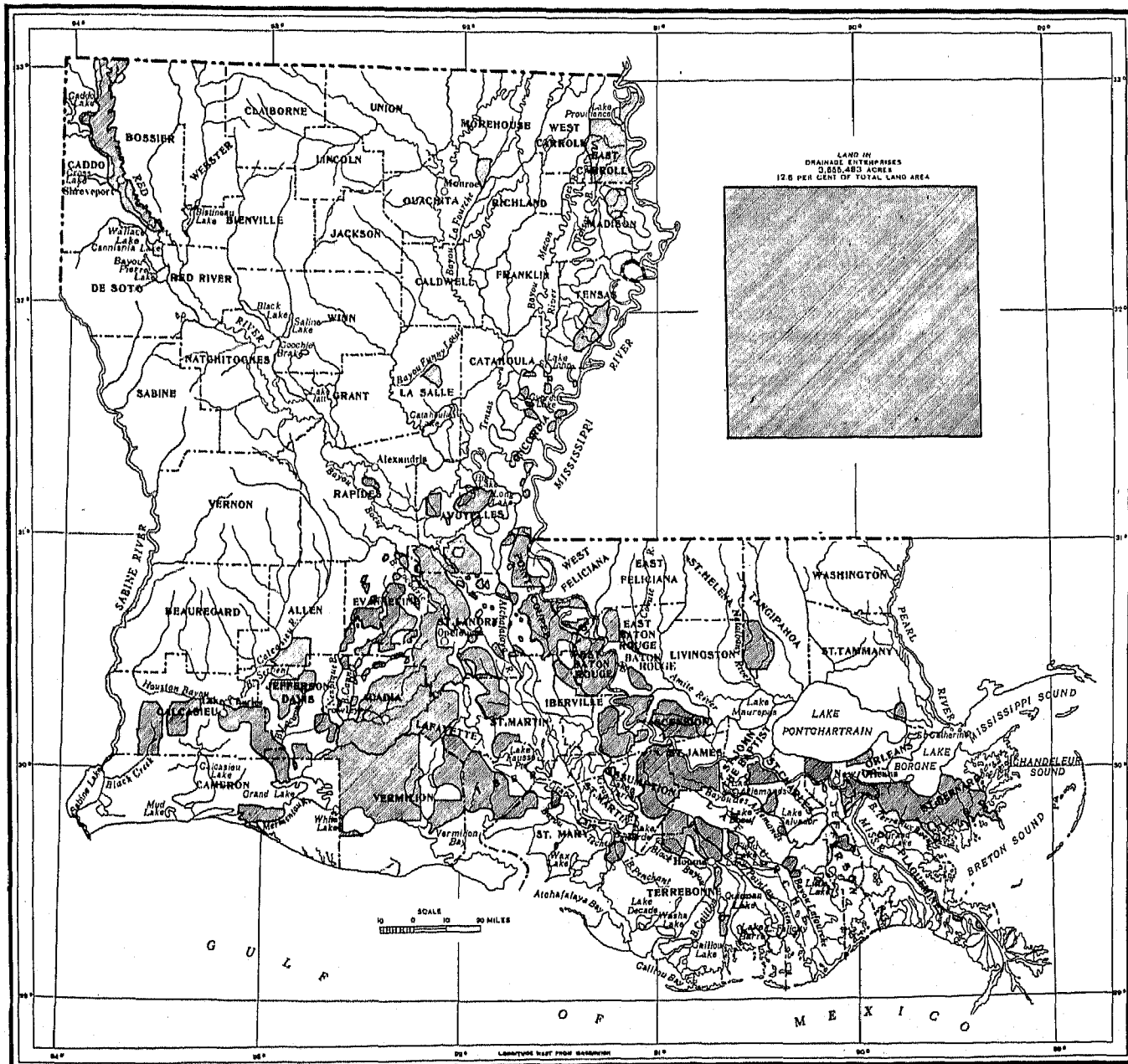
¹ Includes only Bullitt, Carlisle, Fulton, Muhlenberg, and Spencer Counties in 1930; and Bullitt, Carlisle, Graves, Lewis, McCracken, Muhlenberg, and Spencer Counties for 1920.

² Included in "Other counties."

³ A minus sign (-) denotes decrease. A plus sign (+) denotes increase. Per cent not shown when more than 1,000.

LOUISIANA

APPROXIMATE LOCATION OF LAND IN DRAINAGE ENTERPRISES



LOUISIANA

Introduction.—Statistics concerning the drainage of lands for agricultural purposes are presented in the following pages. The data relate to drainage conditions as of January 1, 1930, and the crop year 1929. The first drainage census for the United States was that of 1920 and statistics from that census are shown for purposes of comparison.

An organized drainage enterprise may include timbered and other unimproved land not yet in farms. The statistics for drainage on farms were collected in 1930 on the general farm schedule and are shown in the first section of State Table 1 and in Parish Table I; while those for drainage enterprises were obtained on a special drainage schedule.

Since farm lands provided with drains may be either within or without an organized enterprise, and since these drains may be either supplemental to or independent of the works installed by an enterprise, the figures for the two parts of the drainage census are shown separately.

Summary and condition of land in enterprises.—Most of the drainage enterprises in Louisiana are located in the alluvial land of the southern and southeastern sections of the State. This land generally is very little above sea level and portions of it can not be successfully drained without the use of pumps. The enterprises located near the Mississippi River are protected from overflow by the United States Government levee system.

The enterprises in Acadia, Calcasieu, Jefferson Davis, and Vermilion Parishes include large areas of irrigated prairie used for growing rice. The 1930 census of irrigation shows approximately 170,000 acres of drained land located in irrigation enterprises.

Approximately 62 per cent of all land in drainage enterprises was reported as improved; 21 per cent was woodland; 17 per cent was other unimproved land; 22 per cent was unfit to raise any crop for lack of drainage; and 37 per cent was idle in 1929.

The average cost of drainage in Louisiana was \$5.68 per acre. This low cost is due partly to the fact that many large areas are provided only with outlet drainage channels which must be supplemented with lateral ditches before satisfactory drainage is secured.

The annual rainfall for 1929 varied from 35.9 inches at Shreveport to 90.8 inches at New Orleans, and averaged 63.6 inches for the State. This amount was 8.3 inches above normal.

The usual purpose of an organized drainage enterprise is to provide adequate outlets into which the farms of the district may be drained, and to afford relief from overflow for the district as a unit. Therefore, the fact that an enterprise which has completed its drainage works contains land still unfit to raise any crop, or land fit for only a partial crop, does not necessarily show that the works are inadequate. State Table 1 includes a summary of the condition of lands in drainage enterprises.

STATE TABLE 1.—SUMMARY FOR THE STATE: 1930 AND 1920

ITEM (See definitions in Introduction)	CENSUS OF—		INCREASE ¹	
	1930	1920	Amount	Per cent
FARMS AND DRAINAGE ON FARMS				
All farms.....	number..	161,445	135,403	25,082 19.2
Farms reporting drainage.....	number..	14,202	21,271	-7,069 -33.0
All land in farms.....	acres..	9,355,437	10,019,822	-664,385 -6.6
Farm land provided with drainage.....	acres..	780,202	1,004,935	-218,043 -21.8
AREA, DRAINS, AND INVESTMENT IN ENTERPRISES				
Approximate land area of State.....	acres..	20,061,760	20,061,760	-----
Land in drainage enterprises.....	acres..	3,655,483	2,266,328	1,389,155 61.3
Improved land.....	acres..	2,207,737	1,269,391	938,346 78.0
Unimproved land:				
Woodland.....	acres..	746,560	407,822	278,738 59.6
Other.....	acres..	641,186	529,115	112,071 21.2
Land unfit to raise any crop for lack of drainage.....	acres..	786,880	2,569,189	217,700 38.2
Land drained, fit to raise normal crop.....	acres..	2,486,972	(2)	-----
Land partly drained, fit for partial crop.....	acres..	381,622	1,098,935	182,687 48.1
Land in occupied farms.....	acres..	2,571,531	(3)	-----
Land in planted crops.....	acres..	1,822,620	(3)	-----
Land idle.....	acres..	1,348,437	(3)	-----
Ditches, completed.....	miles..	7,701.2	1,771.6	5,929.6 334.7
Tile drains, completed.....	miles..	2.0	0.2	1.8 900.0
Capital invested in enterprises.....	dollars..	20,752,645	9,021,991	11,730,654 130.0
Average, per acre.....	dollars..	5.68	3.98	1.70 42.7

¹ A minus sign (—) denotes decrease. ² "Swampy or subject to overflow." ³ Not called for on schedule. ⁴ "Suffering a loss of crops from defective drainage."

AREA AND CAPITAL

Area of enterprises.—Statistics by parishes require that an enterprise located in more than one parish be divided, and the part in each parish be considered as a separate enterprise. In this way, 741 drainage enterprises with an average area of 5,524 acres are shown for Louisiana. There are 14 such enterprises of 50,000 acres or more, 127 of between 5,000 and 50,000 acres, and 600 of between 500 and 5,000 acres.

The area of enterprises exceeds the land in enterprises by 437,630 acres, which is the amount of overlap.

STATE TABLE 2.—AREA OF ENTERPRISES, BY SIZE: 1930 AND 1920

SIZE GROUP	AREA OF ENTERPRISES ¹				Land in enterprises, 1930
	1930		1920		
	Acres	Per cent	Acres	Per cent	Acres
All enterprises.....	4,093,113	100.0	2,342,034	100.0	3,655,483
500 to 999 acres.....	309,070	7.6	2,269	0.1	280,703
1,000 to 4,999 acres.....	258,698	6.3	64,003	2.7	249,280
5,000 to 9,999 acres.....	250,448	6.3	159,161	6.8	230,333
10,000 to 49,999 acres.....	2,044,093	50.0	1,037,196	44.3	1,835,759
50,000 to 99,999 acres.....	604,813	14.8	628,385	26.8	592,324
100,000 acres and over.....	556,985	13.6	450,960	19.3	556,985

¹ The sum of the areas of individual enterprises, including overlap.

Character of enterprise.—Organized drainage enterprises having executive officers exclusively their own, chosen according to the State drainage laws, are classed as *drainage districts*.

Enterprises which, in common with others, are under the control of State, parish, or police jury ward officials, are classed as *State projects*, *county drains*, or *township drains*, according to the public officials in control, in order to keep a standard form for all States.

Enterprises under the control of individuals or organizations engaged in the draining of land for purposes of development, subdivision, and sale are classed as *commercial developments*.

Enterprises without legal organization, as such, belonging to individuals, partnerships, or agricultural companies, are classed as *individually owned projects*. Projects of this type are included only when the area drained is 500 acres or more. Approximately 64 per cent of all enterprises were individually owned. Many of these were old plantations originally drained by ditches dug by slave labor. The ditches were small and the cost in many cases was estimated at \$1 per acre.

In the following table the term "county drains" is used instead of "parish drains," and "township drains" instead of "police jury ward drains." Enterprises shown as "township drains" were reported as "police jury ward

road canals" which were organized for the dual purpose of draining both agricultural lands and public highways.

STATE TABLE 3.—LAND AND CAPITAL, BY CHARACTER OF ENTERPRISE, 1930

CHARACTER OF ENTERPRISE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	3,655,483	100.0	20,752,645	100.0
Drainage districts.....	3,200,532	87.6	19,311,738	93.1
County drains.....	4,200	0.1	14,350	0.1
Township drains.....	48,225	1.3	67,835	0.3
Commercial developments.....	8,710	0.2	754,000	3.6
Individually owned projects.....	393,786	10.8	604,722	2.9

Type of drainage.—There were 717 enterprises, covering 3,409,329 acres of land and with an invested capital of \$18,031,023, which reported their works as completed.

There were 24 enterprises, covering 246,154 acres of land and with an invested capital of \$2,721,622, which estimated that \$223,600 would be required to complete the drainage works under construction.

The works completed to January 1, 1930, included approximately 7,701 miles of ditches, 2 miles of tile drains, and 576 miles of levees. These figures do not include drains or levees installed by individual farmers supplemental to the works of an enterprise. There were 18 pumping plants reported.

STATE TABLE 4.—LAND AND CAPITAL, BY TYPE OF DRAINAGE, 1930

TYPE OF DRAINAGE (See definitions in Introduction)	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	3,655,483	100.0	20,752,645	100.0
Gravily drainage only.....	3,532,320	96.6	14,412,845	69.5
Ditches and levees.....	3,527,320	96.5	14,397,845	69.4
Ditches and tile drains.....	5,000	0.1	15,000	0.1
Drainage, all by pumping.....	123,163	3.4	6,330,800	30.5

Pumping plants.—Of the 18 pumping plants reported, all are located in the southern part of the State near the Gulf coast, 13 being near or below New Orleans. One plant located in Plaquemines Parish served land in 3 enterprises, all of which were inter-parish projects.

These 18 plants had a total engine and motor capacity of 6,495 horsepower, and a pump capacity of 2,956,500 gallons per minute. The area served was 123,163 acres.

There were 29 enterprises served by pumps in 1920, of which 8 have been abandoned and 6 have been consolidated with other enterprises.

DRAINAGE—LOUISIANA

STATE TABLE 5.—PUMPING PLANTS AND LAND SERVED, BY KIND OF POWER: 1930 AND 1920

KIND OF POWER	Enterprises	Engine or motor capacity		Pump capacity	Land served
		Number	H. p.	Per cent	G. p. m.	Acres
All enterprises.....	1930..... 18	6,495	100.0	2,956,500	123,103
	1920..... 29	7,965	100.0	5,245,150	140,800
Electric.....	1930..... 1	150	2.3	63,000	4,000
Internal combustion.....	1930..... 11	3,555	54.7	1,373,500	70,804
	1920..... 10	1,860	24.3	743,650	29,182
Steam.....	1930..... 5	1,590	24.5	920,000	29,902
	1920..... 18	5,105	66.6	4,281,300	104,684
Steam and electric.....	1920..... 1	700	9.1	220,200	6,943
Steam and internal combustion.....	1930..... 1	1,200	18.5	600,000	9,397

STATE TABLE 6.—PUMPING PLANTS AND LAND SERVED, BY KIND OF PUMP, 1930

KIND OF PUMP	Pumps	Pump capacity		Engine or motor capacity	Land served
		Number	G. p. m.	Per cent	H. p.	Acres
All enterprises.....	52	2,956,500	100.0	6,495	123,103
Centrifugal.....	31	1,710,000	57.8	3,035	79,097
Screw.....	3	140,000	4.7	330	3,706
Rotary.....	11	201,500	8.9	750	11,210
Rotary and centrifugal.....	4	500,000	16.9	700	15,000
Screw and centrifugal.....	3	345,000	11.7	1,080	14,054

Arrears and delinquency.—There were 6 enterprises, with 7 per cent of the invested capital and covering, approximately, 10 per cent of the land in organized districts, reported as in arrears in payment of principal or interest on bonds or other obligations; while the remaining 735 enterprises reported no arrearage. There were 13 enterprises, covering 430,460 acres, that reported a total of 147,008 acres delinquent in drainage taxes; 723 enterprises, covering 2,967,210 acres, reported no delinquency; while 5 enterprises failed to report.

STATE TABLE 7.—LAND, CAPITAL INVESTED, AND AREA DELINQUENT IN DRAINAGE TAXES, ACCORDING TO ARREARAGE IN PAYMENT OF PRINCIPAL OR INTEREST ON BONDS OR OTHER OBLIGATIONS, 1930

FINANCIAL STATUS	Land		Capital invested to Jan. 1, 1930		Area delinquent
	Acres	Per cent	Dollars	Per cent	Acres
All enterprises.....	3,655,483	100.0	20,762,645	100.0	147,008
Enterprises in arrears.....	351,578	9.6	1,445,000	7.0	110,000
With some delinquent land.....	225,000	6.1	975,000	4.7	110,000
With no delinquent land.....	126,578	3.5	470,000	2.3	—
Enterprises not in arrears.....	3,303,905	90.4	19,307,645	93.0	37,008
With some delinquent land.....	205,460	5.6	3,023,898	17.5	37,008
With no delinquent land.....	2,840,632	77.7	14,005,247	71.8	—
With no report on delinquency.....	257,813	7.1	778,500	3.7	—

Purpose of drainage.—In some cases the drainage development accomplished two or more purposes. An enterprise, prior to drainage, may contain swamp land, improved land in farms, and land subject to overflow. The object in drainage may be to reclaim or benefit all such lands. However, the land is classified according to the principal purpose reported.

The enterprises which reported the "Improvement of land already in farms" as the principal purpose of drainage doubtless contained considerable swampy and wet lands that were either unfit or partially fit for cultivation prior to drainage.

STATE TABLE 8.—LAND AND CAPITAL, BY PURPOSE OF DRAINAGE, 1930

PURPOSE OF DRAINAGE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	3,655,483	100.0	20,762,645	100.0
Reclamation of swamp land not previously in farms.....	713,572	19.5	8,578,720	41.3
Improvement of land already in farms.....	2,530,687	69.4	9,145,703	44.1
Protection against overflow.....	405,224	11.1	3,028,222	14.6

Date of organization.—A period of one or more years may elapse between the date of organization and the beginning of actual construction, and in large enterprises the work may extend over a period of several years. For these reasons the original drainage was accomplished somewhat later than the dates shown. It was not feasible to secure dates of beginning and ending of construction work, so the date of establishment of each enterprise was used.

STATE TABLE 9.—LAND AND CAPITAL, BY DATE OF ORGANIZATION, 1930

DATE OF ORGANIZATION	Land		Area of enterprises ¹		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Acres	Over-lapped acres	Dollars	Per cent
All enterprises.....	3,655,483	100.0	4,093,113	437,630	20,762,645	100.0
Before 1870.....	157,377	4.3	158,697	1,320	197,760	1.0
1870-1879.....	3,273	0.1	3,273	—	6,890	(?)
1880-1889.....	47,939	1.3	48,692	653	68,945	0.3
1890-1899.....	221,880	6.1	227,439	5,559	2,079,397	10.0
1900-1904.....	337,640	9.2	340,801	2,861	1,205,850	5.8
1905-1909.....	479,190	13.1	480,697	1,607	1,343,609	6.5
1910-1914.....	522,695	14.3	570,384	47,689	3,060,852	17.0
1915-1919.....	931,075	25.5	1,103,800	177,834	4,578,500	22.1
1920-1924.....	561,158	15.3	623,214	67,056	5,440,650	26.2
1925-1929.....	393,256	10.8	526,407	133,151	2,174,202	10.5

¹ Includes overlap. ² Less than one-tenth of 1 per cent.

STATE TABLE 10.—CONDITION OF LAND AND LAND AVAILABLE FOR SETTLEMENT, BY DATE OF ORGANIZATION, 1930

DATE OF ORGANIZATION	LAND IN ENTERPRISES					
	Total	Condition of land			Land available for settlement	
		Improved land	Wood-land	Other unimproved land		
All enterprises.....	3,655,483	2,267,737	62.0	746,560	641,186	338,867
Before 1870.....	157,377	101,497	64.5	55,556	324	781
1870-1879.....	3,273	3,140	95.9	133	—	—
1880-1889.....	47,939	35,847	74.8	11,151	941	250
1890-1899.....	221,880	169,588	76.4	20,037	34,656	200
1900-1904.....	337,640	224,081	66.4	111,121	2,438	11,277
1905-1909.....	479,190	295,400	61.7	45,637	165,063	158,492
1910-1914.....	522,695	332,818	63.7	100,042	89,835	62,979
1915-1919.....	931,075	528,600	56.8	164,123	238,352	48,891
1920-1924.....	561,158	304,213	54.2	180,166	70,770	56,991
1925-1929.....	393,256	302,463	76.9	57,994	32,799	9,060

Method of maintenance.—Some enterprises reported more than one method of maintenance, but in such cases the principal method is shown.

Systematic maintenance was reported by 591 enterprises, covering 2,218,300 acres of land and having an invested capital of \$14,934,752; while 150 enterprises, with an invested capital of \$5,817,893 and covering 1,437,183 acres of land, did not have systematic maintenance.

There were 83 enterprises, with an invested capital of \$5,240,030 and covering 416,262 acres of land, that reported ownership of excavators or other power equipment used principally for maintenance; while 658 enterprises, with an invested capital of \$15,512,615 and covering 3,239,221 acres of land, did not report any such equipment.

STATE TABLE 11.—LAND AND CAPITAL, BY METHOD OF MAINTENANCE, 1930

METHOD OF MAINTENANCE	Land		Capital invested to Jan. 1, 1930	
	Acres	Per cent	Dollars	Per cent
All enterprises.....	3,055,483	100.0	20,762,645	100.0
By district forces.....	1,040,227	28.7	8,080,501	38.9
By contract.....	1,350,601	37.1	8,849,822	42.7
By work apportioned to landowners.....	415,471	11.4	1,875,670	9.0
Other, none, and not reported.....	834,194	22.8	1,940,583	9.4

Cost of operation and maintenance.—Since many enterprises do not have annual maintenance, it is necessary to include those that reported *no* cost as well as those that reported *some* cost for 1929, in order to determine a fair average cost of maintenance for the State. Approximately 46 per cent of the land reporting showed some cost and 54 per cent showed no cost in 1929. The average cost for all enterprises was 8 cents per acre, while that for enterprises drained by pumping was \$1.41 per acre. This latter figure is probably higher than normal as the rainfall in May and July was excessive. Expenditures for operation and maintenance vary greatly from year to year.

STATE TABLE 12.—LAND AND COST OF OPERATION AND MAINTENANCE, 1929, BY TYPE OF DRAINAGE

TYPE OF DRAINAGE (See definitions in Introduction)	Land reporting on cost	COST REPORTED	
		Total	Per acre
All enterprises reporting.....	Acres 3,484,681	Dollars 271,208	Dollars 0.08
Gravity drainage only.....	3,308,895	107,470	0.03
Ditches and levees.....	3,308,895	103,970	0.03
Ditches and tile drains.....	5,000	3,600	0.70
Drainage, all by pumping.....	116,786	163,732	1.41

DRAINAGE—LOUISIANA

PARISH TABLE I.—FARMS REPORTING DRAINAGE AND FARM LAND DRAINED, 1930 AND 1920; FARMS, ALL LAND IN FARMS, AND APPROXIMATE LAND AREA, 1930

STATE AND PARISH	FARMS REPORTING DRAINAGE ¹		FARM LAND PROVIDED WITH DRAINAGE		All farms, 1930	FARM LAND, 1930			Approximate land area, 1930
	1930	1920	1930	1920		All land in farms	Crop land	Woodland	
	Number 14,262	Number 21,271	Acres 786,292	Acres 1,004,035		Number 161,445	Acres 9,365,437	Acres 4,740,395		Acres 2,650,113	Acres 29,001,760
The State.....									
Acadia.....	704	34	73,156	3,794	3,828	810,702	207,115	28,737	414,080
Allen.....	7	43	2,819	5,983	1,068	76,740	31,825	28,504	424,320
Ascension.....	210	777	11,644	40,106	1,335	74,222	36,103	11,302	180,240
Assumption.....	39	92	7,691	7,858	416	104,615	53,378	37,078	300,760
Avoyelles.....	571	304	16,265	7,845	5,975	171,967	123,245	29,250	542,080
Bienville.....	29	(²)	983	(²)	3,885	241,812	118,220	72,393	542,720
Bossier.....	1,197	49	34,375	3,392	4,820	197,018	119,587	44,041	552,320
Caddo.....	070	100	10,556	2,953	7,422	284,449	189,418	61,945	503,200
Calcasieu.....	154	130	35,909	20,532	1,565	178,573	81,009	18,640	695,040
Catahoula.....	81	403	4,636	10,758	1,967	90,346	40,346	34,004	450,620
East Baton Rouge.....	38	722	6,966	32,798	2,366	160,388	48,373	53,222	291,200
East Carroll.....	32	342	5,868	11,490	3,451	113,103	68,335	34,678	268,800
East Feliciana.....	200	0	16,520	750	2,379	184,645	68,202	37,717	200,960
Evangelino.....	134	176	4,703	12,262	4,010	169,231	122,638	17,990	435,840
Franklin.....	538	417	13,437	8,089	6,239	197,527	131,803	40,008	403,200
Grant.....	17	455	1,312	13,858	1,708	92,593	35,832	30,088	437,120
Iberia.....	119	677	16,600	41,999	1,297	126,306	83,911	10,519	370,960
Iberville.....	200	495	34,292	60,654	621	90,740	55,340	22,322	373,760
Jefferson.....	50	150	2,050	2,765	243	15,109	6,733	6,733	272,640
Jefferson Davis.....	182	33	50,300	6,504	1,064	278,548	145,413	18,782	460,560
Lafayette.....	523	904	12,084	31,517	3,359	147,308	116,635	4,422	178,560
Lafourche.....	51	344	21,927	19,983	1,108	200,969	72,703	60,299	634,240
Lincoln.....	24	(²)	665	(²)	3,390	245,209	108,535	94,832	302,080
Madison.....	62	683	0,831	39,074	2,457	112,005	64,701	35,318	410,000
Natchitoches.....	72	160	2,134	5,238	5,726	243,454	128,406	80,174	824,000
Orzechita.....	15	390	2,014	10,171	2,823	156,964	71,389	61,167	410,880
Plaquemines.....	370	240	7,880	9,709	449	41,223	6,448	1,192	644,480
Pointe Coupee.....	1,114	2,085	56,421	71,989	2,652	102,242	70,827	53,860	368,640
Rapides.....	1,362	1,423	47,067	55,383	4,305	234,584	100,062	80,960	870,800
Red River.....	34		609		3,102	134,008	77,660	41,518	250,000
Richland.....	53	256	611	4,780	5,103	167,311	107,276	45,212	361,000
St. Bernard.....	113	48	2,463	2,552	186	12,136	3,231	2,580	394,880
St. Charles.....	18	254	2,558	25,760	176	16,073	9,327	2,018	188,800
St. James.....	40	92	3,510	9,310	337	56,832	37,720	9,208	162,560
St. John the Baptist.....	26	124	6,722	13,060	178	43,391	22,008	15,000	147,840
St. Landry.....	2,080	1,860	94,400	60,089	7,494	297,339	200,760	47,204	616,960
St. Martin.....	676	676	23,578	23,556	2,084	104,161	77,029	7,554	336,000
St. Mary.....	8	260	6,268	54,274	520	120,833	60,320	23,725	404,480
St. Tammany.....	53	23	1,944	683	1,179	71,335	19,432	27,432	579,840
Tangipahoa.....	131	362	1,361	4,711	4,336	159,176	55,319	74,120	505,600
Tensas.....	24	540	7,438	16,591	3,139	176,029	75,280	67,856	404,480
Terrabonne.....	140	84	0,782	7,162	682	134,987	45,153	46,526	1,123,840
Vermilion.....	389	1,638	68,580	100,453	3,951	302,222	205,130	13,554	770,320
Washington.....	34	188	708	2,388	2,592	102,955	69,967	57,840	410,200
Webster.....	55		683		3,516	203,505	105,481	63,238	389,760
West Baton Rouge.....	298	345	35,040	34,782	381	50,122	32,051	8,653	130,960
Winn.....	23	(²)	878	(²)	1,069	114,209	40,701	62,867	620,160
All other parishes.....	127	2,887	2,452	88,600	37,717	2,265,580	958,708	881,065	8,267,520

¹ No drainage on farms reported in Boeuregard, Cameron, St. Helena, and West Feliciana Parishes in 1930; nor in Caldwell, Jackson, La Salle, Red River, and Webster Parishes for 1920.

² Included in "All other parishes."

DRAINAGE—LOUISIANA

PARISH TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER ACRE, AND CONDITION AND USE OF LAND, 1930 AND 1920; AND DRAINAGE WORKS, 1930

ITEM (See definitions in Introduction)		THE STATE	Acadia	Allen	Ascension	Assump- tion	Avoy- elles	Bossier	Caddo	
LAND AREA										
1	Approximate land area.....	1930.....acres	29,061,700	414,080	424,320	186,240	309,700	512,080	552,320	563,200
2	Land in enterprises.....	1930.....acres	3,055,483	266,582	34,149	90,517	100,800	148,999	20,000	134,485
3		1920.....acres	2,266,328	150,000	12,500	94,500	53,500	55,500	20,000	100,000
4	Increase, ¹ 1920-1930.....	per cent	61.3	67.7	173.2	-4.2	88.4	168.4		34.5
5	Area of all enterprises (overlapping areas included).....	1930.....acres	4,093,113	334,506	34,149	90,517	100,800	148,999	20,000	134,485
6	Excess over land in enterprises (total areas overlapping).....	acres	437,630	67,924						
CONDITION AND USE OF LAND										
7	Land unfit to raise any crop.....	1930.....acres	786,889	10,330	2,000	18,200	35,575	63,709	2,000	33,821
8	Land unfit to raise any crop prior to drainage.....	acres	1,759,753	98,866	16,075	61,800	40,675	97,009	15,000	94,140
9	Decrease since drainage.....	per cent	55.3	80.6	87.0	64.9	12.5	34.3	86.7	64.1
10	Land fit to raise a normal crop.....	1930.....acres	2,486,072	221,770	32,149	52,317	64,925	57,490	12,000	100,664
11	Land fit to raise a normal crop prior to drainage.....	acres	1,133,171	70,149	16,074	16,300	12,325	31,190	1,000	40,845
12	Increase since drainage ¹	per cent	116.5	161.2	100.0	221.0	426.8	84.3		149.6
13	Land fit to raise a partial crop.....	1930.....acres	381,022	34,482		20,000	300	27,800	6,000	
14	Land fit to raise a partial crop prior to drainage.....	acres	702,569	91,667	2,000	22,417	47,800	20,800	4,000	
15	Decrease since drainage ¹	per cent	50.0	62.3	100.0	10.8	90.4	+33.7	+50.0	
16	Improved land.....	1930.....acres	2,267,737	199,628	15,094	46,817	59,675	58,518	12,000	100,664
17		1920.....acres	1,269,391	164,000	12,500	50,100	20,625	55,228	12,000	75,000
18	Increase, ¹ 1920-1930.....	per cent	78.6	20.0	20.8	-16.5	189.3	66.1		34.2
Unimproved land--										
19	Woodland.....	1930.....acres	746,560	61,034	3,960	35,700	40,700	43,100	6,000	
20	Other.....	1930.....acres	641,186	5,920	15,095	8,000	425	47,381	2,000	33,821
21	Land in occupied farms.....	1930.....acres	2,571,531	263,687	15,094	44,517	60,125	73,680	12,000	100,664
22	Land in planted crops.....	1930.....acres	1,822,020	173,844	15,094	24,550	57,025	43,990	12,000	100,664
23	Woodland cleared and cultivated since drainage.....	1930.....acres	404,429	15,832	1,000	10,000	425	11,500	3,000	134,485
24	Land idle.....	1930.....acres	1,348,437	59,514	19,055	30,450	38,275	47,800	8,000	33,821
25	Land available for settlement.....	1930.....acres	338,867			7,800		14,200	6,000	
DRAINAGE WORKS, 1930										
Ditches--										
26	Completed.....	miles	7,701.2	1,000.1	40.0	154.5	41.0	72.3	2.5	185.6
27	Additional under construction.....	miles	43.7							4.5
Tile drains--										
28	Completed.....	miles	2.0				2.0			
Levees and dikes--										
29	Completed.....	miles	576.3				1.0			220.0
30	Additional under construction.....	miles	9.0							6.5
Pumping plants--										
31	Engine or motor capacity.....	horsepower	6,495							
32	Pump capacity.....	gals. per min.	2,956,500							
33	Land served by pumps.....	acres	123,103							
34	Land drained by ditches only ²	acres	3,100,265	266,582	34,149	90,517	94,600	148,999	20,000	
35	Length of ditches.....	miles	6,373.0	1,000.1	40.0	154.5	38.0	72.3	2.5	
36	Land drained by ditches and tile ³	acres	5,000				5,000			
37	Length of ditches.....	miles	2.0				2.0			
38	Length of tile.....	miles	2.0				2.0			
39	Land having ditches and levees.....	acres	427,055				1,200			134,485
40	Length of ditches.....	miles	325.1				1.0			190.1
41	Length of levees.....	miles	209.2				1.0			220.5
42	Land drained by pumps and other drainage works ³	acres	123,103							
43	Length of ditches.....	miles	541.8							
44	Length of levees.....	miles	289.1							
45	Land protected by levees of an outside agency.....	acres	1,208,970			82,300	25,000	146,999		134,485
CAPITAL INVESTED AND COST PER ACRE										
46	Capital invested in enterprises to Jan. 1, 1930.....	dollars	20,762,045	629,665	80,000	410,122	392,800	645,300	12,000	1,972,722
47		1920.....dollars	9,021,901	379,500	80,000	346,740	99,800	50,600	12,000	200,949
48	Increase, ¹ 1920-1930.....	per cent	130.0	65.9		20.9	203.6			578.0
49	Estimated cost of enterprises when completed.....	1930.....dollars	20,076,245	629,665	80,000	410,122	392,800	645,300	12,000	2,072,722
50		1920.....dollars	9,090,788	388,000	80,000	357,740	99,800	71,500	12,000	360,949
51	Average, per acre when completed.....	1930.....dollars	5.74	2.36	2.34	4.63	3.99	4.33	0.60	15.41
52		1920.....dollars	4.41	2.44	0.40	3.79	1.87	1.29	0.60	3.61
Invested in and required for completion of--										
53	Enterprises having ditches only.....	1930.....dollars	11,489,723	629,665	80,000	410,122	372,800	645,300	12,000	
54	Average, per acre.....	dollars	3.71	2.30	2.34	4.63	3.94	4.33	0.60	
55	Enterprises having ditches and tile drains.....	1930.....dollars	15,000				15,000			
56	Average, per acre.....	dollars	3.00				3.00			
57	Enterprises having ditches and levees.....	1930.....dollars	3,131,722				5,000			2,072,722
58	Average, per acre.....	dollars	7.33				4.17			15.41
59	Enterprises having pumps and other drainage works.....	1930.....dollars	6,339,800							
60	Average, per acre.....	dollars	51.47							

¹ A minus sign (-) denotes decrease. A plus sign (+) denotes increase. Per cent not shown when more than 1,000.

² When works under construction have been completed.

³ Area of enterprises having some land served by pumps.

DRAINAGE—LOUISIANA

PARISH TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER ACRE,

ITEM (See definitions in Introduction)		Calcasieu	Cameron	Concordia	East Baton Rouge	East Carroll	Evange- line	Iberia
LAND AREA								
1	Approximate land area.....1930.....acres..	695,040	960,640	466,060	291,200	268,800	435,840	370,960
2	Land in enterprises.....1930.....acres..	180,039	56,220	23,345	44,500	120,944	132,327	130,409
3	.....1920.....acres..	101,930	45,687	28,508	28,508	9,100	121,990	121,990
4	Increase, ¹ 1920-1930.....per cent..	76.6	23.3	23.3	56.1	12.4	9.1	6.4
5	Area of all enterprises (overlapping areas included).....1930.....acres..	180,039	56,220	23,345	44,500	120,944	151,091	142,299
6	Excess over land in enterprises (total areas overlapping).....acres..						19,667	2,800
CONDITION AND USE OF LAND								
7	Land unfit to raise any crop.....1930.....acres..	19,880				7,469	8,532	800
8	Land unfit to raise any crop prior to drainage.....acres..	44,977	37,400	3,450	16,000	31,006	53,503	54,256
9	Decrease since drainage.....per cent..	55.8	100.0	100.0	100.0	76.6	84.1	98.5
10	Land fit to raise a normal crop.....1930.....acres..	160,159	56,040	23,345	40,500	118,835	101,318	78,699
11	Land fit to raise a normal crop prior to drainage.....acres..	135,062	18,820	15,820	16,000	96,338	32,352	79,293
12	Increase since drainage ².....per cent..	18.6	197.8	47.6	153.1	23.4	213.2	-0.0
13	Land fit to raise a partial crop.....1930.....acres..		180		4,000	3,040	22,477	60,000
14	Land fit to raise a partial crop prior to drainage.....acres..			4,075	12,500	1,040	46,382	6,040
15	Decrease since drainage ².....per cent..			100.0	68.0	+122.0	51.5	+893.4
16	Improved land.....1930.....acres..	95,000	35,420	23,345	34,250	48,715	104,942	138,699
17	.....1920.....acres..	62,001	21,025	23,345	9,693	0,100	0,100	87,789
18	Increase, ¹ 1920-1930.....per cent..	51.8	68.5	68.5	253.3			58.0
Unimproved land—								
19	Woodland.....1930.....acres..	24,258			2,000	81,229	26,810	
20	Other.....1930.....acres..	60,751	20,800		8,250		575	800
21	Land in occupied farms.....1930.....acres..	95,000	45,900	23,345	44,500	104,000	130,170	138,699
22	Land in planted crops.....1930.....acres..	95,000	27,520	14,250	32,000	45,144	94,153	71,690
23	Woodland cleared and cultivated since drainage.....1930.....acres..	5,000			5,000	4,000	0,164	2,375
24	Land idle.....1930.....acres..	83,967	9,400	8,795	8,250	83,382	25,807	50,800
25	Land available for settlement.....1930.....acres..					0,500	1,361	
DRAINAGE WORKS, 1930								
Ditches—								
26	Completed.....miles..	161.0	44.8	252.0	46.0	132.0	708.0	123.0
27	Additional under construction.....miles..							
Tile drains—								
28	Completed.....miles..							
Levees and dikes—								
29	Completed.....miles..		9.0					
30	Additional under construction.....miles..							
Pumping plants—								
31	Engine or motor capacity.....horsepower..		30					
32	Pump capacity.....gals. per min..		4,500					
33	Land served by pumps.....acres..		500					
34	Land drained by ditches only ⁴.....acres..	180,039	54,820	23,345	44,500	120,944	132,327	130,409
35	Length of ditches.....miles..	161.0	30.0	252.0	46.0	132.0	708.0	123.0
36	Land drained by ditches and tile.....acres..							
37	Length of ditches.....miles..							
38	Length of tile.....miles..							
39	Land having ditches and levees.....acres..		900					
40	Length of ditches.....miles..		7.0					
41	Length of levees.....miles..		7.0					
42	Land drained by pumps and other drainage works ⁵.....acres..		500					
43	Length of ditches.....miles..		1.8					
44	Length of levees.....miles..		2.0					
45	Land protected by levees of an outside agency.....acres..			23,345		120,944		3,000
CAPITAL INVESTED AND COST PER ACRE								
46	Capital invested in enterprises to Jan. 1, 1930.....dollars..	882,000	209,000	16,000	116,000	840,000	320,820	764,500
47	.....1920.....dollars..	197,500	88,000		20,000		10,000	150,375
48	Increase, ¹ 1920-1930.....per cent..	346.6	137.5		480.0			408.4
49	Estimated cost of enterprises when completed.....1930.....dollars..	882,000	209,000	16,000	116,000	840,000	320,820	764,500
50	.....1920.....dollars..	260,000	203,000		20,000		18,000	150,375
51	Average, per acre when completed.....1930.....dollars..	4.90	3.72	0.69	2.61	6.46	2.47	5.48
52	.....1920.....dollars..	2.55	4.45		0.70		1.93	1.23
Invested in and required for completion of—								
53	Enterprises having ditches only.....1930.....dollars..	882,000	205,000	16,000	116,000	840,000	320,820	764,500
54	Average, per acre.....dollars..	4.90	3.74	0.69	2.61	6.46	2.47	5.48
55	Enterprises having ditches and tile drains.....1930.....dollars..							
56	Average, per acre.....dollars..							
57	Enterprises having ditches and levees.....1930.....dollars..		1,500					
58	Average, per acre.....dollars..		1.67					
59	Enterprises having pumps and other drainage works.....1930.....dollars..		2,500					
60	Average, per acre.....dollars..		5.00					

¹ Included in "Other parishes."

² A minus sign (-) denotes decrease. A plus sign (+) denotes increase. Per cent not shown when more than 1,000.

³ Office estimate; the reported figures exceeded the improved acreage in all farms in the parish as determined by the census of agriculture.

⁴ When works under construction have been completed.

⁵ Area of enterprises having some land served by pumps.

DRAINAGE—LOUISIANA

AND CONDITION AND USE OF LAND, 1930 AND 1920; AND DRAINAGE WORKS, 1930—Continued

Iberville	Jefferson	Jefferson Davis	Lafayette	Lafourche	La Salle	Madison	Morehouse	Orleans	Plaquemines	Pointe Coupee	Rapides	St. Charles	St. Landry	St. Martin	
873,760	272,040	400,560	178,500	634,240	400,000	416,000	531,840	125,440	644,480	368,040	870,800	188,800	616,000	330,000	1
122,715	48,450	101,230	103,073	62,942	12,000	20,000	17,000	15,500	14,703	184,642	4,400	31,844	294,801	77,032	2
102,615	20,203	55,020	77,000	51,147	5,000	25,000	18,075	(1)	21,839	178,880	4,100	15,420	137,3		3
10.7	66.4	84.0	32.9	23.1	140.0	-20.0	-5.9		-32.3	6.2	6.4				4
124,715	48,450	101,230	158,673	62,942	12,000	20,000	17,000	15,500	14,703	210,409	4,400	31,844	309,833	77,032	5
2,000			55,000							31,707			105,032		6
10,000	15,884	47,250	12,500	13,558	3,000	10,000	2,000	12,000	1,880	22,750		10,000	31,832	10,000	7
20,500	30,682	100.0	100.0	49,930	3,000	10,000	2,000	10,000	10,058	94,473		24,844	120,754	39,500	8
33.0	48.2			72.9				100.0	82.4	75.9		59.7	75.9	74.7	9
68,115	22,392	101,230	103,073	47,424	1,000	10,000	13,000	15,500	11,338	122,009	3,700	20,844	107,727	50,032	10
20,222	2,777	53,089	72,173	12,818	1,000	5,000	5,000	2,000	4,135	34,417	3,400	6,000	55,881	37,532	11
230.8	706.3	87.6	43.6	270.0		100.0	100.0	675.0	174.2	254.8	8.8	247.4	257.0	49.3	12
35,000	10,183			1,000	8,000		2,000		1,575	30,793	700	1,000	65,742	11,000	13
72,003	15,000		10,000	185	8,000	5,000	10,000	1,500		55,752	1,000	1,000	100,006		14
52.1	32.1		100.0	+050.5		100.0	80.0	100.0		28.0	30.0		40.1		15
85,893	24,750	51,150	103,073	41,225	1,000	10,000	13,000	14,000	12,738	107,702	3,400	18,000	200,453	50,032	16
66,836	8,737	53,472	75,400	30,075	500	12,500	14,400	(1)	14,090	96,522	3,309	11,164			17
28.5	183.3	-4.3	37.3	37.1	100.0	-20.0	-10.1		-15.1	11.6	2.8	61.2			18
20,822	100	21,009		10,001	10,000	4,000	2,000	1,000	100	70,010	1,000	10,000	75,729	10,000	19
7,000	23,609	20,020		5,050	1,000	6,000	2,000	500	1,055	324		3,244	9,019	5,000	20
80,803	10,877	52,150	103,073	51,840	2,000	10,000	15,000	6,500	7,866	132,801	3,406	15,000	273,035	50,032	21
61,200	10,077	51,150	100,500	31,403	1,000	8,000	12,000	2,800	4,510	100,072	3,400	15,000	184,585	52,500	22
36,000	100	50,089		7,356	500	8,000		3,000	50	38,507	160	4,000	31,815		23
42,222	28,582			20,350	10,500	5,000		12,000	8,723	75,000	840	12,744	35,550	21,000	24
34,722	27,098	22,340			7,000	3,000		0,000	5,447	781	840	2,744	2,309		25
90.5	146.0	97.0	108.0	312.5	5.0	12.0	12.0	65.0	51.5	1,472.5	5.7	58.0	1,204.5	103.0	26
				1.6									5.7		27
															28
	20.6		20.0	181.0				3.0	17.0			31.7			29
									2.5						30
	850			1,510				150	1,530			600			31
	452,000			517,000				63,000	740,000			200,000			32
	45,575			17,101				4,000	13,103			10,744			33
122,715	2,884	101,230	84,053	26,281	12,000	20,000	17,000	11,500	1,000	184,042	4,400		204,801	77,032	34
90.5	8.0	97.0	118.0	26.5	5.0	12.0	12.0	40.0	23.0	1,472.5	5.7		1,270.2	103.0	35
															36
															37
															38
			10,620	10,500								21,100			39
			50.0	17.0								20.0			40
			20.0	6.0								13.7			41
	45,575			17,101				4,000	13,103			10,744			42
	137.0			270.5				25.0	28.5			36.0			43
	26.0			170.0				3.0	10.5			18.0			44
84,615	25,408			37,187				11,500	9,307	184,042	4,400	21,100	70,901	77,032	45
440,412	3,124,800	478,200	240,000	1,211,000	5,000	40,000	20,000	567,750	603,500	183,305	12,500	533,000	984,815	710,000	46
447,070	624,100	253,820	107,000	1,037,077	2,500	40,000	35,000	(1)	443,500	167,000	12,500	446,438			47
-0.1	406.2	88.4	129.9	11.4	100.0		-42.9		80.0	9.8		19.4			48
440,412	3,124,800	478,200	240,000	1,218,000	5,000	40,000	20,000	567,750	603,500	183,305	12,500	533,000	980,915	710,000	49
404,974	595,400	257,820	141,500	1,102,077	3,100	40,000	35,000	(1)	530,550	167,000	12,500	465,438			50
3.64	04.48	4.72	2.37	10.35	0.42	2.00	1.18	36.03	40.80	0.99	2.84	18.74	3.35	0.22	51
4.54	20.33	4.60	1.81	22.72	0.02	1.00	1.94	(1)	24.29	0.96	3.02	34.08			52
440,412	18,000	478,200	108,500	171,000	5,000	40,000	20,000	167,750	16,000	183,805	12,500		980,915	710,000	53
3.04	6.24	4.72	2.36	0.51	0.42	2.00	1.18	14.59	10.00	0.99	2.84		3.35	0.22	54
															55
			47,500	82,000								160,000			56
			2.42	4.19								7.58			57
	3,106,800			965,000				400,000	587,500			373,000			58
	68.17			56.43				100.00	44.53			34.72			59

DRAINAGE—LOUISIANA

PARISH TABLE II.—LAND IN DRAINAGE ENTERPRISES, CAPITAL INVESTED AND COST PER ACRE, AND CONDITION AND USE OF LAND, 1930 AND 1920; AND DRAINAGE WORKS, 1930—Continued

ITEM (See definitions in Introduction)		St. Mary	Tangipahoa	Tensas	Terrebonne	Vermillion	West Baton Rouge	Other parishes ¹
LAND AREA								
1	Approximate land area.....1930.....acres.....	404,480	505,000	404,480	1,128,840	776,320	130,000	1,137,280
2	Land in enterprises.....1930.....acres.....	55,676	63,000	40,528	75,652	428,748	80,383	200,050
3	.....1920.....acres.....	58,615			85,400	338,771	136,960	317,143
4	Increase, ² 1920-1930.....per cent.....	-5.0			113.7	26.6	-34.7	-8.5
5	Area of all enterprises (overlapping areas included).....1930.....acres.....	55,676	63,000	40,528	83,252	574,588	80,383	200,050
6	Excess over land in enterprises (total areas overlapping).....acres.....				7,600	145,840		
CONDITION AND USE OF LAND								
7	Land unfit to raise any crop.....1930.....acres.....	12,436		20,535	33,000	108,300	18,498	191,800
8	Land unfit to raise any crop prior to drainage.....acres.....	31,170	17,000	10,100	43,000	230,900	20,426	246,850
9	Decrease since drainage ².....per cent.....	60.1	100.0	+103.3	23.3	27.1	37.1	22.3
10	Land fit to raise a normal crop.....1930.....acres.....	42,300	63,000	16,993	33,000	251,250	67,885	98,250
11	Land fit to raise a normal crop prior to drainage.....acres.....	24,470	20,000	11,693	19,186	129,000	5,000	21,000
12	Increase since drainage ².....per cent.....	72.9	215.0	45.3	72.0	94.8		307.0
13	Land fit to raise a partial crop.....1930.....acres.....	940		3,000	9,652	9,198	3,000	
14	Land fit to raise a partial crop prior to drainage.....acres.....	36	20,000	18,735	13,466	68,848	64,957	22,200
15	Decrease since drainage ².....per cent.....		100.0	84.0	28.3	86.6	94.5	100.0
16	Improved land.....1930.....acres.....	39,000	30,000	19,793	42,186	251,098	62,027	98,250
17	.....1920.....acres.....	42,303			26,550	186,912	38,337	31,504
18	Increase, ² 1920-1930.....per cent.....	-7.9			58.9	34.3	63.4	211.0
Unimproved land—								
19	Woodland.....1930.....acres.....	3,736	33,000	18,735	12,500	13,500	23,801	51,800
20	Other.....1930.....acres.....	12,940		2,000	20,066	164,150	2,955	140,000
21	Land in occupied farms.....1930.....acres.....	36,000	30,000	19,593	42,186	255,808	63,030	62,500
22	Land in planted crops.....1930.....acres.....	35,000	21,000	18,000	31,000	205,650	30,450	27,300
23	Woodland cleared and cultivated since drainage.....1930.....acres.....	100	14,000	10,000	8,100	600	40,300	
24	Land idle.....1930.....acres.....	19,640	42,000	20,700	20,000	187,100	21,613	197,550
25	Land available for settlement.....1930.....acres.....	6,500	12,000	15,200	460	2,700	1,500	146,760
DRAINAGE WORKS, 1930								
Ditches—								
26	Completed.....miles.....	63.5	110.0	36.2	71.0	466.0	63.5	62.0
27	Additional under construction.....miles.....	2.0	30.0					
Tile drains—								
28	Completed.....miles.....							
Levees and dikes—								
29	Completed.....miles.....	19.0			6.0	12.0		30.0
30	Additional under construction.....miles.....							
Pumping plants—								
31	Engine or motor capacity.....horsepower.....	1,100				185		540
32	Pump capacity.....gals. per min.....	690,000				90,000		200,000
33	Land served by pumps.....acres.....	22,000				4,000		6,050
34	Land drained by ditches only ⁴.....acres.....	33,676	63,000	40,528	55,462	424,748	80,383	74,000
35	Length of ditches.....miles.....	52.5	140.0	36.2	53.0	454.0	63.5	19.0
36	Land drained by ditches and tile.....acres.....							
37	Length of ditches.....miles.....							
38	Length of tile.....miles.....							
39	Land having ditches and levees.....acres.....				20,190			210,000
40	Length of ditches.....miles.....				18.0			25.0
41	Length of levees.....miles.....				6.0			20.0
42	Land drained by pumps and other drainage works ⁵.....acres.....	22,000				4,000		6,050
43	Length of ditches.....miles.....	13.0				12.0		13.0
44	Length of levees.....miles.....	19.0				12.0		10.0
45	Land protected by levees of an outside agency.....acres.....			39,028	18,000	5,000	74,013	
CAPITAL INVESTED AND COST PER ACRE								
46	Capital invested in enterprises to Jan. 1, 1930.....dollars.....	883,500	550,000	90,802	188,000	1,478,500	322,672	766,960
47	.....1920.....dollars.....	756,625			192,225	968,082	213,750	1,003,640
48	Increase, ² 1920-1930.....per cent.....	16.8			-2.2	54.3	51.0	-52.2
49	Estimated cost of enterprises when completed.....1930.....dollars.....	888,000	660,000	90,802	188,000	1,478,500	322,672	760,000
50	.....1920.....dollars.....	756,625			205,000	1,168,000	226,750	1,747,000
51	Average, per acre when completed.....1930.....dollars.....	15.95	10.48	2.24	2.49	3.45	3.61	2.64
52	.....1920.....dollars.....	12.91			5.79	3.42	1.66	5.51
Invested in and required for completion of—								
53	Enterprises having ditches only.....1930.....dollars.....	498,000	660,000	90,802	100,000	978,500	322,672	76,000
54	Average, per acre.....dollars.....	14.79	10.48	2.24	1.80	2.30	3.61	1.04
55	Enterprises having ditches and tile drains.....1930.....dollars.....							
56	Average, per acre.....dollars.....							
57	Enterprises having ditches and levees.....1930.....dollars.....				88,000			676,000
58	Average, per acre.....dollars.....				4.36			3.21
59	Enterprises having pumps and other drainage works.....1930.....dollars.....	390,000				500,000		16,000
60	Average, per acre.....dollars.....	17.73				125.00		2.48

¹ Includes St. Bernard, St. James, and St. Tammany Parishes in 1930; and Orleans, St. Bernard, St. James, and St. Tammany Parishes for 1920.
² A minus sign (-) denotes decrease. A plus sign (+) denotes increase. Per cent not shown when more than 1,000.
³ Office estimate; the reported figures exceeded the improved acreage in all farms in the parish as determined by the census of agriculture.
⁴ When works under construction have been completed.
⁵ Area of enterprises having some land served by pumps.