ANNUAL REPORT
and
FINANCIAL STATEMENT
of
CHIEF ENGINEER
and
GENERAL SUPERINTENDENT

IMPERIAL IRRIGATION DISTRICT
CALIFORNIA
(and Subsidiary Company in Mexico)

1931-32

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FOREWORD

Although some effect of the current depression was noticed in Imperial Valley during the early part of 1931, it was not until after the middle of the year that the full force was felt. From then on, however, with the continued drop in the market price of farm products, together with a drying up of credit sources, it has been one of the most difficult periods experienced in the history of the valley. Nevertheless, farming operations have been carried forward with but little reduction. There have been many readjustments to meet the new conditions, both in private as well as public business, and as a result it is believed that with any appreciable improvement in prices the valley will quickly recover.

Despite unfavorable farming conditions, the area cropped in 1931 was about the same as for the previous year and showed a drop of less than 10 per cent in the year 1932. On the whole, all crops were successfully produced. The water shortage in the summer of 1931, while causing some loss in crops, growing at that time, was not of major proportions. The total value of crops produced for both years was not much greater than one-half of normal due to the extremely low prices received.

Revenue to the District, except from Mexico, remained about normal until the fall of 1931 when there was a very sharp decline in the December assessment collections. This continued through 1932, making it necessary on March 15 of that year to establish a toll charge for water in order to secure the necessary funds for operation. Revenue from water sales in Mexico decreased over 50 per cent for 1931 and nearly 85 per cent for 1932. This was caused by several factors, one being an arbitrary reduction of 30 per cent in water rates, put into effect by the Mexican Government in January, 1931, another being the loss on exchange caused by Mexico going off the gold standard in July of the same year, and what was perhaps the most important, a large decrease in the area irrigated due to the depression.

As a result of the large loss in revenue there was a small default in payment of bond service on July 1, 1932, this being the first of record. In the fall of that year, a Bondholders' Committee was organized and an agreement reached for refinancing of the District bonds and registered warrants. The plan provides for a temporary reduction in interest rates and a postponement of principal payments for several years, but no reduction in the principal itself. The plan was accepted by vote of the District on January 12, 1933.

The program of retrenchment started by the District in the middle of 1930 was carried forward through both 1931 and 1932, during which years total expenditures, other than for fixed charges, were reduced nearly 50 per cent. The silt content of the water which had been very high in 1929 and 1930 was normal during 1931 and 1932, reducing the excessive dredging costs of the two former years.

No large floods occurred on the Colorado river in either 1931 or 1932, in fact in the flood season of 1931 practically no flood protection work was necessary, and expenditures for the 1932 flood season were not above normal.

BOULDER DAM

1931

The construction of the branch railroad from the main line of the Union Pacific to the townsite was completed early in the year and immediately continued by the Government to the rim of Black Canyon. The Government also constructed a seven-mile paved highway from the town site to the dam site; following completion of the dam this road will be continued across the top and into Arizona. Although work was rushed by the Government on building the construction town, named Boulder City, it was necessary to provide temporary housing facilities during the summer, it not being until late in the fall that the permanent buildings were completed. The town is laid out on the desert, about six miles from the dam site, and has been completely equipped with paved streets, sewers, electricity and water, by the Government. The water plant was put in operation September 1, a supply being obtained from the Colorado river, desilted and lifted two thousand feet to the town site.

On March 4, bids for construction of the dam were opened, Six Companies Incorporated being the low bidder at $48,890,995. The construction contract was signed by the Secretary of the Interior, Ray Lyman Wilbur, on April 20, and from that date on construction has proceeded at a rapid pace.

Power for construction purposes was brought from San Bernardino, a distance of 225 miles, the transmission line being completed by the Southern Sierras Power Company and ready for service on June 13.

The suit instituted by Arizona in October of 1930, attacking the Boulder Canyon Project Act was heard by the United States Supreme Court, and on May 18, 1931, the decision of the court was rendered, declaring the Act to be constitutional and valid.

1932

Construction work during the year was expanded and progressed rapidly and by December it was nearly twelve months ahead of schedule: if this progress is maintained it will mean relief from floods to Imperial Valley by 1935. The Six Companies completed 26 miles of railroad to the gravel deposits and dam site, also several miles of highway to the bottom of the canyon for construction purposes. The gravel-screening plant was placed in operation on January 9 and on March 8 the first "pay" concrete was placed at No. 2 Diversion Tunnel portal.

The four diversion tunnels, each 56 feet in diameter, were completed by the end of the year; each is lined with concrete three feet in thickness. On November 13, the river flow was diverted into the two diversion tunnels on the Arizona side of the river, which completed the first stage of the construction work. Two cofferdams were constructed, one 600 feet below the diversion tunnel portals, the other a short distance upstream from the tunnel outlets. The first is 98 feet high and the second 60

feet high. At the close of the year, excavation in the river bottom for the base of the dam was in progress.

ALL-AMERICAN CANAL

1931

Under date of May 14, H. J. Gault, Engineer in the Denver Office of the Bureau of Reclamation, submitted his report on the Canal, including plans and specifications and estimated cost of approximately $33,500,000. The cost includes the main canal to Imperial Valley, with a total length of approximately 80 miles, and the branch to Coachella Valley, of some 130 miles.

During the early part of the year the form of repayment contract was drafted by attorneys for the Government and the District. Completion was delayed by reason of a request from Secretary Wilbur to State Engineer Hyatt for a recommendation on a division of the water of the Colorado, available to California, among the California users. This was necessary inasmuch as the agreement of February 28, 1930, while it provided for a division of the water between agricultural and domestic uses, made no allocation to the individual agencies. State Engineer Hyatt called representatives of the several agencies together and, following a series of conferences, an agreement was made under date of August 18 which was adopted by the State Engineer as his recommendation of a division of the water and forwarded to Secretary Wilbur.

Drafting of the contract was then completed and on October 18 Secretary Wilbur called a hearing in Washington to receive protests to the contract. Following the hearing, the Secretary reviewed the protests and then rendered his decision in favor of the contract, approving it as to form on November 4. The contract was then submitted to the Board of Directors of the District, and after full consideration, was approved on December 8. The next step was submission of the contract to the State Engineer and to the California Districts Securities Commission, for approval. The State Engineer gave his approval under date of December 28 and the Commission, after holding several hearings, gave its approval on December 31.

1932

Before submitting the contract to the people, many meetings were held in all parts of the valley and details of the contract were thoroughly discussed. The election was held on February 11, the vote showing 6,457 in favor of and 1,275 opposed to ratification, or a majority for the contract of about five to one.

By its terms the contract was not to become effective until a major portion of the lands in Coachella Valley had been included within the boundaries of the Imperial Irrigation District. During the spring, opposition to inclusion developed in Coachella Valley with the result a sufficient inclusion petition could not be secured. Therefore, at the request of the District, a hearing was called by Secretary Wilbur in November, at which the provision in question was redrafted, the new contract being executed by Secretary Wilbur on December 1.

Under the new provision, the contract becomes effective as soon as approved by the District, and the lands in Coachella Valley are given until thirty days after the contract has been validated in the courts, to present petitions for inclusion.

The new contract followed the same procedure as the original one, being approved on December 5 by the Board of Directors of the District, resubmitted to and approved by the State Engineer on December 14 and by the California Districts Securities Commission on December 16. An election to ratify the new contract was called for January 12, 1933, at which it carried by a majority of approximately seven to one.

ORGANIZATION AND GENERAL FEATURES

The Imperial Irrigation District was organized July 25, 1911, and operates under the California Irrigation District Act. In 1916, the District took over the operations of the private company which had theretofore operated the system and also took over the subsidiary company holding the concession for the canal system in Mexico.

Distribution of water in the United States was at that time handled by some thirteen mutual water companies. In 1923, the District absorbed all of these companies and now delivers water directly to the land. All operations in Mexico, however, both in regard to the protective levee system as well as the canal system are carried on through the subsidiary company of the District, which is a Mexican corporation under the jurisdiction of the Mexican Federal Government.

BONDS

Since 1916 there have been four bond issues totaling $16,000,000, the last issue being in 1922. Proceeds were used for the purchase of the private company in 1916 and the mutual water companies in 1923; for construction of protective levees, canals and structures; and for a system of deep drain outlets.

Redemption of bonds commenced in 1925 with the payment of $100,000 on the principal. In both 1931 and 1932 maturities amounted to $300,000 each year; to date $1,750,000 has been retired, reducing the outstanding unmatured bonds to $14,250,000.

All charges falling due in 1931 and on January 1, 1932, were paid but on July 1, 1932, for the first time of record, sufficient funds were not available to meet all bond charges. Of the total of $700,000 of maturities and interest payable on that date, default was made on $68,000 of principal and on approximately $147,000 of interest payments. In view of this situation and because of general economic conditions, a committee of bondholders was organized, which made a study of the affairs of the District, following which meetings were held with the District Board and a plan of refinancing agreed upon.

In brief, the plan provides for no reduction in principal but for a deferment of maturities and a temporary reduction in interest pending a return of normal times. The present serial bonds are to be exchanged at par for sinking fund bonds. Present maturities for the years 1933 and 1934 are to be deferred to the period 1938 to 1942, the remainder to fall due in 1982. Interest payments are to be reduced as follows: for 1933, 50 per cent; for 1934, 60 per cent; for 1935, 40 per cent; and for 1936, 20 per cent. Full interest will be paid from 1937 on. Interest falling due in 1933 will be paid from the collection of delinquent assessments.

As a part of the same plan, payment of the outstanding registered warrants of the District is to be deferred to the period of 1938 to 1942 and interest reduction is to follow the same percentage as for the bonds,

with interest falling due in 1933 to be paid out of the collection of delinquent assessments.

The refinancing plan was overwhelmingly adopted by the people at an election held on January 12, 1933, the plan first having been approved by the District Board and by the California Districts Securities Commission. Before the plan can become effective, the committee must secure an agreement from the holders of present bonds to exchange their bonds for the new issue.

LAGUNA DAM CONTRACT

The present diversion works of the District at Andrade on the Colorado River must be considered as of a temporary character. No permanent diversion weir or dam is available in the river at that point and by reason of an injunction obtained by the Yuma County Water Users' Association in 1916, none can be built. Because of these facts and also with the All-American Canal in view, the District entered into a contract with the United States Government in October, 1918, providing for the moving of the headworks from Andrade up the river to Laguna Dam. As its proportionate share of the cost of Laguna Dam, the District agreed to pay the Government a total of $1,600,000 in twenty years without interest; to date $832,000 or a little more than one-half has been paid.

The annual installment of $96,000 was paid as usual in December, 1931. However, by act of Congress in 1932, the 1931 installment and one-half of the 1932 installment were deferred for a period of years with interest at 5 per cent. This converted the 1931 payment into a credit which was applied on the undeferred half of the 1932 installment and interest, the balance to be applied on the 1933 installment.

OPERATIONS FOR THE YEAR

Colorado River Diversion:

1931

Total diversions for the year amounted to 2,692,849 acre feet, the maximum being 6,420 second feet on July 3, the minimum 400 second feet on February 13 (due to local rains) and the mean for the year 3,690 second feet. These quantities are somewhat lower than for several years past, the decrease being due mainly to a large reduction in farming operations in Mexico.

The percentage of diversion to discharge of the Colorado River recorded at Yuma, for the year was 55.8—the highest of record. For past years the percentage has been as follows:

1923	18.4	1927	18.1
1924	27.0	1928	25.6
1925	25.4	1929	19.7
1926	25.3	1930	30.9

The percentage of diversion to discharge of the river at Yuma for each month during the year, was as follows:

January	112.43	May	32.27	September	180.11
February	31.06	June	25.89	October	61.70
March	101.17	July	74.33	November	65.11
April	83.10	August	81.96	December	95.75

The following tabulation shows diversion by months:

DIVERSION

	Daily in Second Feet					Total Monthly
	Maximum		Minimum		Mean	In Acre Feet
January	3,700	27th	2,525	18th	3,090	190,015
February	3,490	3rd	400	13th	2,125	118,038
March	5,928	31st	2,830	1st	4,574	281,260
April	6,040	2nd	2,400	27th	4,944	294,189
May	5,300	28th	3,225	3rd	4,487	275,870
June	6,050	30th	4,275	7th	5,396	321,085
July	6,420	3rd	1,927	30th	4,581	281,722
August	5,175	12th	1,620	27th	3.426	210,629
September	4,515	4th	855	23rd	2,180	129,679
October	5,065	2nd	3,300	25th	4,054	249,263
November	3,850	3rd	2,100	22nd	2,933	174,502
December	3,286	22nd	1,400	10th	2,709	166,597

Notwithstanding the extremely low flow of the river, no unusual diversion difficulties were had. Operation of the sluice works at Laguna Dam was felt at Andrade when the flow was the lowest, making regulation difficult and the sand dam across the river had to be maintained for a considerable period, but on the other hand, the heavy silt content of the river was low and the usual large amount of drift and debris which comes with a high river was absent.

Suction dredge operations between Rockwood and Hanlon Gates were commenced on June 1 and continued with three shifts daily to July 17, then intermittently to the 24th, when it was necessary to suspend operations, due to the low flow of the river. During August and September dredging was carried on intermittently with a small crew and was closed down for the year on October 2. A total of 750,049 cubic yards of silt was removed during the dredging period.

For a short period, during the low flow of the river, Rockwood Gate was opened and the canal flow regulated at Hanlon Gate. This was done in an effort to reduce operating costs, but owing to a number of difficulties encountered, it was discontinued.

The sand dam across the river was closed on July 23, the earliest date of record, and the entire river discharge diverted until August 7, when the dam was cut, being reclosed on August 20. It broke on the 21st, was closed again on the 22nd and no water passed down the river from the latter date until October 1. During the remainder of the year the flow in the river was more than the demand.

On August 31, during a local thunder storm, lightning damaged telephone and power lines at Andrade and burnt out the telephone board in the office and the switchboard on Dredge Brawley, as well as damaging underground cables and telephone sets.

1932

Total diversions for the year amounted to 2,562,171 acre feet, the maximum being 5,000 second feet on June 21, the minimum 400 second feet on October 10 (due to heavy local rains) and the mean for the year 3,510 second feet. This was the lowest since the year 1921 and was occasioned by a minimum acreage in crop in Mexico, together with a small decrease in acreage in the United States.

The percentage of diversion to discharge of the Colorado River recorded at Yuma, for the year was 18.1 or about normal. (See 1931 Diversion for percentage of other years.)

The percentage of diversion to discharge of the river at Yuma for each month during the year, was as follows:

January	85.30	May	9.54	September	36.37
February	13.97	June	7.29	October	67.25
March	30.88	July	10.84	November	63.93
April	17.64	August	35.95	December	64.36

The following tabulation shows diversion by months:

DIVERSION

	Daily in Second Feet					Total Monthly
	Maximum		Minimum		Mean	In Acre Feet
January	3,620	20th	2,135	31st	2,997	184,254
February	3,360	16th	1,000	19th	2,487	143,036
March	4,648	11th	3,200	20th	3,887	239,028
April	4,800	20th	3,442	25th	4,210	250,524
May	4,725	26th	3,206	8th	4,113	252,873
June	5,000	21st	3,550	5th	4,497	267,600
July	4,656	14th	3,600	3rd	4,197	258,039
August	4,445	23rd	2,000	17th	3,894	239,445
September	4,468	24th	2,985	11th	3,741	222,601
October	4,450	4th	400	10th	2,723	167,447
November	3,332	2nd	2,752	13th	3,030	180,279
December	3,030	6th	1,230	14th	2,554	157,045

Conditions of river flow were favorable throughout the year and no difficulty was had in meeting the demand.

As a means of reducing expenditures, suction dredge operations were not commenced until July 5, a month later than usual. The Calexico was started on that date and continued with three shifts daily until the 15th, when operations were transferred to the Brawley which worked the remainder of the season. On August 20, one shift was laid off and a second was laid off on September 28, the remaining shift continuing to October 22, when the season closed. A total of 851,333 cubic yards of silt was excavated, which although somewhat larger than for 1931 was considerably less than normal. As a result of the effect on the canal system, it is believed that the month's delay in starting operations should be avoided in the future.

Due to a sufficient supply in the river, a sand dam was not required until September 23, on which date closure was made. By October 2, the dam was cut and was not needed thereafter.

Water Distribution—General:

1931

Of the 2,692,849 acre feet diverted from the river 1,394,890 acre feet or 51.80 per cent was delivered to users in the United States and 380,627 acre feet or 14.13 per cent to users in Mexico; a total of 1,775,517 acre feet to all users. Respective deliveries showed decreases of 16.94 per cent and 21.51 per cent as compared with 1930. The decrease in the United States was due mainly to the severe water shortage, but that for Mexico was largely the result of a decreased acreage in crop.

There was considerable curtailment in operations throughout the entire system as a means of retrenchment to meet a falling off in revenues, this being a continuance of the program started in 1930. The canal system functioned without unusual difficulties, in fact the low silt content of the water was of considerable benefit in this respect.

Following is a tabulation showing a comparison of the silt content in per cent by volume for the years 1930 and 1931 as determined by tests taken at Dahlia Heading.

SILT CONTENT AT DAHLIA HEADING
In Per Cent by Volume

	1930			1931		
	Max.	Min.	Mean	Max.	Min.	Mean
January	0.75	0.38	0.50	1.10	0.60	0.91
February	0.63	0.25	0.43	2.00	0.60	1.05
March	1.80	0.60	0.97	3.50	0.70	1.45
April	5.00	0.80	2.37	1.80	0.80	1.08
May	3.50	0.90	1.63	3.40	1.40	2.31
June	2.10	0.80	1.13	2.30	1.00	1.52
July	20.00	0.50	5.25	4.50	0.50	1.50
August	24.00	5.00	14.70	24.00	0.01	11.75
September	9.00	2.00	5.10	17.00	0.20	5.45
October	4.50	1.50	2.84	18.00	4.00	10.61
November	2.00	0.90	1.30	13.00	2.50	5.75
December	1.80	0.90	1.09	7.00	0.80	2.37

The water shortage in the summer, while of longer duration than that of 1924, did not cause as much crop loss. This was due in part to a much smaller acreage in crop in Mexico, thereby releasing a larger percentage of the water to land in the United States and also to several flush heads in the river in the middle of the shortage. The shortage was felt first in the latter part of July, much earlier than ever before, and continued until October. At times during September, the supply was sufficient for domestic purposes only. Prorating between Mexico and the United States under the "Concession," which entitles Mexico to 50 per cent of the water, began on July 24 and continued to August 6, being renewed on August 27 and finally ended on September 1.

1932

Of the 2,562,171 acre feet diverted from the river 1,134,062 acre feet or 44.26 per cent was delivered to users in the United States and 217,534 acre feet or 8.49 per cent to users in Mexico; a total of 1,351,596 acre feet to all users. Respective deliveries showed decreases of 18.70 per cent and 42.85 per cent as compared with 1931. In both cases the cause was a curtailment of farming operations.

The retrenchment program made necessary further drastic cuts, in fact the policy was adopted of doing nothing which was not required to keep water flowing. Advantage was taken of the improvements which had been made to the canal system in previous years and to the system being in excellent condition. As a result, expenditures were reduced to less than 50 per cent of normal, but the work was spread in such a manner that the demand for water was met in all cases without delay.

The silt content of the water was normal as may be noted by comparing the following tabulation with that shown previously for the year 1931.

SILT CONTENT AT DAHLIA HEADING
In Per Cent by Volume

	1932		
	Maximum	Minimum	Mean
January	1.4	0.7	1.04
February	11.0	0.5	4.26
March	7.0	3.0	4.68
April	6.5	3.0	4.53
May	3.2	1.0	2.15
June	1.5	0.8	1.13
July	5.0	0.7	2.00
August	9.0	1.0	2.77
September	18.75	2.0	9.42
October	10.00	1.2	3.08
November	3.00	0.9	1.48
December	1.00	0.5	0.77

There was sufficient flow in the river at all times to meet the demand. Heavy rains in the north end of the Valley did some crop damage and washed out several sections of the East Highline Canal and laterals, but repairs were completed and service resumed before the crops needed irrigating.

Water Distribution—Mexico:

1931

Hearings held in Mexico City last November, relative to water rates, were continued in January of this year following which, on January 27, the Mexican Department of Agriculture and Development ordered a 30 per cent reduction in rates for one year, with certain provisions regarding the right of the Compania to recover resulting losses in succeeding years. The reduction was ordered over the protest of the Compania, but was justified by the Department on the basis of economic conditions in Mexico. In December, without previous notice, a second order was issued by that Department reducing rates an additional 25 per cent. To this the Compania protested and finally succeeded in securing an amended order by which the second reduction was rescinded with the condition that the first reduction of 30 per cent was to remain in effect indefinitely, instead of one year.

In July, Mexico went off the gold standard, causing an increased loss in exchange of currency, which, together with the reduction in rates and a decrease in cropped area, resulted in revenue from water sales dropping to approximately $199,000 as compared with an average in the previous eight years of over $550,000.

Due to a lessened silt content of the water and the retrenchment program, dredging operations were reduced from the last two years. Dragline work this year included 1.2 miles of the Cerro Prieto Canal from New River Check upstream to the junction with the Solfatara Canal; 1.7 miles of the Carrillo Bend Canal; and on this same canal the construction of a cut-off and embankment for a settling pond to assist in handling the silt problem. The only "Ruth" dredging this year was 12 miles on the Mesa Canal. Total mileage dredged was 14.9 miles.

A small break occurred on the south bank of the Alamo Canal at Mile 13 (a short distance upstream from the Alamo Mocho Cut-off) on the afternoon of July 10. It was necessary to cut out the water at Hanlon Heading, but the break was closed by 8:00 A. M. the following morning and

1,000 second feet was passing by 3:00 P. M., being increased to full demand shortly thereafter. No crop damage was caused by the break.

On the night of August 24, a fire broke out in a restaurant adjacent to the Compania Headquarters in Mexicali and completely destroyed the Compania warehouse and contents. The loss to the Compania was fully covered by insurance.

Minor repairs were made to a number of the larger structures and by the change in the Rules and Regulations, the Compania was forced to take over the maintenance of individual delivery gates. Patrolling, brushing and riprapping were carried on as usual. A "60" caterpillar and disk were used in controlling brush growth and berming with good results.

The demand for water was considerably less than normal, total deliveries for the year amounting to only 380,627 acre feet. Due to the water shortage, proration to users was started July 24 and continued to August 6, deliveries being made on a basis of acreage in crop.

Two crop reports were taken, the first in the spring and the second in the summer. A summary of the two showed 103,323 acres irrigated, of which 21,171 acres also received a part of the water from the Pescadero Siphons. Omitting this latter acreage, water duty was 3.62 acre feet per acre.

Acreage shown for the various crops was as follows: Cotton, 71,825 acres or 69.5 per cent; grains, 16,740 acres or 16.2 per cent; alfalfa, 11,733 acres or 11.4 per cent; and miscellaneous, 3,025 acres or 2.9 per cent. There has been a large increase in the acreage in grains (mostly wheat) during the last few years, from 7,100 acres in 1928 to that of nearly 17,000 acres this year.

1932

The demand for water in Mexico this year was the lowest in the past fifteen years, the depression, together with labor difficulties, causing a major part of the land to be idle. The 30-per cent reduction in rates remained in effect and all of these conditions, together with an extremely low value of the peso, which caused a high loss in exchange, resulted in revenue from water sales amounting to only $86,000 or nearly 85 per cent less than normal.

On March 1, the new labor law became effective, making necessary numerous changes in personnel as well as changes in working conditions. Under the terms of this law, a collective labor contract was made with the labor union representing Compania employees, which fixes wages and carries many provisions restricting actions of the Compania in its operations.

Dragline operations were held to a minimum, comprising only 2 miles in the Carrillo Bend Canal and 0.4 of a mile at the head of Ash Canal. "Ruth" dredging was confined to a total of 15 miles on the Mesa Canal, or a total for all of 17.4 miles.

Laguna Wasteway is giving increasing trouble due to filling of the New River Channel. Several cuts have been made, which have given temporary relief, but as the delta continues to be extended and built up by the heavy silt sluiced out of the West Side Main the problem becomes more serious. Back water upstream in New River raised this year, making it necessary to raise the Packard road crossing fill several feet.

No major repairs to structures were required. Minor repairs were made and patrolling, brushing and riprapping carried on as usual. The old wood bridge on the Packard road over the 134 Wasteway was replaced by a 24-inch corrugated iron culvert and fill, requiring some 2,500 cubic yards of earth.

At noon on August 16, a small break, about twenty-five feet in width, occurred in the north bank of the Alamo Canal at Mile 10.5 (near the upper end of the Alamo Mocho Cut-off). The water found its way through and at some depth under the bank, and although found at an early stage could not be brought under control before the bank gave way. The water was cut out at Andrade and by 11:00 P. M. the break was closed and water ordered back. Although some acreage in crop was flooded, the damage was minor in extent.

Deliveries of water to users totaled 217,534 acre feet as compared with those for the years 1928, 1930 and 1931, respectively, of 712,255, 484,919 and 380,627 acre feet. The available water supply was sufficient at all times of the year to meet the demand.

A summation of crop reports taken in the spring and summer showed a total of 80,684 acres irrigated of which 11,000 acres also received water from the Pescadero Siphons. Omitting the latter acreage, water duty for the year was 2.69 acre feet per acre.

Acreage shown for the various crops was as follows: Grains, 38,647 acres or 47.9 per cent; cotton, 29,543 acres or 36.6 per cent; alfalfa, 9,709 acres or 12 per cent; and miscellaneous, 2,785 acres or 3.5 per cent. This year was the first of record in which the cotton acreage did not exceed all others.

Water Distribution—United States:

1931

For convenience in operating, the canal system in the United States is divided into divisions, each in charge of a superintendent. Operation of the main canal system in both Mexico and the United States is handled through the General Water Office, in charge of the General Water Master. No changes were made in any of these divisions this year.

The demand for water was somewhat less than for several years, deliveries to ranches totaling 1,394,890 acre feet as compared with 1,679,433 in 1930, 1,634,187 in 1929 and 1,494,831 acre feet in 1928. This decrease is due almost entirely to the severe water shortage from July to October. The duty of water for the year was 3.20 acre feet per acre as compared with 3.82, 3.85 and 3.67 for the years 1930, 1929 and 1928, respectively.

The shortage of water was first felt in the latter part of July when on the 21st it was necessary to prorate the supply to the divisions. On July 27 prorating to individual users began and continued to August 6 when for a short period the supply was ample.

Prorating to divisions was resumed August 25 and from August 28 to September 3 it was necessary to prorate to the users. On September 9 the supply was again prorated to the divisions and from September 12 to September 30 it was again prorated to the users. During proration water was delivered on a basis of assessed valuation over periods of ten days each, the rate of delivery varying from .4 to .3 of a second foot for each $1,000 of valuation.

A tabulated summary of the crop report for the year appears on page 37. The gross area in crop was 679,451 acres and the net area cropped was 436,450 acres as compared with a net area in 1930 of 439,260 acres. Alfalfa acreage for this year of 254,889 shows an increase of about 16,000 acres while lettuce and cantaloupes show decreases, respectively, of 5,100 and 10,500 acres.

A summation of cleaning operations, in the United States, classified by method used, is shown by the following tabulation:

SUMMARY OF CLEANING OPERATIONS IN MILES

1931

	Canals			Surface Drains		Total
Division	Dragline	Ruth	Shovel	Ruth	Shovel	Miles
Holtville	0.9	508.4	61.9	155.5	2.6	729.3
Imperial		763 9	116.5	49.7		930.1
Brawley		424.1	39.5	164.4		628.0
Calipatria		376.2	64.0	194.7	3.9	638.8
Calexico	2.6	248.8	33.7	8.2		293.3
Total	3.5	2,321.4	315.6	572.5	6.5	3,219.5
Totals for 1930	22.0	2,787.0	336 0	587.0	49.0	3,781.0
Totals for 1929	25.0	2,675.0	308.0	518.0	42.0	3,568.0

The reduction in miles cleaned this year reflects the lower silt content of the water as shown by a previous tabulation and to some extent the improvements made in silt control on several of the most troublesome canals.

Several heavy rains occurred during the year. Run-off from the desert in the vicinity of Dixieland, during a storm from January 2 to 14th, broke into the West Side Main in several places, but as the water had been cut out of the canal, very little damage resulted. A rain in the mountains to the northeast of the Valley, on February 7 and 8th, broke the East Highline in numerous places north of "J" Heading and did considerable damage to the lateral system in the Niland District. In this same area, there was another storm on April 26 and two more in August, but no particular damage resulted.

In order to reduce expenditures for silt removal on several canals and laterals, which had been receiving more than their share of bed silt, skimming weirs were installed. These installations proved of much benefit especially for the Dahlia Canal, the bottom lowering over two feet in a few months; for the Boundary Canal, the bottom lowering fifteen inches within a month; and also for the Beech, Wistaria No. 1 and Woodbine No. 1 Laterals.

Silting in of areas adjoining the east side of the Ash Canal was continued during the year except for the period of water shortage. Minor silting operations were completed at various points on the canal system.

In April, some 250 feet near the lower end of the concrete-lined section of the Dahlia Wasteway failed. In washing out, a deep cut was made which had to be puddled back filled before repairs to the structure could be started. Rubble masonry was used in replacing the lined section and despite the fact it was laid on the new fill, no effect of settlement was found at the end of the year.

When the Outer Trifolium Canal was extended several years ago to the western boundary of the District, capacity was provided for the area

then in the District and temporary wood flumes were constructed across the several washes. With the extension of the District boundary westerly to include the Kane Springs area of some 6,000 acres, the extension canal and structures had to be enlarged. This work was done this year and included realignment and reconstruction of one and one-eighth miles of canal; installation of three metal flumes, totaling 220 feet in length, the other old flumes being eliminated by the storm levee work done in cooperation with the State Highway Department; installation of four eighteen-inch culverts; and construction of three-eights of a mile of embankment for silting purposes to strengthen canal banks. A further extension into the new area of 3.5 miles of canal was completed by the property owners.

Construction of Improvement District No. 1 was completed. The work included installation of 3,750 feet of 24-inch, 2,750 feet of 18-inch, and 450 feet of 12-inch pipe, also 11 reinforced concrete control structures, combined with 17 delivery gates. Under all road crossings, special reinforced pipe was used. All work except the contral structures was financed through the sale of ten-year warrants, which are an obligation against the land in the Improvement District. The cost of the control boxes was borne by the Irrigation District, which also is to operate and maintain the works. The total cost amounted to $16,328 of which $12,450 was obtained from the sale of warrants.

During the year, labor crews brushed and cleared 1,684 miles of canal and surface drain banks, in addition to riprapping banks, fence moving, repairing breaks, patrolling and other miscellaneous work.

A total of 1,899 miles of canal and surface drain banks was graded, of which 1,211 miles were done by team graders and 688 miles by power graders.

There was a large expansion of disking on canals, the development of which was started last year. Each outfit consists of a "60" caterpillar and a heavy type disk built by the District. Not only is the brush and bamboo cane removed, but by putting the disk into the canal, the berm is trimmed, eliminating considerable dredging. During the year, 915 miles of canal banks were treated in this manner.

Also as a means of eradicating the growth of vegetation on the canal banks, experiments were continued with the use of chemicals; while good results were obtained, sufficient funds were not available to make as extensive tests as will be required before definite conclusions can be reached.

The following tabulation shows a total of 2,460 structures repaired, replaced or constructed during the year, as compared with 2,526 last year:

CONSTRUCTION, REPLACEMENT, AND REPAIR OF STRUCTURES

1931

	Repaired					Constructed or
Division	Deliveries	Checks and Drops	Bridges	Misc.	Total	Replaced
Holtville	92	111	15	25	243	47
Imperial	53	67	22	46	188	198
Brawley	70	163	12	17	262	14
Calipatria	300	378	63	22	763	153
Calexico	261	219	21	16	517	75
Total	776	938	133	126	1,973	487

Eradication of noxious weeds was continued. It has been found that the most effective work, in most cases, is done in August and September. Johnson grass and camel thorn are the predominating weeds to contend with.

1932

The demand for water was less than last year, deliveries totaling 1,134,062 acre feet, the lowest amount since 1926. Part of the decrease was due to a lesser acreage in crop and part to the return to a water toll on March 15. The duty of water was 2.84 acre feet per acre, while for previous years it was as follows: 1931, 3.20; 1930, 3.82; 1929, 3.85; and 1928, 3.67 acre feet per acre. No difficulty was encountered in meeting the demand, the flow in the river being ample throughout the year.

A tabulated summary of the crop report is shown on Page 38. The gross area in crop was 630,988 acres, and the net area cropped 399,053 acres as compared with 436,450 acres, net area in 1931 and 439,260 acres in 1930. The largest part of the reduction was in vegetable acreage.

A summation of cleaning operations, in the United States, classified by method used, is shown by the following tabulation:

SUMMARY OF CLEANING OPERATIONS IN MILES

1932

Division	Canals Dragline	Canals Ruth	Canals Shovel	Surface Drains Ruth	Surface Drains Shovel	Total Miles
Holtville		480.0	68.6	81.4	1.0	631.0
Imperial		671.4	109.3	56.0		836.7
Brawley		276.7	47.6	90.6		414.9
Calipatria	1.0	247.4	50.7	47.4	3.0	349.5
Calexico		168.8	36.8	15.5		221.1
Total	1.0	1,844.3	313.0	290.9	4.0	2,453.2
Totals for 1931	3.5	2,321.4	315.6	572.5	6.5	3,219.5
Totals for 1930	22.0	2,787.0	336.0	587.0	49.0	3,781.0

This shows over 700 miles less than in 1931 and more than 1,300 miles less than in 1930, which was largely the result of the retrenchment program curtailing operations.

A very severe rain storm struck the Valley on October 8 and 9th, the early part of the storm centering on the east side, then swinging to the west and north across the Valley. Considerable damage was done to many parts of the canal system. The worst damage was to the East Highline Canal and laterals from "C" Heading north to Niland. For nearly two miles the Highline was filled with sand washed from the desert, many breaks occurred north of this section, the lateral system was broken in innumerable places, the town of Calipatria east of the railroad was under several feet of water and some damage was done to farm land and crops in the vicinity of the Highline.

In the Holtville Division, small breaks occurred in laterals from the Oat to Occident near the main north and south drains, and to the north, in the Brawley Division, many laterals were broken and road crossings filled with debris. Also in the Brawley Division there were some breaks in the Rockwood Canal system, but the most damage came from the tail end of the storm, the run-off from the desert west of Westmorland washing

out the Trifolium Canal and many laterals in a number of places and damaging Trifolium No. 1 and No. 2 deep drains.

In the Imperial Division, several laterals north of the town of Imperial were broken and back water in the Rose No. 1 Drain created a small lake in the Mesquite Lake area.

Roads were flooded and washed out in many parts of the Valley, particularly in the central and northern portions, train service was stopped for several days and electric power was off for nearly twenty-four hours.

On the 11th, run-off from the storm, which had accumulated in the Alamo River, reached Alamo Dam near Calipatria and taxed the capacity of the structure. The connecting levee to the east was broken and the Vail Canal also, a short distance from the head. Several bridges below the Alamo Dam were washed out and others weakened by the excessive flow, and near the outlet of the Alamo River into Salton Sea, the river overflowed its banks, flooding a large area, but little of which was in crop, however.

Repairs were rushed and in a few days were completed except on the Outer Trifolium and East Highline north of "C" Heading, this work requiring about ten days to complete to a point where water service could be resumed. Despite the extent and severity of the storm, the crop loss was very small and water service was available by the time irrigation was again needed.

In view of the successful operation of the skimming weirs installed last year, several more were added this year at the heads of particularly troublesome laterals, including the Pepper, South Date and Birch.

Silting in of the Prendergast land on the east side of the Ash Canal was completed and operations moved to the Forrester and north part of the Gray land. There remains but one more area to silt in this vicinity and one in Mexico on the east side of the Ash between the head and the International Boundary.

For the past several years, complaints have been received regarding "D" Lateral along the east and north sides of the grammar and high school grounds at Calipatria. Conditions were considered dangerous to the school children and seepage was damaging the concrete pavement along the north side of the grounds. To eliminate this part of the lateral, a connection was made from "C" to "D" Lateral one mile west of the school grounds to supply the land on "D" Lateral to the west and a pipe line constructed from "C" to "D" Lateral on the west side of the school grounds to serve the rest of the land. The pipe line consisted of 2,600 feet of 24-inch concrete pipe with rubble masonry inlet and outlet structures. The check at the inlet of the pipe in "C" Lateral and the banks of the lateral for a short distance upstream were raised to provide the necessary head. The work was completed in November.

This work was done in accordance with an agreement with the City of Calipatria by which the latter was given the right to remove that part of "D" Lateral which was eliminated. At the same time another agreement was made between the District and the City by the terms of which, the latter dismissed the pending suit for damages caused by the washing out, several years ago, of the lower end of the City's outlet sewer and septic tank on the bank of the Alamo River; since that time, the sewer has emptied directly into the river. As consideration for the dismissal, the District agreed that, in the event the septic tank had to be rebuilt, the District would contribute up to $5,000 towards the replacement cost.

During the year, labor crews brushed and cleared 771 miles of canal and surface drain banks, in addition to miscellaneous work. The difference between this mileage and that for last year of 1,684 miles is another result of the drastic retrenchment program.

A total of 1,003 miles of canal and surface drain banks was graded, of which 550 miles were done by team graders and 346 miles by power graders. For last year, a total of 1,899 miles was graded.

Disking of canal banks was continued, but on a very much reduced program, the total for the year being 214 miles as compared with 915 miles last year.

The following tabulation shows a total of 1,800 structures repaired, replaced, or constructed during the year as compared with a total of 2,460 last year:

CONSTRUCTION, REPLACEMENT, AND REPAIR OF STRUCTURES

1932

Division	Repaired					Constructed or Replaced
	Deliveries	Drops and Checks	Bridges	Misc.	Total	
Holtville	51	44	5	5	105	37
Imperial	27	89	7	38	161	80
Brawley	107	105	14	7	233	73
Calipatria	187	239	45	16	487	95
Calexico	220	222	39	4	485	44
Total	592	699	110	70	1,471	329

The campaign for eradication of noxious weeds was continued this year, though somewhat limited by lack of funds. However, it is believed that definite progress is being made each year and the situation, as far as the canal system is concerned, is well under control and can be maintained unless the work has to be stopped because of reduced expenditures.

In order there be no misunderstanding, it should be pointed out that the reduction in operations through the retrenchment program was not on a basis of economy but was necessary to meet a falling off in revenue and as a means of assisting the water users to carry on, through the depression.

River Protection:

1931

The total discharge of the Colorado River at Yuma for the year was 4,832,000 acre feet. This is the lowest discharge of any year since measurements were commenced, in fact, it is over 3,000,000 acre feet less than the previous minimum of 7,959,000 acre feet which occurred in the year 1902. It is only 30 per cent of a normal discharge.

Of this amount, 106,730 acre feet was from the Gila River as compared with 12,200 acre feet in 1930.

The maximum discharge was 26,900 second feet on June 16, compared with an average of previous years of 100,000 second feet. The minimum was 66 second feet on September 23, but as the spillway from the Yuma Canal is below the metering station, this does not represent the flow available at Andrade. Further comparison with other years is shown by a tabulation on Page 36.

In preparation for a possible flood, a large shot was made in the quarry to increase the supply of rock available for revetment purposes. The shot was similar to those in the past. Coyote holes were drilled in the face of the quarry, the tunnels totaling 575 linear feet, connecting twelve powder pockets. The shot was made with nearly 30,000 pounds of granular powder and 600 pounds of 40 per cent dynamite and brought down an estimated total of 67,500 cubic yards of broken rock. It is hoped this will be sufficient for protective work until Boulder Dam controls the floods.

By reason of the low peak flow of the river and the absence of any attack on the levee, for the first time in the past twelve years, it was not necessary to haul rock into Mexico for levee revetment. However, the usual patrols were maintained during the flood season and routine work of brushing and track maintenance was carried on.

No water flowed through the old Pescadero Cut this year, the flow passing down the new channel to the east. The Pescadero Siphons were operated for a short time only this season by the Delta Canal Company, owing to the low water.

1932

In February, for the first month since August, 1930, the discharge of the river at Yuma reached normal, but the total for the year of 14,187,000 acre feet, while over three times greater than last year, was several million acre feet less than normal.

Of the total discharge at Yuma, 261,290 acre feet was from the Gila River as compared with 106,730 last year.

The maximum discharge was 89,100 second feet on June 5, which was not far below an average of recent years, and the minimum was 1,600 second feet (not including Yuma Spill) on December 28.

That the elevation of the river bed at Andrade has risen considerably in the past few years is shown by gage readings. On May 31 of this year with a discharge of 75,000 second feet, the Rockwood gage reading was 118.9 feet as compared with a reading of 116.3 on May 18, 1922, with an equal discharge; a rise of 2.6 feet. Were it not for the fact that Boulder Dam will control the floods within a short time, a major part of the levee system would have to be raised or strengthened within a very few years, entailing a very large expenditure.

During the flood season there was some sloughing of levees although the river made no direct attacks of any serious proportions. Continuous patrolling was maintained night and day during the high stage but no trouble developed. Some revetment was necessary. Rock hauling commenced May 16 and a regular schedule of dumping maintained until June 11. From the latter date to August 22, when operations were discontinued, hauling was intermittent. During the season a total of 22,320 cubic yards of rock and gravel was placed as follows: 3,800 yards of rock and 8,180 yards of gravel on Ockerson Levee between Miles 14 and 17, and 10,340 yards of rock on Bee River Levee near Mile 21.5.

The following tabulation shows the cubic yards of rock placed on all levees since 1919:

Year	Cubic yards	Year	Cubic yards	Year	Cubic yards
1919	48,850	1924	32,960	1929	30,900
1920	18,240	1925	42,060	1930	31,700
1921	85,150	1926	40,300	1931	None
1922	88,210	1927	50,900	1932	14,140
1923	96,060	1928	32,780		

Total for the 14 years—612,250 cubic yards, which was distributed as follows:

C. D. Levee	7,780	Pescadero Levee	126,710
Ockerson Levee	116,870	Pescadero Dam	85,640
Bee River Levee	221,920	Volcano Levee	53,330

At peak flow, a small amount of water passed down the old Pescadero Cut, silting it higher, at other times the entire flow followed the new channel to the east. The Pescadero Siphons were operated only during the flood flow period.

Drainage Construction:

1931

During a major portion of the year, the three large wheel machines were used in constructing six and eight-foot lateral drains. Some were for individuals in which case all of the cost was advanced by the water user. Where community drains were constructed, the District cooperated by installing all public structures, all other costs being paid for by the landowners benefited. A total of approximately thirty miles of shallow drains was completed during the year.

Two installations, totaling over 14,000 feet of five-inch drain tile, were made for individual ranches, the owners paying all of the expense. In several cases landowners made their own installations.

1932

Because of a lack of funds both on the part of the District as well as the landowners, but few new "wheel" drains were constructed this year. Approximately five miles were completed, this being work either started last year or the plans for which had been completed prior to this year.

Drainage—Maintenance of Deep Drains:

1931

Maintenance of the outlet drainage system included repairs to bridges, siphons, and flumes, and raising of the latter where necessary, bank protection and channelization, operation of drainage pumps as heretofore, and dredging. The permanent test wells were read regularly and investigations of ground water conditions were made throughout the Valley.

The storm of February 14, although not as serious as that in the winter of 1926-27, caused five breaks in Trifolium No. 1 and two in Trifolium No. 2 Drains. At one point Trifolium No. 1 Drain was silted nearly to ground surface for one-quarter of a mile, cleaning by dragline being necessary.

Sections of the following drains were cleaned by a dragline equipped with a clam shell bucket: Holtville Main, Holtville No. 2, 2A, 2B, 2D and 6; Trifolium No. 1, Spruce Main, Westmorland, Mt. Signal, Number Nine, Central Main and South Central.

Operations were reduced nearly 50 per cent as compared with last year.

1932

The usual routine maintenance and repair work was carried on at about the same rate as in 1931. While there were some effects noticeable in the drainage system, yet it was in relatively good condition at the end of the year.

The heavy rain storm in October did considerable damage to deep drains north of Holtville, in Mesquite Lake, and west of Westmorland. The run-off into Rose No. 1 Drain was so large it overtopped the dam at the pumping plant at the junction with the Rose Outlet, with the result that the dam washed out and backwater from the Oulet flooded a considerable area in Mesquite Lake District. In making repairs the dam was raised and strengthened and the pump house elevated to avoid future occurrences of a similar nature. The Trifolium No. 1 and No. 2 Drains were broken in many places, the crossing of the former and the Los Angeles Highway being completely filled with silt. At other points, there was considerable erosion and several bridges were washed out. The Trifolium Storm Drain was also seriously damaged.

The outlet of the crossing of the Central Main Drain under the Rositas Canal had to be replaced. It was a wood structure of driven sheet piling and was replaced by a heavily reinforced concrete box, to withstand bank pressure much greater than normal due to slippage resulting from seepage.

Sections of the following drains were cleaned by a dragline equipped with a clam shell bucket: Trifolium No. 1, Dixie No. 3 and No. 4, Spruce, Gerrard, Rose No. 1, Holtville No. 9 and Ash.

Alamo and New Rivers:

1931

Since the diversion of the Alamo in June, 1927, the flow through the new outlet silted the banks and extended the delta 1.5 miles to the northwest and some 1.25 miles beyond in a northeasterly direction. During the water shortage this year, the bed of the river silted in for some distance above and below the diversion point and when the flow increased after the shortage, overflow resulted in the lower end with a consequent raising of water surface upstream to such an extent a new outlet was required. A line was brushed and an attempt made to channelize the flow, but the sluicing was not rapid enough, therefore, at the end of the year a dragline started excavating a new channel.

The principal work on New River Outlet this year was the raising and strengthening of banks. In December, a dragline built a levee along the south and west sides of Section 15 and the river turned into the basin of some 320 acres this created.

The usual amount of bank protection work was required on both rivers, rocks and steel jetties, brush and old auto bodies being used.

1932

The new outlet for the Alamo River was completed in February, the dragline then raising the north bank for some distance upstream from the outlet. In order to silt in low ground on both sides of the river, small pipes were installed through the bank and at one point an opening left in the bank which will be closed later. Although the run-off from the October storm overtopped the banks of the river for some distance above the outlet and inundated the surrounding area, the outlet remained intact and was but little damaged.

The silting basin constructed on New River in December of last year was completely filled by the end of August. By this time, however, a new outlet had been opened by a dragline along the east line of Sections 13 and 15 and through this the river was turned. Silting of low areas adjacent to the channel was carried on by the same method as used along the Alamo River.

Meteorological Data:

1931

The District continued to act as an observer for the United States Weather Bureau this year. A tabulation of results is shown on Page 41.

The maximum temperature was 116 degrees on July 2, the minimum was 27 degrees on November 23 and the mean for the year was 72.1 degrees, which was 0.8 of a degree above last year.

During the year, there were 269 clear days, 61 partly cloudy and 35 cloudy days. The mean relative humidity was 31.2 per cent, and the rainfall 4.75 inches as compared with 1.90 inches last year.

1932

A tabulation showing results of weather observations for 1932 is shown on Page 41.

The maximum temperature was 114 degrees on August 5, the minimum 25 degrees on January 27 and the mean for the year was 71.0 degrees.

During the year, there were 289 clear days, 61 partly cloudy and 16 cloudy days. The mean relative humidity was 28.3 per cent and the rainfall 4.62 inches, of which 2.86 inches fell in one October storm.

Miscellaneous:

1931 and 1932

The Telephone and Electrical Department carried on general maintenance and repairs only, during both 1931 and 1932, there being no new construction possible under the retrenchment program.

The telephone system consists of the following: In the United States, 183.65 miles of pole line carrying 428.50 miles of circuits, with 180 telephones, 39 signaling devices, 3 switchboards and 4 switchboxes connected; in Mexico, 150.10 miles of circuits, with 45 telephones, 14 signaling devices and 1 switchbox connected. Total equipment in both United States and Mexico consists of 333.75 miles of pole line carrying 682.95 miles of circuits, with 3 switchboards, 5 switchboxes, 225 telephones and 53 signaling devices connected. In addition, District lines make contact on 52.40 miles of foreign pole line.

Purchase and construction of new equipment during 1931 consisted of 2 autos, 5 heavy disks and 3 "60" caterpillar tractors; for 1932 two autos (one new and one secondhand), a new type of bulldozer mounted on a secondhand "60" caterpillar and one rotary scraper.

Total purchases of all kinds showed a marked reduction, those for 1931 being approximately $320,000 and for 1932 approximately $200,000 as compared with the total for 1930 of nearly $530,000.

Muskrat bounty paid in 1931 amounted to $5,198 and $1,052 in 1932 up to June 22, when it was discontinued to reduce expenditures. To date bounty has been paid for the destruction of a total of 139,000 muskrats.

Valuations and Assessments:

1931 and 1932

The total assessed valuation of lands in the District for 1931 increased approximately $130,000 as compared with 1930 but decreased in 1932 by nearly $450,000 under 1931. The assessment rate both for 1931 and 1932 was the same as for the previous seven years or $5 per each $100 of assessed value.

Collection of assessments for 1931 was nearly normal but for 1932 showed the effect of the depression, collections prior to issuance of Certificates of Sale being nearly $240,000 less than in 1931, the delinquency on this date was 34.6 per cent as compared with 17.9 per cent in 1931 and 14.8 per cent in 1930.

Comparisons with previous years are shown by the following tabulation:

Assessment For	Assessed Valuation	Per Cent of 1921	Rate Per $100	Total of Assessments	Paid*	Per Cent
1921	$53,594,766	100.0	$2.50	$1,339,869	$1,074,167	80.2
1922	48,216,049	89.9	1.10	530,376	446,895	84.3
1923	46,369,156	68.5	2.50	1,159,229	1,003,769	86.6
1924	43,027,272	80.3	5.00	2,151,364	1,913,928	89.0
1925	42,411,886	79.1	5.00	2,120,594	1,824,825	86.1
1926	47,521,849	88.7	5.00	2,376,092	2,076,669	87.4
1927	48,898,062	91.2	5.00	2,444,903	2,061,477	84.3
1928	48,402,220	90.3	5.00	2,420,111	2,039,368	84.3
1929	48,263,664	90.1	5.00	2,413,183	2,090,467	86.6
1930	49,454,608	92.3	5.00	2,472,730	2,106,668	85.2
1931	50,587,177	94.4	5.00	2,529,359	2,077,110	82.1
1932	50,141,996	93.6	5.00	2,507,100	1,639,555	65.4

*Amounts paid before issuance of Certificates of Sale.

The following tabulation shows that notwithstanding the large delinquency of 1932, the total amount of Certificates of Sale unpaid December 31, 1932, (including penalties and costs) for a twelve-year period is only 8.4 per cent of total assesments for that period:

CERTIFICATES OF SALE TAKEN EACH YEAR AND AMOUNTS PAID AS OF DECEMBER 31, 1932

Assessment For Year	Total Assessment	Portion of Assessments Transferred to Certificates of Sale	Per Cent of Total Assessment	*Certificates of Sale Unpaid Dec. 31, 1932	Per Cent of Total Assessments
1921	$ 1,339,869	$ 260,698	19.5	$ 23,396	1.7
1922	530,376	83,479	15.7	10,434	2.0
1923	1,159,229	155,461	13.4	22,275	1.9
1924	2,151,364	244,706	11.3	36,744	1.7
1925	2,120,594	293,623	13.8	43,633	2.1
1926	2,376,092	298,500	12.6	48,650	2.0
1927	2,444,903	381,216	15.6	69,433	2.8
1928	2,420,111	377,752	15.6	79,924	3.3
1929	2,413,183	318,985	13.2	116,480	4.8
1930	2,472,730	340,942	13.8	246,181	10.0
1931	2,529,359	445,463	17.6	425,285	16.8
1932	2,507,100	864,914	34.5	929,819	37.1
Total	$24,464,910	$4,065,739	16.6	$2,052,254	8.4

*These amounts include penalties on assessments and costs.

Water Tolls and Charges:

1932

Because of the large delinquency in payment of assessments combined with loss of revenue from other sources, a general water toll of fifty cents an acre foot was established this year, effective on March 15. However, it was provided that payments of tolls for water used between March 15 and June 30 could be applied as a credit on the second installment of the current assessment, if the latter were paid in full prior to the delinquent date. Later this provision was extended to the date of sale and finally changed so that upon payment in full of the second installment, on any tract of land, toll credits could be applied on water deliveries to such tract. Suit was brought in the Superior Court to test the legality of both the toll and the credit, the decision of the Court, upon both points, being in favor of the District. The toll credit plan was discontinued on July 1, payment for water delivered after that date not being subject to credit on assessments.

A special water toll of $1.00 an acre foot was established on March 1 of this year on deliveries to land subject to assessment deed to the District. No change was made in the regular service charge of twenty-five cents a day.

The following tabulation shows cash receipts from water sales and redemption of delinquent assessments, by years from 1921 to date:

CASH RECEIPTS

Year	Water Sales Mexico	Water Sales and Service Charges United States	Total from Water	Redemption of Certificates of Sale	Total
1921	$334,938	$717,365	$1,052,303	$ 75,125	$1,127,428
1922	471,885	788,953	1,260,838	168,887	1,429,725
1923	532,311	918,370	1,450,681	176,707	1,627,388
1924	533,108	295,698	828,806	178,373	1,007,179
1925	635,681	253,593	889,274	258,829	1,148,103
1926	586,780	125,781	712,561	219,830	932,391
1927	502,784	86,723	589,507	218,084	807,591
1928	630,860	83,999	714,859	312,388	1,027,247
1929	530,745	86,308	617,053	527,797	1,144,850
1930	409,979	81,930	491,909	234,185	726,094
1931	199,634	69,595	269,229	175,920	445,149
1932	85,978	234,136	320,114	88,924	409,038

Financial Statement -- 1931

BALANCE SHEET

December 31, 1931

ASSETS

CURRENT ASSETS:

Cash	$ 910,679.19	
Materials and Supplies	223,091.88	
Current Assessments and Penalties	1,674,894.31	
Certificates of Sale	1,094,363.99	
Accounts Receivable	575,924.83	
Land Held Under District Tax Deeds	103,902.83	
Total Current Assets	$ 4,582,857.03	

CAPITAL ASSETS:

Irrigation System, Additions and Betterments	$10,137,027.74
Protective Levees and Works	3,873,910.43
Drainage Canals and Structures	2,762,569.76
Equipment and Facilities	763,303.96
Buildings	273,157.36
Land	127,955.40
Salton Sea Flooding Easements	17,380.37
Patent Rights	475.00
Total Capital Assets	$17,955,780.02

DEFERRED ASSETS:

Laguna Dam Diversion Right	$ 1,600,000.00
All-American Canal Survey by United States	40,000.00
Funds Advanced for Litigation	6,276.36
Improvement District No. 1 Warrants Held by Treasurer	2,300.00
Total Deferred Assets	$ 1,648,576.36

DEFERRED CHARGES TO OPERATION:

Prepaid Insurance	$ 11,713.33
Deferred Expense—S. A. Gerrard Co. Contract	16,000.00
Other Deferred Charges	6,055.28
Total Deferred Charges to Operation	$ 33,768.61
Total Assets	$24,220,982.02

LIABILITIES AND SURPLUS

CURRENT LIABILITIES:

Unpaid District Warrants	$ 917,684.20
Unpaid Interest on District Warrants	18,064.93
Bond Interest Maturing January 1, 1932	403,875.00
Unpaid Matured Bond Interest	3,700.00
Third Issue Bonds Maturing July 1, 1932	300,000.00
Unpaid Matured Bonds	2,000.00
Unpaid Time Vouchers	41,829.04
Unpaid Purchases	22,948.26
Other Accounts Payable	21,062.50
Total Current Liabilities	$ 1,731,163.93

CAPITAL LIABILITIES:

District Bonds Issued	$16,000,000.00	
Less Third Issue Bonds Redeemed	1,450,000.00	
District Bonds Oustanding		$14,550,000.00
Less Bonds Maturing July 1, 1932 (Current Liability)		300,000.00
		$14,250,000.00
Improvement District No. 1 Warrants Outstanding		12,350.00
Total Capital Liabilities		$14,262,350.00

DEFERRED LIABILITIES:

Laguna Dam Diversion Right	$ 672,000.00
S. A. Gerrard Co. Contract	16,000.00
Total Deferred Liabilities	$ 688,000.00

DEFERRED CREDITS TO INCOME:

Deferred Revenue from 1931-32 Assessments	$ 2,504,071.18
Penalties on 1st Installment, 1931-32 Assessments	40,881.91
Improvement District No. 1 Assessments	1,248.50
Total Deferred Credits to Income	$ 2,546,201.59

SURPLUS:

Surplus from Prior Years	$ 4,535,858.75
Surplus for Current Years	457,407.75
Total Surplus	$ 4,993,266.50
Total Liabilities and Surplus	$24,220,982.02

REVENUE AND EXPENSE FOR THE YEAR 1931

REVENUE:		
Accrued Revenue from Current Year Assessments	$2,520,686.72	
Less Provisions for Possible Cancellations	91,242.25	$2,429,444.47
Penalties and costs on Current Year Assessments		60,435.98
Revenue from Improvement District No. 1 Assessments		1,093.88
Water Sales and Service Charges:		
Water Sales and Service Charges, U. S.	$ 68,178.23	
Water Sales, Mexico	236,501.41	304,679.64
Total Operating Revenue		$2,795,653.97
Miscellaneous Revenue:		
Interest on Certificates of Sale	$ 81,460.31	
Interest on Bank Deposits	2,114.98	
Rental of District Property	9,215.57	
Special Revenue—Cons. Surface Drains	9,210.08	
Special Revenue—Construction of Canals	360.40	
Cash Discount on Purchases	1,847.27	
Unpayable Accounts	1,090.61	
Gain on Sales of Land Held Under Tax Deeds	4,979.92	
Miscellaneous Revenue	4,232.14	
Total Miscellaneous Revenue		114,511.28
Total Revenue		$2 910,165.25
EXPENSE:		
Operation and Maintenance of System		$1,387,262.59
Interest on District Bonds		816,000.00
Depreciation of Equipment and Facilities	$ 145,976.48	
Depreciation of Buildings	20,750.58	166,727.06
Total Operating Expenses		$2,369,989.65
Miscellaneous Expenses:		
Interest on District Warrants	$ 43,855.45	
Interest on Improvement District No. 1 Warrants	150.75	
Loss on Mexican Exchange	24,587.12	
Extraordinary Income Tax, Mexico	4,203.99	
Taxes	375.78	
Uncollectible Accounts Receivable	2,226.54	
Fire Loss, Mexicali Warehouse	1,321.13	
Loss on Inventory Adjustments of Materials and Supplies	315.90	
Miscellaneous Losses	5.731.19	
Total Miscellaneous Expenses		82,767.85
Total Expenses		$2,452,757.50
Surplus of Revenue over Expenses for Year 1931		$ 457,407.75

CASH RECEIPTS AND DISBURSEMENTS FOR THE YEAR 1931

Cash Balances on Hand January 1, 1931		$ 984,691
CASH RECEIPTS FROM:		
1930-31 Assessments	$1,042,842	
1931-32 Assessments	870,815	
Improvement District No. 1 Assessment	900	
Penalties on 1930-31 Assessments	10,172	
Redemptions of Certificates of Sale	126,716	
Interest on Certificates of Sale	27,454	
Sales of Land held under Assessment Deeds	21,750	
Total Receipts from Assessment Sources	$2,100,649	
Water Sales and Service Charges, United States	69,595	
Water Sales, Mexico	199,634	
Payment for Drains, Deliveries, etc.	41,588	
Rental of District Property	8,940	
Insurance on Mexicali Warehouse	7,500	
State Compensation Insurance Dividend	6,127	
Gasoline Tax Refunds	5,274	
Sales of Materials and Supplies	1,987	
All Other Sources	32,552	
Total Cash Receipts		2,473,846
		$3,458,537
CASH DISBURSEMENTS:		
Matured Bonds Paid	$ 298,000	
Matured Bond Interest Paid	827,830	
Interest Paid on Registered Warrants	31,909	
Pay Roll Payments	1,085,386	
Payments for Materials and Services	302,904	
Petty Cash and Miscellaneous Payments	1,829	
Total Cash Disbursements		2,547,858
Cash Balances on Hand December 31, 1931		$ 910,679

Financial Statement -- 1932

BALANCE SHEET

December 31, 1932

ASSETS

CURRENT ASSETS:

Cash		$ 459,051.88
Materials and Supplies		200,905.24
Current Assessments and Penalties		542,273.95
Water Accounts Receivable		70,670.76
Other Accounts Receivable		19,384.73
Total Current Assets		$ 1,292,286.56

OTHER ASSETS:

Certificates of Sale	$2,078,978.71	
Less Reserve for Cancellations	415,794.49	$ 1,663,184.22
Interest on Certificates	$ 903,344.42	
Less Reserve for Cancellations	271,003.33	632,341.09
Assessment Deeds to Land		265,258.15
All-American Canal Survey by United States		40,000.00
Laguna Dam Diversion Right		1,600,000.00
Miscellaneous Assets		13,696.12
Total Other Assets		$ 4,214,479.58

CAPITAL ASSETS:

Canal System	$10,153,510.36
Protective Works	3,873,910.43
Drainage Outlets	2,762,569.76
Salton Sea Flooding Easements	19,180.37
Buildings	252,253.23
Land	128,485.40
Equipment and Facilities	657,948.46
Total Capital Assets	$17,847,858.01

DEFERRED CHARGES TO OPERATION:

Prepaid Insurance	$ 6,630.80
Other Deferred Charges	25,245.80
Total Deferred Charges to Operation	$ 31,876.60
Total Assets	$23,386,500.75

LIABILITIES

CURRENT LIABILITIES:

Unpaid District Warrants	$ 885,244.53
Unpaid Matured Bond Interest	147,825.00
Unpaid Matured Bonds	68,000.00
Accrued Interest on Bonds	395,625.00
Unpaid Checks and Time Vouchers	31,516.22
Other Accounts Payable	105,932.14
Total Current Liabilities	$ 1,634,122.89

DEFERRED LIABILITIES:

Laguna Dam Diversion Right	$ 684,000.00
Other Deferred Liabilities	14,000.00
Total Deferred Liabilities	$ 698,000.00

CAPITAL LIABILITIES:

Unmatured District Bonds	$14,250,000.00
Improvement District No. 1 Warrants	11,950.00
Total Capital Liabilities	$14,261,950.00

DEFERRED CREDITS:

1932-33 Assessments	$ 740,712.73
Penalties on 1932-33 Assessments	16,788.43
Unrealized Revenue from Delinquent Assessments	2,560,777.21
Other Deferred Credits	93,185.31
Total Deferred Credits	$ 3,411,463.68

INVESTMENT OF THE DISTRICT:

Investment of the District, Prior Years	$ 3,236,023.65
Excess of Revenue over Expense, Year 1932	144,940.53
Total Investment of the District	$ 3,380,964.18
Total Liabilities	$23,386,500.75

REVENUE AND EXPENSE FOR THE YEAR 1932

REVENUE:

Assessment Levy, Year 1931-32	$2,499,793.31	
Penalties on 1931-32 Assessments	103,184.83	$2,602,978.14
Less Uncollected Assessments and Penalties, converted into Certificates of Sale		930,488.54
Realized Revenue from 1931-32 Assessments and Penalties		$1,672,489.60
Realized Revenue from Assessments of Prior Years:		
Certificates of Sale	$ 38,020.85	
District Assessment Deeds	11,284.61	49,305.46
Interest Collected on Redemption of Certificates of Sale		10,127.90
Total Realized Revenue from Assessments Levied		$1,731,922.96
Water Sales and Service Charges, U. S.:		
Water Sales, County Land	$ 216,258.82	
Water Sales, City Land	10,102.62	
Water Sales, Assessment Title Land	5,022.56	
Service Charges	50,838.94	282,222.94
Water Sales, Mexico	$ 134,482.84	
Less Loss on Exchange	49,626.17	84,856.67
Other Revenue:		
Rental District Property	$ 14,380.42	
Interest on Bank Deposits	2,811.63	
Cash Discount on Purchases	888.09	
Interest Earned, Miscellaneous	137.68	
Unpayable Accounts	101.93	
Miscellaneous Revenue	1,336.83	19,656.58
Total Revenue		$2,118,659.15

EXPENSE:

Operation and Maintenance of Irrigation and Protective System:		
Water Distribution:		
Operation of Canals	$ 218,535.77	
Maintenance of Canals	328,630.58	
Maintenance of Structures	50,965.87	
Total Water Distribution	$ 598,132.22	
Diversion	79,071.74	
River Protection	15,712.15	
Drainage Outlets	63,681.79	
Operation of Telephone and Power Lines	19,521.51	
Maintenance of Real Estate and Buildings	14,651.80	
Executive Expenses	93,460.27	
Administrative Expenses	65,021.10	
Colorado River Development	9,405.46	
Total Operation and Maintenance	$ 958,658.04	
Less Undistributed Credits	2,546.92	$ 956,111.12
Accrued Interest on District Bonds		799,500.00
Accrued Interest on Registered Warrants	$ 58,889.34	
Accrued Interest on Registered Bonds	2,387.64	
Accrued Interest on Registered Bond Coupons	4,713.84	65,990.82
Interest on Deferred Installments, Laguna Dam Contract		4,800.00
Costs of Refinancing Plan		5,283.18
Other Expenses:		
Uncollectible Accounts Receivable	$ 3,147.55	
Loss on Adjustments to Inventories of Materials and Supplies	1,040.13	
Taxes	523.80	
Loss on Exchange, Miscellaneous	309.89	
Fire Loss	300.00	
Miscellaneous Expenses	1,870.03	7,191.40
Depreciation of:		
Equipment and Facilities	$ 114,076.29	
Buildings	20,765.81	134,842.10
Total Expense		$1,973,718.62
Excess of Revenue over Expense for Year 1932		$ 144,940.53

CASH RECEIPTS AND DISBURSEMENTS FOR THE YEAR 1932

Cash Balances on Hand January 1, 1932		$ 910,679
CASH RECEIPTS FROM:		
1931-32 Assessments	$764,211	
1932-33 Assessments	215,227	
Improvement District No. 1 Assessments	637	
Penalties on 1931-32 Assessments	8,121	
Redemptions of Certificates of Sale	67,512	
Interest on Certificates of Sale	10,129	
Sales of Land held under Assessment Deeds	11,285	
Total Receipts from Assessment Sources		1,077,122
Water Sales and Service Charges, United States	$234,007	
Toll Charges applicable on Assessments	72,889	306,896
Water Sales, Mexico		85,977
Redemptions of Certificates assigned to Others		9,526
Deposits for Drains, Deliveries, etc.		11,668
Rental of District Property		10,764
Gasoline Tax Refunds		4,005
Sales of Materials and Supplies		1,405
Insurance Refunds		716
All Other Sources		18,732
Total Cash Receipts		$1,526,811
CASH DISBURSEMENTS:		
Matured Bonds Paid	$234,000	
Matured Bond Interest Paid	663,625	$ 897,625
Interest Paid on Registered Warrants		13,988
Pay Roll Payments		637,171
Payments for Materials and Services		417,980
Payments to Holders of Assigned Certifs. Redeemed		9,820
Payments of Improve. Dist. No. 1 Warrants and Int.		1,135
Miscellaneous Payments		718
Total Cash Disbursements		$1,978,437
Cash Balances on Hand December 31, 1932		$ 459,052

SALTON SEA ELEVATIONS

July, 1921—January, 1933

Date	Sea Level
July 1, 1921	—249.1
Jan. 1, 1922	—249.2
July 1, 1922	—249.2
Jan. 1, 1923	—249.9
July 1, 1923	—250.2
Jan. 1, 1924	—249.1
July 1, 1924	—249.0
Jan. 1, 1925	—250.2
July 1, 1925	—249.9
Jan. 1, 1926	—249.7
July 1, 1926	—248.8
Jan. 1, 1927	—247.8
July 1, 1927	—247.0
Jan. 1, 1928	—246.4
July 1, 1928	—246.0
Jan. 1, 1929	—246.5
July 1, 1929	—245.8
Jan. 1, 1930	—245.2
July 1, 1930	—244.3
Jan. 1, 1931	—244.3
July 1, 1931	—243.2
Jan. 1, 1932	—244.2
July 1, 1932	—243.8
Jan. 1, 1933	—244.0

EXPENDITURES FOR THE YEARS 1926 to 1932, INCLUSIVE

No.	Feature	1926	1927	1928	1929	1930	1931	1932
1.	EXECUTIVE:							
	El Centro Office	$ 93,140	$ 100,407	$ 97,461	$ 105,348	$ 107,850	$ 110,714	$ 93,460
2.	GENERAL ADMINISTRATION:							
	Headquarters Office	87,379	88,922	90,837	96,185	89,389	83,930	65,021
3.	STORAGE							
	Colorado River Development	6,387	67,148	86,747	59,505	62,823	19,658	12,127
4.	DIVERSION							
	Diversion Gates	20,624	24,654	25,100	26,380	24,909	20,917	17,784
	Intake Canal	2,471	2,669	2,996	3,511	2,334	970	829
	Dredging	72,631	80,708	84,763	89,258	79,903	48,704	46,747
	Diversion Weir	18,765	14,647	11,497	11,161	11,015	9,066	5,103
	Miscellaneous Operations	13,826	12,753	14,744	13,918	13,327	11,938	8,609
		$ 128,317	$ 135,431	$ 139,100	$ 144,228	$ 131,488	$ 91,595	$ 79,072
5.	WATER DISTRIBUTION:							
	Mexico:							
	Canal Operation	$ 64,649	$ 62,411	$ 63,877	$ 64,864	$ 62,002	$ 59,071	$ 48,055
	Canal Maintenance	89,671	73,971	91,120	102,131	98,265	71,442	53,701
	Structure Maintenance	4,595	10,232	21,672	11,240	38,544	6,807	4,517
	Canal Construction							
	Structure Construction	2,550		932				
		$ 161,465	$ 146,614	$ 177,601	$ 178,235	$ 198,811	$ 137,320	$ 106,273
	United States:							
	Canal Operation:	$ 197,207	$ 191,971	$ 197,084	$ 198,538	$ 201,054	$ 204,727	$ 170,481
	Canal Maintenance	675,336	637,375	606,320	647,583	710,477	500,685	274,930
	Structure Maintenance	118,851	145,035	129,497	132,863	112,128	87,350	46,449
	Canal Construction	11,722	10,313	22,787	34,284	15,644	6,598	5,363
	Structure Construction	31,119	33,425	45,039	60,416	72,301	43,169	3,217
		$1,034,235	$1,018,119	$1,000,727	$1,073,684	$1,111,604	$ 842,529	$ 500,440
6.	RIVER PROTECTION:							
	Patrolling and Maintaining Levees	$ 70,464	$ 77,145	$ 25,948	$ 45,997	$ 26,523	$ 7,653	$ 15,712
	Improvement to Levee System	42,452	48,002	50,483	12,522	43,773		
		$ 112,916	$ 125,147	$ 76,431	$ 58,519	$ 70,296	$ 7,653	$ 15,712
7.	MISCELLANEOUS:							
	Telephone & Power Lines, O. & M.	$ 24,799	$ 26,239	$ 23,707	$ 27,691	$ 28,328	$ 27,697	$ 19,522
	Tele. & Power Lines, Construction	2,421	362	3,490	2,342	2,561	50	
	Real Estate and Buildings, Maintenance	17,978	15,976	21,501	16,718	15,992	18,741	14,652
	Real Estate and Buildings, Const.	7,641	9,618	2,657	11,234	10,305	2,353	292
	Equipment, Renewals & Purchases	64,065	63,025	56,333	91,479	51,815	29,654	9,324
	Miscellaneous	698			3,206	5,755	10,362	*1,696
		$ 117,602	$ 115,220	$ 107,688	$ 152,670	$ 114,756	$ 88,857	$ 42,094

No.	Feature	1926	1927	1928	1929	1930	1931	1932
9.	DRAINAGE: (OUTLETS)							
	Drain Maintenance	$ 60,447	$ 83,946	$ 77,866	$ 52,037	$ 65,832	$ 38,803	$ 41,503
	Drain Construction	55,364	34,287	12,960	15,843	4,710		
	New River	14,958	27,646	18,223	5,839	5,854	11,167	9,278
	Alamo River	14,058	22,066	12,199	11,666	10,103	11,636	11,967
	Adjustment Salton Sea Claims	116,031	4,795	350			3,590	2,733
		$ 260,858	$ 172,740	$ 121,598	$ 85,385	$ 86,499	$ 65,196	$ 65,481
	Total Exclusive of Fixed Charges	$2,002,299	$1,969,748	$1,898,190	$1,953,759	$1,973,516	$1,447,452	$ 979,680
8.	FIXED CHARGES:							
	Laguna Dam Contract **	$ 192,000	$ 96,000	$ 96,000	$ 96,000	$96,000		
	Bond Interest	923,645	875,718	864,982	844,875	837,920	827,830	663,625
	Bond Redemption	145,000	202,000	195,000	250,000	250,000	298,000	234,000
	Interest on Warrants	5,905	17,074	27,575	20,949	20,912	31,909	14,723
	Refinancing Plan							5,283
		$1,266,550	$1,190,792	$1,183,557	$1,211,824	$1,204,832	$1,157,739	$ 917,631
	GRAND TOTAL	$3,268,849	$3,160,540	$3,081,747	$3,165,583	$3,178,348	$2,605,191	$1,897,311

SUMMARY

No.	Feature	1926	1927	1928	1929	1930	1931	1932
1.	Executive	$ 93,140	$ 100,407	$ 97,461	$ 105,348	$ 107,850	$ 110,714	$ 93,460
2.	General Administration	87,379	88,922	90,837	96,185	89,389	83,930	65,021
3.	Storage	6,387	67,148	86,747	59,505	62,823	19,658	12,127
4.	Diversion	128,317	135,431	139,100	144,228	131,488	91,595	79,072
5.	Water Distribution, Mexico	161,465	146,614	177,601	178,235	198,811	137,320	106,273
	Water Distribution, United States	1,034,235	1,018,119	1,000,727	1,073,684	1,111,604	842,529	500,440
6.	River Protection	112,916	125,147	76,431	58,519	70,296	7,653	15,712
7.	Miscellaneous	117,602	115,220	107,688	152,670	114,756	88,857	42,094
9.	Drainage	260,858	172,740	121,598	85,385	86,499	65,196	65,481
	Total Exclusive of Fixed Charges	$2,002,299	$1,969,748	$1,898,190	$1,953,759	$1,973,516	$1,447,452	$ 979,680
8.	Fixed Charges	1,266,550	1,190,792	1,183,557	1,211,824	1,204,832	1,157,739	917,631
	GRAND TOTAL	$3,268,849	$3,160,540	$3,081,747	$3,165,583	$3,178,348	$2,605,191	$1,897,311

*Credit

**An advance payment of $96,000 was made in 1931, but is not included in this statement, as it is to be applied on installment due December 31, 1934.

COMPARISON OF COLORADO RIVER DISCHARGE AT YUMA, ARIZ. WITH DIVERSION AT HANLON HEADING

Colorado River Discharge

YEAR	TOTAL Acre Feet	MAXIMUM Sec. Feet	DATE	MINIMUM Sec. Feet	DATE
1913	11,788,300	62,500	June 10	2,600	Jan. 18
1914	20,654,400	136,700	June 14	3,300	Jan. 7
1915	14,643,200	90,000	Feb. 3	2,700	Sept. 20
1916	22,940,400	220,000	Jan. 22	3,800	Jan. 12
1917	20,610,600	142,900	July 4	5,300	Jan. 9
1918	13,145,300	94,300	July 3	4,100	Sept. 13
1919	10,740,000	82,600	Nov. 30	1,800	Jan. 16
1920	21,445,800	190,000	June 8	5,100	Dec. 27
1921	19,464,400	185,700	June 28	5,200	Jan. 10
1922	17,019,500	115,000	June 10	3,300	Oct. 18
1923	17,843,500	100,000	June 8	4,600	Jan. 3
1924	11,421,000	65,800	June 24	1,200	Sept. 11
1925	12,457,300	52,900	June 8	1,210	Jan. 8
1926	12,201,000	73,100	June 16	2,440	Sept. 17
1927	17,095,000	81,200	Feb. 20	2,620	Jan. 9
1928	12,781,000	98,800	June 13	2,020	Dec. 31
1929	17,474,000	88,900	June 7	1,360	Jan. 2
1930	10,629,000	53,600	June 9	1,770	Feb. 3
1931	4,832,000	26,900	June 16	66	Sept. 23
1932	14,187,000	89,100	June 5	1,600	Dec. 28

Hanlon Heading Diversion**

YEAR	TOTAL Acre Feet	MAXIMUM Sec. Feet	DATE	MINIMUM Sec. Feet	DATE
1913	1,667,343	3,419	July 25	786	Dec. 31
1914	1,863,518	4,205	July 26	802	Jan. 1
1915	1,912,931	5,003	June 23	746	Jan. 30
1916	2,218,898	5,854	June 22	1,011	Jan. 19
1917	2,270,110	5,595	Sept. 22	1,456	Aug. 16
1918	2,719,149	5,932	Aug. 17	295	Jan. 13
1919	2,656,675	6,082	Aug. 4	1,781	Jan. 13
1920	2,821,543	5,992	July 19	1,789	Feb. 28
1921	2,419,595	4,968	Sept. 17	413	Jan. 5
1922	2,890,282	5,860	July 31	1,740	Jan. 14
1923	3,275,425	6,910	Aug. 15	2,492	Dec. 28
1924	3,078,307	7,200	July 30	1,295	*Sept. 11
1925	3,158,665	6,948	July 22	300	Dec. 15
1926	3,090,769	6,400	July 8	300	Dec. 11
1927	3,089,191	6,612	July 15	821	Dec. 27
1928	3,271,529	7,255	July 25	989	Dec. 4
1929	3,423,511	7,200	June 21	2,200	*Jan. 2
1930	3,280,708	7,078	July 9	1,900	*Jan. 12
1931	2,692,849	6,420	July 3	400	*Feb. 13
1932	2,562,171	5,000	June 21	400	Oct. 10

*The wasteway from the Yuma Main Canal at Siphon Spill is between the meter station at Yuma and Hanlon Heading, which accounts for the diversion at Hanlon Heading being greater than the discharge at Yuma on several occasions.

**This tabulation includes all water diverted from the Colorado River to the Imperial Irrigation District, except the following amounts, listed by years in acre feet which were diverted at Cerro Prieto Head Gate from Volcano Lake: 1916, 17,309; 1917, 142,345; 1918, 157,685; 1919, 197,534; 1920, 274,413; 1921, 115,425.

CROP DATA FOR YEAR 1931

UNITED STATES

Field Crops		Acres
Alfalfa		216,073
New Alfalfa		38,816
Barley	(1930-31)	50,282
Barley	(1931-32)	53,007
Corn		23,682
Cotton		209
Oats	(1930-31)	977
Oats	(1931-32)	955
Wheat	(1930-31)	11,205
Wheat	(1931-32)	5,149
Bermuda		16,036
Cane		412
Sudan		1,885
Hemp		7,485
Rice		280
Miscellaneous		71
TOTAL		426,524

Permanent Crops	Acres
Asparagus	3,364
Apricots	41
Dates	186
Grapes, Malaga	625
Grapes, Thompson	1,637
Grapes, Other	170
Grapefruit	9,884
Olives	58
Oranges	1,036
Pomegranates	42
Strawberries	67
Plums	15
Pears	15
Tangerines	255
Nursery Stock	53
Figs	28
Pecans	354
Lemons	92
Shade Trees	59
Avocados	10
Miscellaneous	27
TOTAL	18,018

Garden Crops		Acres
Lettuce	(1930-31)	53,911
Lettuce	(1931-32)	41,234
Cantaloupes	(1930-31)	39,029
Cantaloupes	(Fall 31)	2,157
Cantaloupes	(1931-32)	30,189
Honeydews	(1930-31)	4,674
Honeydews	(Fall 31)	300
Honeydews	(1931-32)	4,478
Honeyballs	(1930-31)	2,873
Honeyballs	(Fall 31)	116
Honeyballs	(1931-32)	3,033
Tomatoes	(1930-31)	2,321
Tomatoes	(1931-32)	1,553
Peas	(Spr. 31)	6,865
Peas	(Fall 31)	8,277
Peas	(Spr. 32)	5,283
Carrots	(1930-31)	5,143
Carrots	(1931-32)	1,884
Watermelons	(1930-31)	8,311
Watermelons	(1931-32)	8,917
Squash	(1930-31)	427
Squash	(1931-32)	288
Cabbage	(1930-31)	725
Cabbage	(1931-32)	485
Cucumbers	(1930-31)	385
Cucumbers	(1931-32)	80
Spinach	(1930-31)	198
Spinach	(1931-32)	100
Greens	(1930-31)	230
Greens	(1931-32)	200
Sweet Potatoes	(1930-31)	54
Sweet Potatoes	(1931-32)	103
Chicory	(1930-31)	100
Chicory	(1931-32)	19
Miscellaneous	(1930-31)	594
Miscellaneous	(1931-32)	373
TOTAL		234,909

Field Crops	426,524
Garden Crops	234,909
Permanent Crops	18,018
Total Acreage of Crops	**679,451**
Less Acreage Counted Twice	**243,001**
NET AREA IN CROP	**436,450**

MEXICO

	Cotton	Alfalfa	Grains	Misc.	Total
Acres	71,825	11,733	2,523	1,128	87,209*
Per Cent	82.4	13.4	2.9	1.3	100.00

Grand Total Area Cropped, United States and Mexico 523,659

*21,171 acres also received water from siphons installed at Pescadero Dam.

CROP DATA FOR YEAR 1932

UNITED STATES

Field Crops	Acres
Alfalfa	214,983
Alfalfa (Planted since Oct. 1st)	28,926
Barley (1931-32)	53,007
Barley (1932-33)	52,041
Milo	16,602
Cotton	160
Oats (1931-32)	955
Oats (1932-33)	824
Wheat (1931-32)	5,149
Wheat (1932-33)	12,063
Bermuda	22,009
Cane	384
Sudan	1,285
Sesbania	2,406
Rice	310
Flax	444
Clover	1,090
Miscellaneous	98
TOTAL	412,736

Permanent Crops	Acres
Asparagus	3,397
Apricots	43
Dates	178
Grapes, Malaga	453
Grapes, Thompson	1,775
Grapes, Other	24
Grapefruit	9,545
Olives	59
Oranges	1,134
Pomegranates	24
Strawberries	59
Plums	15
Pears	11
Tangerines	322
Nursery Stock	34
Figs	45
Pecans	656
Lemons	86
Shade Trees	54
Miscellaneous	18
TOTAL	17,932

Garden Crops		Acres
Lettuce	(1931-32)	41,234
Lettuce	(1932-33)	38,051
Cantaloupes	(1931-32)	30,189
Cantaloupes	(Fall 32)	510
Cantaloupes	(1932-33)	27,334
Honeydews	(1931-32)	4,478
Honeydews	(Fall 32)	240
Honeydews	(1932-33)	3,458
Honeyballs	(1931-32)	3,033
Honeyballs	(Fall 32)	180
Honeyballs	(1932-33)	3,566
Tomatoes	(1931-32)	1,553
Tomatoes	(1932-33)	1,692
Peas	(Spr. 32)	5,283
Peas	(Fall 32)	8,701
Peas	(Spr. 33)	5,421
Carrots	(1931-32)	1,884
Carrots	(1932-33)	3,811
Watermelons	(1931-32)	8,917
Watermelons	(1932-33)	6,323
Squash	(1931-32)	288
Squash	(1932-33)	586
Cabbage	(1931-32)	485
Cabbage	(1932-33)	731
Cucumbers	(1931-32)	80
Cucumbers	(1932-33)	101
Greens	(1931-32)	200
Greens	(1932-33)	300
Miscellaneous	(1931-32)	595
Miscellaneous	(1932-33)	1,096
TOTAL		200,320

Field Crops	412,736
Garden Crops	200,320
Permanent Crops	17,932
Total Acreage of Crops	**630,988**
Less Acreage Counted Twice	**231,935**
NET AREA IN CROP	**399,053**

MEXICO

	Cotton	Alfalfa	Grains	Misc.	Total
Acres	29,543	9,709	8,765	1,395	49,412*
Per Cent	59.9	19.6	17.7	2.8	100.00

Grand Total Area Cropped, United States and Mexico 448,465

*11,000 acres also received water from siphons installed at Pescadero Dam.

Water, Weather and Crop Tables---Imperial Valley, United States and Mexico

Calendar Year.	Total Area Irrigated for Year.	Total Quantity of Water Diverted From Colorado River—Acre Feet.	Total Quantity of Water Wasted, Lost, and Unaccounted for—Acre Feet.	Total Quantity of Water Delivered to Users, United States and Mexico — Acre Feet.	Net Acre Feet Per Acre Delivered.	Rainfall—Feet	Water Delivered Per Acre Plus Rainfall During Season—Feet.	Mean Annual Temperature—Degrees Fahrenheit.	Date of Last Killing Frost in Spring Before July 15.	Date of First Killing Frost After July 15 in Fall.	Percentage of Area in Different Crops: Cereals and Seeds.	Cotton.	Hay and Forage.	Fruits, Vegetables and Misc.
1912	242,110	1,433,753	613,195	820,558	3.39	0.20	3.59	70.0	Jan. 3	Dec. 21	47.9	3.3	44.0	4.8
1913	275,797	1,667,343	672,582	994,761	3.61	0.16	3.77	69.9	Mar. 25	Dec. 25				
1914	316,832	1,863,518	700,317	1,163,201	3.67	0.24	3.91	71.6	Jan. 31	Dec. 13	26.6	12.3	47.1	14.0
1915	334,534	1,912,931	766,515	1,146,416	3.43	0.28	3.71	71.2	Jan. 19	Nov. 14				
1916	375,509	2,236,207	928,201	1,307,906	3.48	0.40	3.88	71.1	Feb. 2	Nov. 13	35.5	11.4	42.1	11.0
1917	435,940	2,412,456	937,748	1,474,708	3.38	0.14	3.52	71.0	Mar. 4	Dec. 11				
1918	508,210	2,876,834	1,162,071	1,714,763	3.37	0.15	3.52	70.9	Feb. 3	Nov. 27	31.5	36.2	21.7	10.6
1919	588,250	2,854 209	1,156,873	1,697,336	2.89	0.24	3.13	70.9	Feb. 25	Nov. 29	30.8	31.3	23.9	14.0
1920	603,440	3,095,956	1,303,472	1,792,484	2.97	0.41	3.38	70.1	None	Dec. 7	20.6	49.2	16.9	13.3
1921	531,674	2,535,020	1,218,815	1,316,205	2.48	0.50	2.98	70.8	Feb. 16	Nov. 19	31.5	31.5	31.0	6.0
1922	563,400	2,890,282	1,415,284	1,474,998	2.62	0.21	2.83	70.6	Feb. 6	Jan. 3	26.2	33.1	28.2	12.5
1923	530,000	3,275,425	1,741,003	1,534,422	2.90	0.29	3.19	70.2	Feb. 11	Jan. 1	15.1	44.8	30.0	10.1
1924	544,338	3,078,307	1,413,934	1,664,373	3.06	0.06	3.12	72.5	Jan. 23	Dec. 19	13.7	45.5	27.9	12.9
1925	586,545	3,158,665	1,377,807	1,780,858	3.04	0.25	3.29	71.1	Jan. 18	Dec. 12	13.4	40.9	30.3	15.4
1926	546,402	3,090,769	1,281,863	1,808,906	3.31	0.54	3.85	72.6	Feb. 2	Dec. 14	16.0	29.1	36.1	18.8
1927	545,216	3,089,191	1,208,573	1,880,618	3.45	0.39	3.84	72.3	Jan. 24	Dec. 7	16.8	23.5	39.8	19.9
1928	598,389*	3,271,529	1,064,443	2,207,086	3.72	0.02	3.74	71.9	Jan. 18	Nov. 16	22.4	20.5	35.3	21.8
1929	589,184*	3,423,511	1,173,390	2,250,121	3.95	0.14	4.09	70.8	Feb. 9	Nov. 23	13.8	17.8	42.5	25.9
1930	572,967*	3,280,708	1,116,356	2,164,352	3.85	0.16	4.01	70.3	Jan. 23	Nov. 19	13.5	13.1	38.3	35.1
1931	539,773*	2,692,849	917,332	1,775,517	3.26	0.40	3.66	72.2	Jan. 20	Nov. 23	16.2	14.9	47.2	21.7
1932	468,959*	2,562,171	1,210,575	1,351,596	2.89	0.39	3.28	71.0	Feb. 5	Dec. 13	13.6	5.1	49.4	31.9

Previous to January 1, 1923, water wasted, lost and delivered, based on amount "Billed to Mutual Water Company," since that time deliveries to water users. Includes both United States and Mexico.

NOTE:—Deliveries to land based on orifice measurement and are at least 10% less than actual as shown by tests.

*19,700 acres in 1928, 19,751 acres in 1929, 29,035 acres in 1930, 21,171 acres in 1931, and 11,000 acres in 1932 were served through the Colorado River Land Company's siphons at Pescadero Cut and by the Alamo "6B" Canal. To this acreage the following amounts were furnished by the Alamo "6B" Canal: 55,577 acre feet in 1928; 1,303 acre feet in 1929; 70,155 acre feet in 1930; 82,931 acre feet in 1931 and 29,066 acre feet in 1932. This acreage and water, included in the tabulation herein given, has been subtracted in figuring the duty of water.

Meteorological Data, Year 1931

TEMPERATURE

Month	Mean Maximum	Mean Minimum	Mear	Maximum	Date	Minimum	Date	Greatest Daily Range
January	71.7	37.9	54.8	85	30	29	1	42
February	70.9	46.1	58.5	76	2	38	24	35
March	82.3	46.6	64.5	95	15	37	6	45
April	89.0	56.0	72.5	97	1	51	1	46
May	96.3	63.6	80.0	108	30	55	19	45
June	99.7	69.6	84.7	111	27	58	16	38
July	108.6	81.7	95.2	116	2	75	3	36
August	102.5	77.3	89.9	112	25	70	31	36
September	99.3	66.7	83.0	111	7	58	14	40
October	89.0	57.1	73.1	98	4	51	23	41
November	73.2	42.8	58.0	93	3	27	23	42
December	66.5	35.7	51.1	75	25	28	14	40
Year	87.4	56.8	72.1	116	July 2	27	November 23	46

RELATIVE HUMIDITY / PRECIPITATION IN INCHES / WEATHER

Month	Per Cent	No. Days Over .01	Monthly	Greatest 24 Hours	Clear	Partial	Cloudy
January	41.5	3	.06	.03	26	2	3
February	48.0	7	1.90	1.01	15	6	7
March	19.0				25	6	0
April	23.0	2	.93	.91	21	6	3
May	19.0				29	2	0
June	21.0				23	6	1
July	30.5	1	.05	.05	23	7	1
August	35.0	4	.51	.25	15	11	5
September	28.0	2	.57	.42	24	3	3
October	33.0	3	.10	.07	25	3	3
November	35.0	3	.33	.23	20	5	5
December	41.0	2	.30	.25	23	4	4
Year	31.2	27	4.75	1.01	269	61	35

Meteorological Data, 1932

TEMPERATURE

Month	Mean Maximum	Mean Minimum	Mean	Maximum	Date	Minimum	Date	Greatest Daily Range
January	65.9	33.5	49.7	75	19	25	27	45
February	71.2	43.2	57.2	87	27	28	5	41
March	81.3	46.9	64.1	94	19	40	7	46
April	86.2	52.1	69.2	98	19	47	1	45
May	93.2	60.5	76.9	102	13	52	7	39
June	101.1	67.2	84.2	110	21	58	4	42
July	104.6	75.1	89.9	111	22	63	14	42
August	105.3	74.4	89.9	114	5	62	12	40
September	102.8	68.4	85.6	112	4	60	19	40
October	87.4	56.1	71.8	102	5	45	26	41
November	81.4	45.0	63.2	87	7	40	15	44
December	64.7	36.9	50.8	80	4	30	25	39
Year	87.1	54.9	71.0	114	August 5	25	January 27	46

RELATIVE HUMIDITY / PRECIPITATION IN INCHES / WEATHER

Month	Per Cent	No. Days Over .01	Monthly	Greatest 24 Hours	Clear	Partial	Cloudy
January	42.0				26	4	1
February		6	1.14	.45	17	7	5
March					27	4	0
April	18.0				20	9	1
May	19.0				31	0	0
June	20.0				28	1	1
July	26.0				12	19	0
August	27.0				27	4	0
September	24.0				28	2	0
October	33.0	3	2.86	2.31	26	2	3
November	30.0				25	4	1
December	44.0	2	.62	.47	22	5	4
Year	28.3	11	4.62	2.31	289	61	16