REPAYMENT OF THE CONSTRUCTION COSTS OF FEDERAL AND INDIAN RECLAMATION PROJECTS.

75th Congress, 3d Session House Document No. 672

REPAYMENT OF THE CONSTRUCTI(FEDERAL AND INDIAN RECLAMATI(

LETTER

FROM

THE SECRETARY OF THE INTERIOR

TRANSMITTING PURSUANT TO PUBLIC LAW NO. 331, 75TH CONGRESS, APPROVED AUGUST 21, 1937

THE REPORT OF THE SPECIAL REPAYMENT COMMISSION APPOINTED TO DEVISE A MORE EQUITABLE AND FLEXIBLE PERMANENT PLAN FOR THE REPAYMENT OF THE CONSTRUCTION COSTS OF FEDERAL AND INDIAN RECLAMATION PROJECTS

MAY 18, 1938.—Referred to the Committee on Irrigation and Reclamation and ordered to be printed with illustrations

UNITED STATES
GOVERNMENT PRINTING OFFICE
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LETTER OF TRANSMITTAL

THE SECRETARY OF THE INTERIOR,
Washington, May 18, 1938.

The SPEAKER OF THE HOUSE OF REPRESENTATIVES.

SIR: I am transmitting herewith the report of the special Repayment Commission, authorized by the act of August 21, 1937, Public Law 331, Seventy-fifth Congress, first session, which was appointed to study Federal and Indian reclamation projects and to devise a more equitable and more flexible permanent plan for repayment of the construction cost of these projects.

The Repayment Commission in its report has made a number of recommendations which, if adopted, would have far-reaching effect. I suggest that the report be given careful consideration and that the Department of the Interior be given an opportunity to present its views and comments in advance of any legislative action which may result.

Sincerely yours,

HAROLD L. ICKES,
Secretary of the Interior.

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UNITED STATES DEPARTMENT OF THE INTERIOR,
REPAYMENT COMMISSION,
Washington, May 13, 1938.

THE HONORABLE THE SECRETARY OF THE INTERIOR.

Sir: In accordance with Public Law 331, Seventy-fifth Congress, first session, approved August 21, 1937, we herewith transmit our report on United States and Indian reclamation projects.

Respectfully submitted.

THE REPAYMENT COMMISSION,
CHARLES A. LORY, *Chairman.*
GEORGE T. COCHRAN, *Member.*
WILLIAM R. WALLACE, *Member.*

REPORT ON GENERAL PLAN OF REPAYMENT OF CONSTRUCTION CHARGES OF UNITED STATES AND INDIAN RECLAMATION PROJECTS

PART I. GENERAL STATEMENT OF PROJECT DEVELOPMENT

Under Public Law 331, Seventy-fifth Congress, first session, approved August 21, 1937, the Secretary of the Interior on November 8 appointed Charles A. Lory, George T. Cochran, and William R. Wallace members of the Commission provided for therein. The Commission organized at Denver on November 30, 1937, with Charles A. Lory as chairman, George T. Cochran, vice chairman, and G. W. Lineweaver, executive secretary.

The text of the law follows:

AN ACT To create a commission and to extend further relief to water users on United States reclamation projects and on Indian irrigation projects

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is hereby created a commission to be composed of three members appointed by the Secretary of the Interior, all of whom shall have an intimate knowledge of irrigation farming but who shall not be employees of the Bureau of Reclamation or the Bureau of Indian Affairs of the Department of the Interior, and shall have no financial interest in the matters coming under their jurisdiction. The commission is authorized and directed to investigate the financial, economic, and other conditions of the various United States and Indian reclamation projects, with particular reference to the ability of each such project to make payments of water-right charges without undue burden on the water users, district, association, or other reclamation organization liable for such charges. Such investigation shall include an examination and consideration of any statement filed with the commission, or the Department of the Interior, by any such district, association, or other reclamation organization, or the water users thereof, and, where deemed advisable by the commission and requested by such district, association, or other reclamation organization, said commission may proceed to such project and hold hearings, the proceedings of which shall be reduced to writing and filed with its report. Said commission, after having made careful investigation and study of the financial, economic, and other conditions of the various United States and Indian reclamation projects and their probable present and future ability to meet such water-right charges, shall report to the Congress as soon as practicable, with its recommendations as to the best, most feasible, and practicable comprehensive permanent plan for such water-right payments with due consideration for the development and carrying on of the reclamation program of the United States, and having particularly in mind the probable ability of such water users, districts, associations, or other reclamation organizations to meet such water-right charges regularly and fully from year to year during periods of prosperity and good prices for agricultural products as well as during periods of decline in agricultural income and unsatisfactory conditions of agriculture.

SEC. 2. There is hereby authorized to be appropriated, out of any money in the Treasury not otherwise appropriated, the sum of $30,000, which shall be available for expenditure, as the Secretary of the Interior may direct, for expenses and all necessary disbursements, including salaries, in carrying out the provisions of this act. The commission is authorized to appoint and fix the compensation of such employees as may be necessary for carrying out its functions under this act without regard to civil-service laws or the Classification Act of 1923, as amended.

SEC. 3. If upon investigation the commission shall find that a project, because of partial crop failure due to a water shortage or other causes beyond the control of the water users, is unable to make full payment of the construction charges becoming due and payable for the calendar year 1937, without great hardship or undue burden, the commission is hereby authorized to certify that fact to the Secretary and such certification, if approved by said Secretary, shall operate to grant an extension of time for the payment of such proportion of the construction charges due for the calendar year 1937 as the commission considers just and equitable, the proportion of the charges so extended to be paid at such time as the Secretary may determine.

SEC. 4. Sections 1 and 2 of the act approved April 14, 1936 (Public, Numbered 519, Seventy-fourth Congress), are hereby repealed.

Under a schedule arranged immediately on organization, 72 hearings were held, between December 1 and January 26 (in 57 days) on United States reclamation and Indian irrigation projects, which had submitted requests for opportunity to present their views. In addition, 30 conferences were held with Governors of States in which reclamation projects are located, or their representatives, and with officials and staffs of State colleges of agriculture in the reclamation area. Arrangements were made to secure supplemental information, principally factual data, from county, State and Federal agencies, as well as other sources familiar with western irrigation farming. Stenographic reports of all hearings were made and are filed with this report, as required by the act of Congress under which the Commission functioned.

The Commission found it advantageous, in the interest of economy in time and expense, to travel by automobile. Good roads in every State visited and open weather permitted it to travel 10,500 miles by motor conveyance, inspect the physical conditions of some projects, and arrange hearings, as far as possible, to meet the convenience of water users and their representatives. Whole-hearted cooperation was accorded by project and district officials, by State and college representatives, and all information available was placed at the disposal of the Commission.

FULL DISCLOSURE OF FACTS SOUGHT

At the hearings, project, district and association officials, and individual water users were invited to present oral and written statements on the financial, economic, or other conditions of their projects and project farmers. Opportunity was given to file any supplemental data desired for incorporation in the record.

Many hearings were attended by representatives of Governors. Faculty members of State Colleges of Agriculture furnished results of studies or surveys affecting individual projects or reclamation-irrigation conditions generally.

Project superintendents, district counsel, and other officials of the Bureau of Reclamation and Bureau of Indian Affairs responded to requests of the Commission for information. Project officials, water user organizations, county and State officials gave much time in assembling information in response to a comprehensive questionnaire prepared by the Commission which sought to elicit data as to fiscal conditions affecting the ability of water users to repay water-right construction charges.

From officers of Federal land banks in the western area, which have financed large volumes of mortgages on project farms, and from the Reconstruction Finance Corporation, which has refinanced many

private irrigation projects, the Bureau of the Census, and Department of Agriculture, the Commission received comprehensive data bearing on problems before it. Railroad officials, cooperative marketing associations, chambers of commerce, and other organizations contributed to the information which was made available. Officers of the National Reclamation Association and the Federal Irrigation Congress, State associations and other organizations interested in reclamation and irrigation were generous in their assistance.

CONFERENCES WITH STATE OFFICIALS

In conferences with Governors, their representatives, with faculty members of State colleges of agriculture, and individual citizens, discussions were had with respect to greater cooperation on the part of State and Federal agencies in meeting and overcoming project difficulties. The need was emphasized for ways and means of stabilizing conditions for the individual water user, aiding him in solving his financial and agricultural problems, conserving land and water resources, and of bringing States and communities in which projects are located into a realization of the value of reclamation and conservation.

College of agriculture representatives gave valuable first-hand data on project crops, costs, irrigation practices, marketing, and general economic conditions. In Montana, the Commission had the benefit of information contained in an economic survey by specialists of the State college of agriculture, covering each Federal project. Institutions in other States contributed similar data on individual projects.

HEARINGS AND CONFERENCES

The hearings and conferences held by the Commission are listed as follows:

HEARINGS

Arizona:
- Salt River Valley Water Users' Association.
- San Carlos irrigation and drainage district (Indian).

Arizona-California:
- Yuma County Water Users' Association.
- First Yuma Mesa Unit Holders' Association.
- Bard irrigation district.

California: Orland Unit Water Users' Association.

Colorado:
- Grand Valley Water Users' Association.
- Orchard Mesa irrigation district.
- Uncompahgre Valley Water Users' Association.

Idaho:
- Boise Board of Control (Boise-Kuna, Emmett, Nampa and Meridian, New York, Pioneer, Riverside, Settlers, Wilder, and Big Bend irrigation districts).
- Minidoka, Milner-Gooding Water Users' Association.
- Minidoka irrigation district.
- Fort Hall (Indian).

Montana:
- Bitter Root irrigation district.
- Frenchtown irrigation district.
- Huntley project irrigation district.
- Sun River:
  - Fort Shaw irrigation district.
  - Greenfields irrigation district.
- Milk River:
  - Glasgow and Malta irrigation districts.
  - Chinook Division.
- Flathead (Indian).

Montana-North Dakota: Lower Yellowstone irrigation districts Nos. 1 and 2.
Nebraska-Wyoming:
- North Platte:
  - Goshen irrigation district.
  - Pathfinder irrigation district.
  - Gering and Fort Laramie irrigation district.
  - Northport irrigation district.
  - Bridgeport irrigation district.

Nevada:
- Truckee-Carson irrigation district.
- Pershing County water conservation district.

New Mexico: Carlsbad irrigation district.
New Mexico-Texas:
- Rio Grande:
  - El Paso County water improvement district No. 1.
  - Elephant Butte irrigation district.

Oregon:
- Umatilla:
  - Hermiston irrigation district.
  - West extension irrigation district.
  - Westland irrigation district.
- Stanfield irrigation district.
- Vale, Oreg., irrigation district.

Oregon-California:
- Klamath:
  - Pine Grove irrigation district.
  - Enterprise irrigation district.
  - Klamath drainage district.
  - Horsefly irrigation district.
  - Langell Valley irrigation district.
  - Klamath irrigation district.
  - Malin irrigation district.
  - Sunnyside irrigation district.
  - Hadley McCormick division.

Oregon-Idaho:
- Owyhee:
  - Owyhee irrigation district.
  - Gem irrigation district.
  - Ontario-Nyssa irrigation district.
  - Payette-Oregon Slope irrigation district.
  - Bench irrigation district.
  - Crystal irrigation district.
  - Slide irrigation district.

South Dakota:
- Belle Fourche irrigation district.

Utah:
- Uintah (Indian).
- Sanpete:
  - Ephraim Irrigation Co.
  - Horseshoe Irrigation Co.
- Moon Lake Water Users' Association.
- Provo River Water Users' Association.
- Weber River Water Users' Association.
- South Cache Water Users' Association.
- Strawberry Water Users' Association.
- Ogden River Water Users' Association.

Washington:
- Okanogan irrigation district.
- Yakima:
  - Kittitas reclamation district.
  - Tieton Water Users' Association.
  - Sunnyside Valley irrigation district
  - Outlook irrigation district.
  - Grandview irrigation district.
  - Granger irrigation district.
  - Sunnyside irrigation district.
  - Snipes Mountain irrigation district
  - Wapato (Indian).

Wyoming:
Beaver irrigation district (Frannie Division).
Shoshone irrigation district (Garland Division).
Willwood division.

CONFERENCES

Arizona:
With Governor Stanford, State officials, and representatives of the State commission on the Colorado River.
With representatives of the Univeristy of Arizona.
California:
With former President Hoover.
With California State representatives, at Sacramento.
With representatives of the University of California.
With President Wilbur of Stanford University.
With officials of the Office of Indian Affairs.
Idaho:
With Governor Clark and State officials.
With State Planning Board representatives.
With State College of Agriculture representatives.
Colorado:
With Governor Ammons.
With representatives of the State Planning Commission and Water Conservation Board.
With representatives of the State College of Agriculture.
Montana:
With Mr. W. S. Hanna, Bureau of Indian Affairs, with regard to Indian irrigation projects in Wyoming, Montana, Idaho, and Washington.
With representatives of the State Planning Commission and State Engineer James.
With Mr. O. S. Warden, president of the National Reclamation Association and representatives of the businessmen of Great Falls.
With representatives of the State College of Agriculture.
Oregon:
With State Engineer Stricklin, as representative of the Governor.
With members of the State Planning Commission.
With Prof. W. L. Powers, representing the State College of Agriculture.
Nevada:
With Governor Kirman.
With President Clark of the University of Nevada.
With Director Doten and members of the extension staff.
New Mexico:
With Governor Tingley.
With President Fife, of the New Mexico State College.
Utah:
With Governor Blood, State officials and representatives of the Water Conservation Board.
With President Peterson of the Utah State Agricultural College and faculty members.
Washington:
With State Supervisor of Hydraulics Bartholet representing the Governor.
With representatives of the State College of Agriculture.
Wyoming:
With Acting Governor Hunt and State officials.
With representatives of the University of Wyoming.

HIGHWAY AND URBAN DEVELOPMENT

The experience of the Commission in traveling 10,500 miles on hard-surface highways by automobile in midwinter, through 15 Western States demonstrates the excellence of highway development and efficient maintenance. Automobiles, trucks, and tractors bear evidence of the rapid advance in the use of mechanical power on project farms.

Cities and towns, on Federal projects or almost wholly dependent on project operations, have a population more than three times that

of the project farm area. These urban communities, in the main, are well planned, show excellent construction in homes, commercial and industrial structures, streets are well illuminated. They have splendid school facilities and modern water supply and sanitary facilities.

RELIEF FROM 1937 CONSTRUCTION CHARGES

Upon completion of its field work, the Commission returned to Denver, Colo., and, in pursuance of section 3 of the act of Congress, it examined requests for extensions of time for payment of construction charges due and payable in the calendar year 1937. Recommendations made to the Secretary of the Interior, in each instance where a request for relief was presented, were based on what the Commission found, in its opinion, to be the ability of the water users or project to pay "without great hardship or undue burden."

Economic conditions on Bureau of Reclamation projects and on areas of Indian irrigation projects occupied by white settlers, surveyed by the Commission, are generally comparable. On Indian and Reclamation projects Federal laws governing administration and repayment conditions and physical features differ in many instances.

MAJOR PROBLEMS REVEALED BY HEARINGS

The hearings impressed upon the Commission particular phases of the problems of the water users, as follows:

1. Effect of the general economic situation and losses occasioned by severe and continued drought, with a few reclamation, and one Indian, irrigation projects reporting shortages of water. Severe financial losses were suffered by many project farmers due to drought, which reduced forage on adjacent dry-land grazing areas. Currently, the depressed market prices for livestock are emphasized.

2. Difficulties confronting individual water users and district organizations in adapting their operations to changing economic conditions and to the Federal and State enactments affecting agricultural production.

3. Economic distress on projects—on limited areas of most of them—and of heavy financial burdens on project farmers, as they strive to repay construction costs, finance the improvement of their farms, and maintain a decent standard of living for their families.

4. Increased cooperation with water users by Federal and State agencies has been effected in several States, but there is need for even more cooperation to aid in solving the problems of agriculture under irrigation.

5. Costs of building and machinery are high, certainly, compared with the prices a farmer receives for his products; credit facilities are limited, and interest rates often excessive. The water user must pay his share of building project roads and schools, and taxes mount.

6. Crops must be marketed under heavy transportation costs and other costs of distribution. Farmers must adapt their farming methods, especially on new projects, to raw land, to climatic conditions, and find, by costly experience, the crops adapted to individual farms and to the region. Project farmers from humid regions must learn to produce crops under irrigation. If they use too much water, they reduce the productivity and fertility of their soil by seepage and must bear the loss.

7. The Bureau of Reclamation and the Office of Indian Affairs have limited facilities for cooperating with project farmers in farm management and for enlisting the cooperation of State and of Federal agencies in the service of project farmers to promote proper land use, maintain soil fertility, eradicate noxious weeds, prevent erosion and encourage advantageous marketing. In contrast, adequate provision has been made for the construction of irrigation systems. The Bureau of Reclamation and the Bureau of Indian Affairs have outstanding engineering organizations, well trained, experienced and capable. The Bureau of Reclamation has exceptional laboratory facilities for research and testing materials and structures. Capable staffs of engineers are provided for operation and maintenance of the project works and distribution systems, until projects are taken over by water users.

8. Inflexible procedure under law and regulations in dealing with project water users or with their organizations, permits little adjustment to changing conditions affecting agriculture, and thereby increases the difficulties of the farmer in meeting his financial obligations to the Government and increases the difficulties in making collections.

9. When water is made available for project lands, the farmers are expected to work out their own individual and collective problems with little or no assistance from either Federal or State agencies to enable them to operate successfully, produce crops profitably, and repay costs of construction. Under the reclamation laws and regulations, after authorization of a project by Congress and certification of its economic feasibility by the President, the Bureau of Reclamation enters into contracts with water users or their organization for repayment.

10. There is no provision for memoranda of agreement with the State concerned for cooperation, in project research or community guidance. A State's participation is limited to existing State laws governing water appropriations, formation of irrigation districts, and the imposition of State or local taxes. Instances have been reported where tax laws permit the assessment of project farms, largely valueless without water, for State and local taxation, as irrigated land at relatively high values before the farm is in full cultivation or before little, if any, of the construction charges are paid. Severe penalties are imposed in some State for delinquencies. These conditions obviously increase the difficulties of developing a project into a productive area and maintaining the solvency of the project farmers so as to permit repayment of construction costs.

11. The operation of reclamation projects deals with agriculture in an intensified form and, like in the operation of any large business, problems continually arise and present themselves as an obstruction to the success of the water users. Some of these problems are of long standing; a few may be considered as emergencies or temporary. In most cases the water user lacks the facilities of scientific research and knowledge to remove obstacle. Land settlement, seepage, waste of water, the size of the farm units, the balance between project farms and range facilities, the war against noxious weeds and pests, tenantry, community management and finances, require continuous attention; frost, hailstorms, grasshoppers, and the like are generally local and temporary and the individual water user affected should receive consideration and adjustment.

Adverse conditions presented in the hearings held by this Commission are of long standing and have been emphasized at various times in the last 25 or 30 years. However, it is recognized that at the hearings special emphasis was given to the record of water users who have been less prosperous and generally below the average in the value of crops produced and the degree of prosperity reached, rather than to the water users who have obtained a fair degree of prosperity and have had little, if any, difficulty in paying annual charges. Attention is called to the detailed review of these conditions in Instructions to Local Boards of Review by Secretary of the Interior Lane, June 1915, and reports of boards on individual projects; to Federal Reclamation by Irrigation (Fact Finders Report), S. 92, Sixty-eighth Congress, 1924; to An Economic Survey of Certain Irrigation Projects 1929, United States Government Printing Office, 1930; and to Report on Federal Reclamation to the Secretary of the Interior, December 1, 1934.

In spite of the difficulties recited, and to a large extent reiterated, encouraging progress has been made through the Federal Government's efforts to reclaim arid and semiarid areas in the region west of the one hundredth meridian, in the conservation and utilization of the land and water resources, the stabilization of communities that are a vital, integral part of the economic, social, and agricultural life of the States, the West, and the Nation.

ACCOMPLISHMENTS OF THE RECLAMATION PROGRAM

Among the major accomplishments or encouraging features resulting from the reclamation program of the United States, as affecting individuals, localities or communities, the 15 States in which projects are located, and the national benefits accruing, the following may be cited:

1. Conservation of water and land resources, both affecting public lands owned by the United States and the States, and those in private ownership.
2. Creation of 48,773 irrigated farms within Federal projects under the Bureau of Reclamation, and providing a supplemental water supply for approximately 30,000 farms under Warren Act or special contracts covering nonproject land, in addition to the farms in the Indian irrigation areas.
3. Providing homes and means of livelihood for 210,466 persons, as of December 31, 1936, on farms within reclamation project areas, and insuring directly a livelihood for approximately 200,000 persons on Warren Act farms and on Indian irrigation areas occupied by white settlers.
4. Responsible for the establishment, stabilization, and business of 257 cities and towns on or dependent on reclamation project areas, with a population of 653,441 persons.
5. Contributing a major part to the support of 859 public schools and 996 churches, and to banks with deposits of $226,903,747 on December 31, 1936.
6. Stabilized agricultural conditions and production on project farms, with the result that a survey of relief conditions on Federal projects reveals that bona fide farm operators in only a few areas were forced on relief, and that these cases were confined to new settlers

who had not had opportunity to bring their land into production or who were subjected to conditions incident to drought, water shortage, or other conditions beyond their control.

7. The crops produced on Federal reclamation projects in the aggregate do not contribute to a national surplus of agricultural commodities. The volume of wheat, corn-hogs, and cotton produced on reclamation projects is not sufficient to supply the demands of the West alone in raw material or byproducts. Cattle and sheep were produced in the western section of the country before reclamation became a national policy, and were shipped to midwestern markets for finishing before going on to the stockyards. A considerable portion of these livestock products was returned to western sections for consumption. The general effect of Federal reclamation has been beneficial to the entire livestock industry. It may be noted that the United States is an importer of meats.

8. Crops such as apples have, to a large extent, been exported and in domestic markets must overcome a tariff barrier represented by high freight rates which bar effective competition with products of midwestern and eastern areas near centers of population. Citrus fruits and fresh vegetables grown on reclamation areas cannot compete in season with similar products grown near centers of consumption. In a few cases, as of specialty potatoes, markets of other areas may be invaded but only after the tariff railroad rate barrier against western products is overcome.

9. On the other hand, as shown by Bureau of the Census and Department of Agriculture reports, the West is a buyer of corn and hog products; processed cereals, hard wheat flour, cotton byproducts, tobacco (none is grown in the reclamation area), and of all farm machinery, motor vehicles and equipment, and of practically every type of machinery and household equipment.

10. The stabilizing influence of the water supply provided by Federal reclamation works for agriculture in the West, and as a market for nonwestern products may be illustrated thus:

The total irrigated "cropped" area reported by the Census Bureau for 1929, including Federal and non-Federal lands, was 14,084,000 acres, excluding pasture. In 1934, the last year for which the Census Bureau has reported on irrigated lands cropped, and when there was a severe drought, the total irrigated area cropped was 11,159,320 acres, a decrease of 24 percent. The cropped area of reclamation projects excluding pasture decreased, by comparison, only 1 percent but the pasture land, a valuable commodity that year, increased 41 percent over the 1929 area in pasture. Cropped areas supplied with supplemental water by Federal project works showed an increase in 1934. The protection of forage and pasture for livestock during the drought, so far as the facilities of the Bureau of Reclamation works could afford, is thus illustrated by the 1934 census figures.

11. Since 1906, when the first reclamation project went into operation, the value of crops produced on reclamation projects, including land provided with supplemental water, was $2,311,783,242, or approximately 10 times the overall costs of irrigation works serving those lands. The average per acre is approximately three times the average agricultural production per acre for the country. It should be borne in mind, however, that the overhead costs of the irrigation farmer in the West are more than three times those of the average

farmer in the country, due to cost of water, high freight rates on what he buys, and the competitive effect on the price at which he must sell his products.

12. Based on estimates from reports in Irrigated Agriculture for 1929, published in 1930, the average value irrigation farmers placed on irrigated land, inclusive of buildings, was $177.30. Adjusting these figures to 1936–37 values and allowing for decrease in crop values, the average per acre value of irrigated land, protected by water rights, in the 15 reclamation States, is conservatively estimated at $118.20 an acre. On this basis, the reclamation program has created land values in these States, including only those of projects in operation, of $201,198,068. In addition it has protected, through supplemental water supplies, land values of $157,629,410, or a total of $358,827,478, an amount in excess of the total construction expenditures by the Bureau of Reclamation in 35 years, exclusive of Boulder Dam. These figures do not include the values that have been added to the range land adjacent to project areas. It has been estimated that in normal years an irrigated acre in the West supports 3 to 4 acres of dry land at an average value of $10 per acre.

13. Including buildings, equipment and machinery, the assessed values of irrigated land in the 15 Western States average $56.40 per irrigated acre, based on reports of several State tax commissions and conservative estimates from other sources. The taxable values attributable to reclamation development, therefore, approximate $171,353,748. It may be noted that the taxable values of land before irrigation, or without water, average from $1 to $5 an acre.

14. The Commission has not undertaken to make a survey of the benefits accruing to the Nation as a whole from the Federal reclamation program. It has been impressed with the importance attached to the construction, maintenance, and development of projects as a market for nonwestern products, by manufacturers, railroads, and other transportation agencies.

A survey has been made by the Idaho Planning Board, J. D. Wood, consultant, of incoming shipments to cities and towns, supported by an area 75 percent dependent on Federal reclamation irrigation within the Boise (Idaho) project. Railroad and motortruck companies participated in this survey and its accuracy is well substantiated. During 1937, the products shipped into the area, that were traceable by bills of lading and invoices, had a wholesale or manufacturers' value of $19,072,504.43. This included probably 90 percent of incoming commodities.

Of this volume, commodities valued at $13,092,533, or 70 percent, were attributable to project purchasing power, and were produced, manufactured, or originated in 31 States outside of the reclamation area. The greatest volume, both in carloads and value, originated in the State of Michigan and included not only automobiles, but farm machinery, household furniture and equipment, cereals, and other foodstuffs. Thirty other States shared proportionately.

On the basis of the Boise survey and with allowance for the varying purchasing power of other reclamation project areas, population, economic conditions and proximity to markets, purchases of nonwestern products shipped to reclamation areas average annually $209,480,328. The volume of nonwestern products shipped into the reclamation areas as a whole exceeds the agricultural products of

reclamation projects shipped east of the one hundredth meridian in a ratio of more than 8 to 1.

15. The reclamation program was a pioneer in the public development of hydroelectric power in the West through multiple-purpose use of water resources. Operations have now been perfected to the extent that water for irrigation is conserved through interchange of power with private utilities, and surplus power is disposed of advantageously during the irrigation season. Electric power operations reduced the construction cost to be repaid directly by water users on 10 projects by from 25 to 30 percent, based on average net earnings for 1930–36.

16. Despite the moratoria periods of 1921–24 and 1931–36, suspending repayments, and many unfavorable factors affecting repayment under a program involving trail-blazing activities of a varied character, the record of repayments of original construction costs compares favorably with those of far less expensive non-Federal irrigation enterprises which have been refinanced from time to time in the last 30 years. Total returns on construction charges by water users and from power and other revenues as of June 30, 1937, from completed projects where repayment contracts were in effect, were approximately 23 percent of the construction costs subject to repayment at that time. It should be noted that under the reclamation law, amendments thereto and special legislation, repayments have not been required to begin for some years after water is available for limited areas, and when irrigation is provided on a water-rental basis, returning revenues are not sufficient to meet current operation and maintenance costs in many instances.

17. A classification of project farms as to productivity is not available. However, an examination of reports from typical projects located in various general farming, fruit, and other specialty crop areas, indicates an average in crop production as follows:

	Percent
Excellent (more than 1½ times the average value per acre of crop return)	10 to 15
Good (average to 1½ times the average)	35 to 40
Fair (one-half to average)	35 to 40
Poor (below one-half of the average)	20 to 30

Of those with "poor" crop results, the farms embrace unproductive soil, new land not thoroughly subjugated, and in many instances farmers who are without experience in irrigation or who may have had bad seasons through no fault of their own. The grading of irrigated farms compares with that of other farms, so far as relative productive value is concerned.

Part II. Factors Affecting Repayment

The factors and conditions affecting repayment of construction charges, presented in the hearings, may be classified as follows:

CONSTRUCTION COSTS

The first plans of Federal reclamation projects contemplated building only the main canal and principal distributing canals, leaving the construction of the small laterals to the landowners. The construction costs of this work ranged from $22 to $30 per acre. Because a portion of the water users could obtain water without additional effort,

while others had to join with neighbors in the construction of canals; often of considerable size, the original plan was abandoned and the canal system was built so as to deliver water to the irrigable land in each farm unit. The use of wooden structures was discontinued and a more permanent type of concrete and steel was substituted. These changes, with increased cost of material and labor, resulted in an increase in the construction cost but a saving in time and effort on the part of the farmer in getting his land ready for crop production.

The original Reclamation Act provided for the payment of construction costs in 10 annual installments. The increased cost above described made necessary an extension of time to 20 years as authorized by the act of August 13, 1914. The schedule of payments called for 2 percent of the construction charge for the first 4 years, 4 percent for the next 2 years, and 6 percent for the remaining 14 years. Little difficulty was experienced in meeting the first payments, but when the 6-percent installment had to be paid, difficulties were experienced and special relief acts were passed, granting relief in the payment of charges becoming due in 1922, 1923, and 1924. Then followed the Fact Finders' Act of December 5, 1924, which provided for the payment of construction charges computed at 5 percent of the average gross annual crop value for the 10 years last past. Difficulties connected with the administration of this provision resulted in its repeal when the Adjustment Act of May 25, 1926, was passed. This act authorized the Secretary to execute repayment contracts extending over a period of not to exceed 40 years. Coincident with extension in the repayment period, more and more expensive projects were undertaken. Construction costs have also increased, because of the need of constructing drainage works to maintain the irrigable lands in a productive condition. Over 3,700 miles of drainage works have been built at a cost to the United States of about $16,000,000, which, on most of these projects, is to be repaid as supplemental construction after the primary construction charges have been paid.

In addition to the above, construction costs have been increased by adding approximately 5½ million dollars of delinquent operation and maintenance charges that accrued during years of economic distress. These are some of the major factors that have resulted in material increases in the construction costs.

MARGINAL AND UNPRODUCTIVE LANDS

In 1926 the irrigable areas on most of the projects were classified into productive paying lands and lands where, because of seepage, sandy soil, or other factors that made crop production difficult or impossible, charges were temporarily suspended and the lands designated as class 5. There are 168,600 acres in this class. Some of this area has been reclaimed by the construction of subsurface drains and some progress has been made in bringing sandy lands, subject to wind erosion, into production by planting windbreaks. Under the provisions of the Adjustment Act, lands now in the paying class that become unproductive cannot be relieved from the payment of construction charges, particularly on projects where joint liability contracts have been executed. On the other hand, lands where charges have been temporarily suspended, and which have been reclaimed and are producing good crops, can be required to pay. In the few cases where lands have been transferred to the paying class, ample

time has been allowed for bringing such areas into crop production that is equal to or better than crops produced on adjacent areas in the paying class.

On some of the projects the land classification heretofore made was done by local boards without having a full knowledge of the importance of the work to be accomplished. The necessity of reviewing the work and correcting errors in the classification was brought out at a number of the hearings. On some of the projects there are sandy soils of low fertility and poor water-holding capacity which now give a low return for the work of cultivation and irrigation and for the quantity of water it is necessary to use. There are some farms where seepage has spread into lands that are now in the paying class, making crop production difficult or impossible. Such lands, under the provisions of existing law, must continue to pay construction charges. There has been a general request that authority be granted to the Secretary of the Interior to determine such areas and grant relief from payment until they may have been reclaimed. It is the opinion of the Commission that this should be done.

JOINT LIABILITY FOR REPAYMENT OF CONSTRUCTION COSTS

Joint liability is required in all contracts that have been executed under the provisions of the Adjustment Act to safeguard the investment of the Government and to insure the repayment of construction costs. It fails in its purpose, particularly on projects which have soils of varied productive power. Low productive lands and joint liability are a powerful combination tending to reduce repayment on all project lands to the amount the least productive lands can pay. In time of economic stress with increasing delinquency of these lands, all construction repayments finally cease, even though more prosperous farmers on better lands could and would continue payment, if they were individually liable. A landowner under individual liability has an incentive to improve his farm, pay for his water right, and thereby add a reflected value to the nearby low productive farms.

One serious result of joint liability on reclamation projects is the discouragement and mental depression of landowners whose assessments are increased because others do not pay, and the despair upon final realization that the accumulation of assessments is beyond their ability to pay. Under joint liability, many financial agencies refuse to make loans on project lands, even though the individual farmer is a first-class risk. The joint liability feature also prevents the individual farmer from qualifying for many of the general benefits under Federal acts designed to aid the farmer.

FARM UNITS

On some projects, particularly those devoted to general farming, some farmers are handicapped by having a farm too small to be operated economically. There seems to be little the Government can do to correct this condition on projects where the public notice has been issued, but on projects now being constructed careful consideration should be given to soil, climate, marketing, motorization, and other factors that affect the earning capacity of the man on the land and the size of the farm, based upon what is considered necessary for the reasonable requirement of the support of a family.

TENANTRY

Tentantry on reclamation projects varies. From 25 to 50 percent of the cultivated lands are under lease. On one reclamation project 65 percent of the cultivated lands are farmed by tenants. On Indian projects the percentage of leased lands is especially high because of the Indian leases.

Landlords may be classified as:

(*a*) A farmer in financial distress who has secured outside work or who resorts to a renter in the hope of bettering his condition.

(*b*) One who has a job or a business and uses his savings to buy a farm for a future home.

(*c*) Old folks who are not able to carry on or are retiring and usually rent either to their children or a dependable employee.

(*d*) Banks, mortgage companies, insurance companies, and money lenders of all kinds who have gained title through judgments, foreclosures, and deeds in debt settlements.

(*e*) Speculators who purchase bargains to sell later at high prices.

The first, fourth, and fifth classes increase materially in times of depression. The second class increases materially in good times. The third class remains about the same at all times. Tenants consist of men—

(*a*) Who are entering the farming industry without sufficient capital to purchase land and are using this method of advancement to farm ownership;

(*b*) who own a farm unit that is too small for economical operation;

(*c*) who habitually rent land and never become owners.

The greatest physical evils of tenantry are careless and excessive use of water and the mining of the soil, or tendency of the tenant to take all of the fertility out of the soil without putting any back, either by proper rotation or fertilization. Indian lands suffer materially in this manner. It can be prevented only by long leases and proper stipulations. On projects generally the tenant has been paying crop rents to the landlord of one-fifth of the beets, one-half of the alfalfa, and one-third of the grain and potatoes. Under those terms the landlords pay the taxes and water charges. In some instances the landlords have netted good interest on their investment and the tenants have made a pretty good living. Consideration should be given to cooperative means to reduce tenantry to a minimum.

TAXES

Taxes are generally high and penalties for delinquencies in some States are severe. A few States are cooperating with projects and district officials in adjusting delinquent taxes. Oregon does not increase assessed value of patented lands on reclamation projects until 3 years after water has been applied. Unfortunately, the practice of assessing project lands on the basis of developed irrigated farms as soon as water is available, and with water rights unpaid, is all too general in reclamation States. Project lands must bear their proportionate cost of schools and generally of project area highways. In times of economic stress, the project farmer strives to pay his State, county, and local taxes as fully as possible to avoid heavy penalty for delinquency, and permits his project construction payments to accu-

mulate. Generally the State, county, and local agencies could be of material aid to their reclamation projects by basing assessment values upon the actual equity of the water user rather than on full land and water valuation and by reducing penalties for tax delinquency.

MORTGAGE DEBT

Mortgage debt is general and approaches the project construction charge per acre on some projects. Farmers who were able to borrow easily in more prosperous times now find themselves in serious difficulties in paying bond and interest charges. Many States are making commendable efforts to adjust mortgage payments and avoid foreclosures. Mortgage holders are more successful in adjusting the rate of payment and in collecting interest than are project officials in collecting repayments of construction charges.

INTEREST RATES

There is a large volume of individual indebtedness for merchandise, machinery, professional services, and for farm operation on all projects. The interest rate on this is high. The farmer must maintain his credit with his banker. He must pay the merchant, the doctor, the garageman, and farm-machinery salesman. When crops are poor and prices low and the farmer has not enough money for paying these and his other obligations, all the creditors naturally join in individual and project requests for postponement of the construction payment, even though such payment is a relatively small fraction of the farmer's total obligation.

GENERAL ECONOMIC SITUATION—LOW PRICES FOR FARM PRODUCTS

The project farmers found difficulty in adjusting themselves to the rapid decline in prices in 1937. Crops were good and prices fair in 1936. Farmers found it possible to pay current costs and some debts. With one or two exceptions, prospects on the projects were good in the spring of 1937 and continued so until midsummer, when the lack of demand and low prices for fruits, farm crops, and livestock brought serious difficulties. Losses of many cattle and sheep feeders, of potato and apple growers are severe. The effects of low prices of farm products are aggravated by increased costs of production and of higher prices of practically all materials the farmer must buy. Coming so soon after several years of trying economic conditions, the effects of this low price and low demand on the farmers are serious.

MARKETING

Low demand of farm products is intensifying marketing difficulties. Costs of packing and shipping show no reduction. Many projects are far removed from large consumer groups and shipments must bear long-haul charges. The same is true of shipments to the projects. On all of the projects, marketing associations for the principal products have been organized and are important factors in increasing project income.

WATER SUPPLY

The effects of the recent long-continued drought were serious on only a very few of the Bureau of Reclamation and Indian projects. In some instances it has been necessary to make careful use of the available water supply, but on a number of projects, where an ample supply has been available, water has been wasted and farms damaged by excessive use. In contrast to the Government projects, private projects have suffered from short supplies and overdevelopment. A large portion of the recent construction program of the Bureau of Reclamation has been for building reservoirs to furnish supplemental supplies to private projects having a limited supply of water. The drought has proved the value of storage reservoirs in the conservation of the water resources of the West.

INSECT PESTS, PLANT AND ANIMAL DISEASES, HAIL, FROST, FLOODS, EROSION

Insect pests, particularly grasshoppers, cause occasional heavy losses on some projects. Control of the coddling moth is at heavy expense to the apple growers. Plant and animal diseases levy their toll. As yet, the farmer's means of control of these are limited. On a few projects, hail storms on some sections have inflicted heavy losses. Others suffer from destructive late spring or early fall frosts. Floods may occasionally damage crops and canals and injure fields through erosion. Wind erosion has been destructive on some projects during the drought. These happenings are beyond the control of the farmer, but the losses they inflict seriously affect his crop production and his ability to pay his construction costs and other financial obligations.

CROPS

Growing crops on arid land under irrigation requires skill and adaptation. Soil reaction to cultivation and irrigation is learned by trial. Crops best adapted to soil and climate do not necessarily bring the best financial returns. Changes in crops to meet changes in marketing demand are costly in time, labor, and expense. The farmer must have good yields to compensate for the extra labor of irrigation and the cost of water. Certain projects are losing heavily from noxious weeds. Conditions are particularly favorable under irrigation for the spread and growth of noxious weeds, and control is necessary.

IRRIGATION METHODS

To a considerable extent farmers worked out their own methods of application of water for growing crops, with limited knowledge of the water requirements of their various crops and of the advantageous time of water application, and with no satisfactory and inexpensive appliance for measuring water. These methods frequently resulted in the use of much more water than was necessary. Attention of the Commission was called in a number of cases to the excessive use of water resulting in leaching and erosion of soil and seepage of lands.

COSTLY MANAGEMENT

Some projects operated by water users' organizations are under costly management due to lack of experience and poor business methods of their boards of directors. In mistaken economy, maintenance allowance is reduced, and canals, flumes, conduits, and other structures allowed to deteriorate. Experienced and capable superintendents are reduced in salary until they can no longer afford to remain or are dismissed and replaced with lower salaried men. Some projects have provided no sinking fund for replacing important structures and must now rebuild costly structures with most of the original cost still unpaid. Canals and laterals are not kept clean, water is not fairly distributed, and well-built and expensive structures deteriorate at a rate that cripples project operations. On all projects that have been turned over to the water users, the contracts covering such transfer contain a section requiring that the Secretary is to approve the selection of the manager, whose record of training and experience must show he is qualified to handle the job. Nothing is said as to the salary that is to be paid, and as a result the officials on some projects have reduced salaries to a point where it is difficult to obtain men having the necessary qualifications.

In many instances the general financial depression caused emergencies and required a reduction of assessments and the expenditure of reserve funds. In some cases, the Bureau has made use of Civilian Conservation Corps boys to do emergency work necessary to keep the project in efficient running order. Such work was of great benefit and no doubt formed a worthy part of the Civilian Conservation Corps program.

INFLEXIBILITY OF CONTRACTS

Difficulties of repayment are increased by detailed and inflexible contracts whose terms meticulously attempt to protect the Government against loss, and require the individual water user or his organization to assume the risks and the losses due to natural causes beyond human control, and the effects of uncertainties of production and of marketing, with no provision for substantial adjustment except through appeals to Congress.

Frequent appeals to Congress for revision of these contracts for extension of time for repayment, and changes in repayment of construction costs, demonstrate that the rigorous detailed contract considered necessary for construction simply does not and cannot be made to apply to repayment, dependent upon agricultural production. Repayment contracts should be written without involved legal phraseology and in language the farmer understands.

LEGAL RESTRICTIONS OF THE POWERS OF THE SECRETARY OF THE INTERIOR

These restrictions and the regulations they make necessary result in much misunderstanding and unhappiness among project farmers. They do not understand why difficulties of repayment due to causes over which they have no control cannot be adjusted on the basis of these causes rather than by reference to provisions of the reclamation law, or to the terms of a contract, neither of which permits adjustment.

DIFFICULTY IN ADJUSTING FARM MANAGEMENT ON RECLAMATION PROJECTS TO THE REQUIREMENTS OF NATIONAL AND STATE LEGISLATION AFFECTING AGRICULTURE

Due to the conditions that naturally govern the production of crops under irrigation and to the contract obligations of the water users, some projects are affected adversely by attempting to comply with the provisions of national laws affecting agriculture.

Thus projects which have produced cotton only for a short time find that under national laws their quota is very much below their former normal production. Other projects which have worked out a wide diversified farming schedule find their whole program upset by the Soil Conservation regulations. The time and money required for the water users to make the necessary changes to adapt themselves to these restrictions materially reduces the ability of the projects to repay construction charges.

HYDROELECTRIC POWER

Power revenues applied in whole or in part in payment of construction charges where power plants are a part of the reclamation project are important factors in the ability of at least 10 projects to repay such charges, with several others now under construction where power revenues will be an important factor. Projects relying on power revenues to repay a substantial part of construction charges are apprehensive of the effect of other public power developments on their present market and future income. Projects without power development are eager to develop power where feasible, provided non-interest bearing funds can be obtained from the Government, in the expectation of reducing annual construction charges. Some complaint was made that water used for power development has been detrimental to storage for irrigation purposes. The danger of power being given preference over irrigation is recognized, and arrangements have been made to avoid this by exchange with public utilities, whereby storage for irrigation is not adversely affected.

CONSERVATION AND COOPERATION

Conservation of natural resources varies in every part of our Nation and with the particular resource treated. The limit of development in every place is fixed by the amount of water available, either by natural supply or by works of conservation. Water, therefore, is one of the greatest natural resources. Uncontrolled, its destructive force is immeasurable. Conserved, its productive power is prolific. The parties interested in the conservation of water are those most benefited; the Nation, the State, and the water user. Aside from the increase in property values and in business, the helping of men to own farms and the building of communities of moral and substantial people is the greatest product of water conservation.

The construction of project works does not complete the work of conservation. The operation of those works must continue down through the years. Upon the reclamation projects, the policy has been adopted to turn such operation over to the water users on the principle of local home rule. Economic, agricultural, and irrigation problems have arisen and will continue to arise which the water user

lacks facilities to solve. Cooperation of the three interested parties is desirable. The farmer is too independent a person to start such a program. The States have done considerable work but do not have the means of contact on reclamation projects to carry the results of their work to the water user. The Federal Government has an investment and can initiate such a cooperative program.

The financial returns of some projects are reduced through lack of cooperation of their farmers in project planning, marketing, crop improvement, weed control, livestock improvement, and recreation Many project farmers do not take advantage of the facilities of Federal or State Departments of Agriculture or of the State colleges of agriculture to help them in their farming and community enterprises. Good project teamwork and active cooperation with Federal and State agricultural agencies assist materially in meeting repayment and other financial obligations.

EXCESSIVE INDEBTEDNESS

A number of the projects are burdened with excessive indebtedness. This indebtedness is made up, in some instances by the amount of the construction charges alone, and in other instances, by a combination of the construction charges and the mortgage and other indebtedness of the project farmer. In all cases we have found that the private creditor is on the ground and collects his money first and if there is anything left the Government then has a chance for its payment.

In all such cases of excessive indebtedness, careful studies are necessary to lay out a sound financial program All the factors affecting repayment must be considered. Cooperation with private creditors, if any, and with water users may be essential. Generally speaking, a financial program cannot be forced upon a project regardless of the attitude of the water users and it may take several years to establish a workable plan.

Extensions of time may be necessary if repayment is to be made at all. Repayment on the basis of a percentage of crop value may or may not act as an automatic extension of time, and should not require future adjustments except in cases of temporary emergencies. Those projects which have a fixed annual installment will necessarily be calling for frequent adjustments. While extension of time does not mean a reduction in construction charges, yet it does reduce the annual installments and does mean the absorption by the public of the carrying charge for the additional time. It is far better to permit adjustments granting additional time, with the Government accepting the additional burden of the carrying charge, than to permit projects continually to be calling upon Congress for moratoria or write-offs.

EFFECT OF RELIEF LABOR

On some projects in course of construction during the past 5 years, costs of construction of certain parts of the canal system have been increased from 25 to 50 percent on account of the policy of the Government to use public works to reduce the relief rolls. In some cases wages were fixed at a much higher rate than the wage for which such labor could have been secured. In practically all cases, the relief rolls furnished the least satisfactory labor available. This increased

cost is passed on to the water users of the particular project and materially affects repayment. The effect of this increased cost in some cases has been to place the charge per acre higher than the project lands normally can bear.

The local project work attracts laborers from far beyond the project boundaries. Material for the project comes from the whole Nation. Some consideration therefore should be given to this added cost in fixing terms of repayment.

PROJECTS REQUIRING SPECIAL CONSIDERATION

The Umatilla project in Oregon has a very porous sandy soil with serious problems of wind erosion. The Northport Irrigation District and the Bridgeport Irrigation District are divisions of the North Platte project. The lands in these districts are also very sandy and wind erosion is destroying the farms. In all of these projects, the number of settlers has been reduced to such an extent that even the cost of operation is equal to or more than the present farmed lands will pay.

Two general forms of relief have been suggested. One is to release all claims by the Government and turn the projects over to the water users to work out their own salvation. The other is to operate these projects as experiment projects for special study and research on wind-erosion control and the subduing of soils affected thereby.

The first method suggested is not a cure but is leaving to the farmer a most difficult financial and cultural problem without guidance or the means of solving it. The second method, to be successful, would require a cooperative agreement between the Bureau of Reclamation, the project, and the State College of Agriculture, together with other interested State and National agencies. The repayment program would necessarily be changed, not only as to installments but as to the total amount per acre to be repaid. If necessary, a water rental system should be installed and the payment of construction charges entirely suspended.

The first method would relieve the Bureau of responsibility of the projects for a time, but as problems became more acute or reached the point where the destruction of a community became imminent, direct appeals to Congress for aid would be made. The second method would ultimately solve many of the problems presented, and the information and results obtained would be of general benefit. The Commission believes the second method should be followed. Some other projects also have special problems, but the Commission believes those problems may be solved under the program set forth in our general recommendations.

LAND SETTLEMENT

The problems of land settlement are now more acute than in former years. The migration West during the homestead days, the grand openings of reservations, and the early rushes to take up land, led reclamation officials at the beginning to assume that the settlement of irrigation projects would be almost automatic. The filing of homestead applications by persons possessing none of the qualifications necessary to subdue and develop an irrigated farm soon demonstrated that some rigid requirement must be imposed to eliminate the misfit.

Today the financial and agricultural ability of the settler is an important consideration in the placing of settlers. Under the act of Congress of December 5, 1924, special boards are appointed by the Secretary to determine the qualifications of prospective settlers as to industry, experience, character, and capital. Today a more adaptable class of settlers is secured. The placing of water upon land gives rise to many unexpected problems and requires special skill and knowledge. The building of a community out of raw land takes time. The development of projects increases the property, business, and citizenship of a State. The success of the project farmer is of vital interest to the State. New settlers require information concerning the soil, its depth, deficiencies, and underlying strata. They also need guidance in the installation of the most efficient irrigation system for their farm units. They especially need schools, churches, and community development. Much of the work of land settlement and community development lies peculiarly within the province of the State and local governments. Land-use studies by State colleges of agriculture can be obtained in many instances. Some projects have voluntary organizations to promote land settlement. During the past few years substantially 60,000 families with an average of five members per family have moved into the seven far Western States from farms in the Great Plains. There are at least 20,000 more families to follow. The land-settlement problem not only includes soil, irrigation, and community problems, but also the proper placing of this unprecedented migration. Some consideration, therefore, should be given to cooperative arrangement with States and local organizations for the handling of land-settlement problems.

Part III. Observations

When the National Reclamation Act was passed in 1902 the lands which could be irrigated within the means of individual farmers were practically all under canals. Irrigation systems were small cooperative enterprises, generally constructed by the farmers, who paid for their water wholly or in part by "working on the ditch." In many instances construction work was arduous, costs high in time and effort, and the development of the farms accomplished under great hardship.

The work on the canal and other structures, the operation of the canal, the development of farms and homes under common conditions of hardship developed cooperation, able leadership, pride of ownership, and ability to grow good crops under irrigation. However, even under these conditions one or more decades were necessary to adjust water rights, develop paying methods of farming and work out efficient methods of canal operation.

The provisions of the National Reclamation Act are based on this early experience, and judged from the economic and agricultural development of the West at the time of its enactment, its terms were very generous. Farmers who had experienced the difficulties of developing a farm and building a home under private irrigation systems, paying high interest rates and suffering from insufficient water supplies, were sure repayment of water-right charges without interest, on Government projects, could be made in 10 years. General encouragement was given by western farmers to their friends to settle on proposed reclamation projects. The Bureau of Reclama-

tion was organized as a construction agency in the expectation of having the project operated and maintained as an agricultural enterprise and district by the farmers. In this plan the difficulties of settlement were not anticipated, nor the time necessary for a farmer, inexperienced in irrigation, to learn how to grow crops under irrigation, or the time, cost, and adjustments necessary for the project farmers to learn to work together in the operation of the project as a cooperative enterprise and as a going community.

The settlers on the older projects soon found more time than 10 years was necessary to repay the construction charge, and to gain the experience to operate and maintain the project efficiently. The Bureau tried to assist project farmers in their problems of settlement, organization and production but was not able under its legal and financial limitations to expand this service commensurate with the needs of the farmers, the increase in the number of farmers and the change in economic conditions. Repayment of construction charges, which depends fundamentally on the crop income of project farmers, became more difficult and extensive and trying adjustments were necessary.

On June 30, 1937, the total construction charges remaining to be paid under existing repayment contracts, from the several projects were about $213,000,000. The Bureau of Reclamation is a Federal credit agency responsible for safeguarding this investment. As now organized, the Bureau does not have the facilities and the Secretary of the Interior does not have the authority to do this. Neither does the Bureau have the facilities nor the Secretary have the authority to assist the project farmers in safeguarding the investment in money and toil in their farms, and in maintaining the production of their farms, upon which their ability to repay their project construction charges depends.

The Commission calls attention to the changes in the relationship of the Federal Government to agriculture since the enactment of the National Reclamation Act. National forests and grazing lands are strictly administered for conservation. Animal and plant and seed quarantines have been established. Standards with proper inspection service govern meat, dairy, fruit, grain, and cotton shipments. Pure food is required. Marketing is regulated by the several acts concerning cotton and grain futures, warehouse, packers and stockyards, commodity and produce exchanges, agencies and services. Soil erosion and conservation, flood control, electrification, tenancy, and cooperatives not only in marketing but in farm forestry, are the subjects of special legislation.

Federal financing of farmers began with the Farm Loan Act in 1916 and has since been extended through intermediate credit institutions, cooperatives, production credit associations, and seed, crop, and emergency loans. Credit adjustments for farmers are arranged through the farm mortgage acts. Bonuses are paid under various allotment acts. Farm instruction, extension, research, and supervision is carried on under several acts, including the Adams, Smith-Lever, Purnell and Bankhead-Jones Acts, as well as under vocational educational acts.

Due to the lien against his land for unpaid construction charges, including joint liability, the project farmer finds it difficult to qualify for loans from the financial agencies of the Government. Because

of the specialty nature of irrigation, and of the general nature of the extension and research work of Government agencies, the project farmer has not been given the attention by Government agencies which he ought and must have.

ATTITUDE OF PROJECT WATER USERS

The attitude of project water users toward payment of construction charges is wholesome. They expressed their intention to make their payments promptly. There is practically no talk of repudiation. They are interested in a rate of repayment they can meet without undue burden under present economic conditions, and are asking no greater considerations from the Government than are extended to other beneficiaries of Federal credit. They believe they are worthy of the cooperation of State and Federal agencies in maintenance of the production and the economic and social values of their projects and thereby their ability to pay their financial obligations.

SUMMARY ON JOINT LIABILITY

Points in favor.

The basic arguments in favor of joint liability in repayment of construction charges on Federal projects are as follows:

1. The Government's security is enhanced by the "community" or joint liability of all water users on a project for the obligations of the individual.
2. Community spirit will operate to compel those inclined to avoid or defer repayment to pay with regularity.
3. In financing private or non-Federal irrigation enterprises, joint liability is invariably required.
4. If, for any reason, some water users or some lands will not bear their share of construction costs, the other water users, conscious of their obligation and productive land, will pay for the entire cost.
5. Joint liability as to payment of operation and maintenance charges in advance has been successful.
6. Presumably, joint liability has been based on the assumption that all land in a project was of approximately the same productive value.
7. Accounting by the Bureau of Reclamation is lessened and simplified.
8. General taxes pay bonds and obligations that are a joint liability.

Points Against.

1. The human element, not peculiar to water users alone, precludes a willingness on the part of one man to bear the debts of his neighbors.
2. For that reason, settlers with capital, the result of saving or sacrifice, are disinclined to obligate themselves for debts of others already on a project or who may come on later.
3. Joint liability in practical operation on any Federal project prevents a farmer from securing a paid-up water right, free of the obligations of his neighbors, during an ordinary span of life.
4. Joint liability has forced the abandonment of land that by reasonable care and work could be brought into production and eventually pay its share of construction cost.
5. Instead of developing community spirit for repayment, joint liability has been the instrument by which mass sentiment has been

developed for moratoria, extension of time for repayment, suspensions, and direct write-off. It has given added weight to mass political effort.

6. The blanket moratoria acts from 1931–36 were the direct results of mass psychology developed by joint liability, and this provided an unanswerable argument for postponing all construction charges. As a result, the Reclamation Fund was deprived of from $6,000,000 to $10,000,000 in repayments during that period and encouragement given the advocates of write-offs to press for further moratoria.

7. Project land with its productivity, water supply, and the individual farmer form the real basis of the security for repayment.

8. Contrasted with the intent of joint liability, it has lowered the morale on practically every project and has resulted in efforts to present the situation of the least fortunate as that of the most favored.

9. Relatively little land in any project is of the same productive capacity naturally or through irrigation, and soil differs as greatly as individuals.

10. Payment of operation and maintenance charges has been enforced by refusal to turn on water, not by the joint obligation requirements of a district.

11. Joint liability affords no protection against "mining" the project lands, the excessive use of water, nor does it induce improved agricultural or irrigation practices.

12. While bookkeeping on the part of the Bureau is lessened and simplified, conditions produced in part by joint liability have been far more troublesome and expensive than would be the handling of 40,000 individual accounts, not counting the loss to the reclamation fund during moratoria periods and probable eventual loss.

13. Experiences of private irrigation projects with joint liability are similar to those of the reclamation projects, as shown by Reconstruction Finance Corporation reports of refinancing operations on projects.

14. A substantial number of water users on every project would pay out earlier except for joint liability, which reduces the borrowing power of the individually successful farmer.

15. Joint liability protects the inefficient and unsuccessful farmer and prevents new settlers from coming to the project.

16. General taxes as a joint liability are only successfully collected so long as the property value is much higher than the debt. When valuation falls a tax strike results.

Whether any excess liability, no matter how small, would serve to remove the instrument of mass pressure against prompt and orderly repayment, especially from non-farmer project leadership, is open to question. On several older and fairly well stabilized projects or districts of projects, where construction costs are low and power revenues are helpful, joint liability has not been detrimental. However, it is asserted that large numbers of water users even on this type of project would have paid out and increased the increments to the reclamation fund if there had been no joint liability.

EFFECT OF MORATORIA, RELIEF ACTS, AND JOINT LIABILITY

An analysis of the effect on construction water right charges during the so-called agricultural depression periods of 1920–24 and 1931–36, when moratoria or relief acts extended the time for repayment of construction charges shows:

Relief during 1920–24 was authorized by acts of March 31, 1922, February 28, 1923, May 9, 1924, and December 5, 1924, authorizing the Secretary of the Interior to grant extensions of time for repayments (but not beyond March 1, 1927). Blanket relief was granted when it was impossible to make investigations in 1924. In the other years individual water users made application alleging they were unable to make payments. These deferred payments were absorbed in new contracts made subsequent to the Adjustment Act of 1926.

On the Minidoka project (and perhaps elsewhere) the effect of the 1921–23 depression was more serious than that of 1930–33. Every bank in the Minidoka area, except a small new one, closed as a result of heavy livestock losses. Nevertheless, not having joint liability, most individuals continued to pay during the whole period of depression.

During the 5-year period 1920–24, when relief legislation was in effect, $14,784,978.35 in construction charges became due on all projects; $9,562,646.52 or 64.7 percent was paid; and $5,222,331.83 or 35.3 percent was unpaid June 30, 1925.

Where joint liability contracts were in effect, blanket relief was granted in 1924, it appears from statements before the House Appropriations Committee in 1927.

During the period 1931–36, moratoria acts granting blanket relief on all projects were enacted, as follows:

April 4, 1932, providing for extension on all of 1931 charges and 50 percent of 1932 charges;

March 4, 1933, for remainder of 1932 and all of 1933;

March 27, 1934, all of 1934;

June 13, 1935, all of 1935;

April 14, 1936, 50 percent of 1936.

From July 1, 1931, to June 30, 1937, there was collected on account of construction charges, exclusive of rental of irrigation water, a total of $5,128,355 from all projects. This was principally from power revenues applicable to construction charges, and contracts not affected by the moratoria. During the fiscal year ending June 30, 1931, a total of $4,337,584 was collected on construction charges.

It is estimated that during the 6-year period 1931–36, the normal repayments accruing, under contracts in effect on July 1, 1931, would have aggregated $19,500,000. Thus, the reclamation fund in the period was deprived of $14,371,645.

Well-informed observers have asserted that, with the exception of Umatilla and several small districts, 25 to 40 percent of the repayments due could have been made in each of the 5 years 1931–35, and that in 3 out of the 5, 75 percent could have been paid without great hardship or undue burden. In substantiation of these observations is the fact that nonfarming landlords, banks, and mortgage holders control from 30 to 40 percent of the paying acreage of the "going" projects; that on one project the nonfarming owner of three farms stated that he had netted not less than 10 percent from his rentals and crop shares in any year of the moratoria, after allowing for deferred charges, etc.; and that the tax delinquencies on no project as a whole have exceeded 25 percent.

At the lowest estimate, but for the influence of joint liability, the reclamation fund during the 6-year period should have received not

less than $6,000,000 additional on construction charges, or a total of more than $11,000,000 from this source. This estimate is substantiated by these facts:

(*a*) That no projects other than the few in acute distress due to peculiar conditions, had difficulty in meeting the 50 percent 1936 and full 1937 charges despite the drive to extend the moratoria.

(*b*) That many water users during the moratoria period—on one project 25 percent (Newlands)—continued to pay their charges into the district treasury, which did not pass payments on to the Bureau. On the Frannie division of the Shoshone project construction charges were collected during these years and the money used for continuing the construction of drainage works.

Emphasis may be laid on the psychological or moral effect on water users as a whole, resulting from the moratoria and the incentive to agitation on the part of leaders in the movement for write-offs, either direct or under the guise of extensions of time for repayment.

Joint liability has not and does not enhance the Government's security for construction expenditures, which rests in the final analysis on the water delivered, the productivity of the land under irrigation, and the individual water user.

Where project areas have been found permanently unproductive, the construction costs have been written off by an act of Congress, in 1926. By the same act, where land, up to 1926, was found temporarily unproductive by local boards of review, construction charges were suspended until such time as the Secretary shall find such lands to be productive, when he may order it included in the paying class. Small areas on a few projects have been returned to the paying class.

In all probability, a reclassification of land and thorough soil examination, coupled with improved irrigation and farming methods, would return some parts of the suspended acreage to the paying class. Reclassification would likewise remove from the paying class a substantial acreage on practically every project, where the soil has been "mined" by excessive use of water, overcultivation and lack of fertilization or proper drainage. Obviously, joint liability cannot be construed, nor will it be held, to compel one water user to pay the charges on land that has become unproductive either through neglect of another water user or the work of Nature.

This observation illustrates further the contention that while joint liability in theory protects the interest of the Government or the Bureau of Reclamation, it cannot and does not take into account the operations of human and physical forces. It offers a constant instrument to support appeals for relief, as was shown during the demands on Congress for moratoria.

Were all land in a project of equal productive value, construction costs low compared with present values, and returns stabilized, joint liability would offer a means of overcoming the human element and of promoting community spirit and pride in connection with prompt and regular payment. But those basic conditions do not exist in any project as a whole, although recognized on a few districts of several.

PART IV. INDIAN PROJECTS

(As supplied by the Office of Indian Affairs)

Since 1887, the Indian population has seen its land holdings shrink from almost 130,000,000 acres to approximately 50,000,000 acres. The land which was sold by, or taken from the Indians was the best and most productive part of the Indian estate. That which was left to them was largely submarginal. For years, the majority of the Indians subsisted on the proceeds from the sale or the leasing of their lands. In this process of living upon their capital they were encouraged by whites anxious to seize and exploit the Indians' assets and by a Government wilfully or stupidly blind to the rapid evolution of a dependent pauper population. It was not until there was no more land to be sold, and the rental values of the remaining lands had shrunk to almost nothing, that the Indian was forced to turn to the self-use of his remaining lands—and to emergency relief work—for his support. It was at this point that enlightenment overtook the white guardians of the Indians, leading the Congress finally to reverse the 50-year old Indian land policy which had resulted in the alienation of two-thirds of the Indian estate, and to authorize the rebuilding of an adequate land base upon which the Indian could function properly.

The Supplementary Report of the Land Planning Committee to the National Resources Board recently indicated that the Indian population needed approximately 25,500,000 acres of land of various types in order to become self-supporting on a low standard of living. Since the submission of this report, there has been acquired for the use of Indians a total of approximately 2,600,000 acres. At this rate of acquisition, it will take a minimum of 50 years to approach the standard of Indian land holdings recommended to the National Resources Board.

A very large proportion of the total Indian income is at present derived from relief work, especially in the Great Plains and adjacent drought areas. When these relief expenditures cease, Federal contributions in another form will have to take their place—unless in the meantime the Indian is supplied with a proper land base and with the means of making effective use of his land resources.

The complete utilization of all Indian basic resources must be brought about with the utmost speed in order to prevent a continuing drain upon the Federal Treasury for Indian support and to forestall the pauperization of a large part of the Indian population. And it is here that the importance of irrigation as a part of the economy of Indian administration becomes apparent.

Far the largest and most valuable of the remaining, only partially developed Indian assets, is water.

1. The orderly development of land uses by irrigation projects on Indian reservations is a fully justified and desirable national enterprise. This is so because, (a) agricultural development by irrigation on most of the reservations in the arid and semi-arid regions constitutes the principal, if not the sole, means and opportunity by which the Indian may become self-supporting and make proper use of his lands, and (b) continued and further development of Indian irrigation projects is essential to preserve the water rights appurtenant to the reservations which have been established by treaties or other Federal enactment.

This right becomes increasingly difficult to protect in the face of the approaching full development of the general water resources by other water users.

2. The need for and the feasibility of irrigation projects for Indians should be determined by a different formula than is commonly used in determining the feasibility of irrigation projects for the better-prepared, more scientific, and more mobile white farmers. The Indian is confined to his reservation until the time comes when he has adjusted himself to the whites' "civilized," competitive environment. He must for many years depend upon the resources of his reservation. The test of an Indian irrigation project is, therefore: Will it tend to increase the chances of the Indians becoming self-supporting?

The justifiable cost for such an Indian irrigation project has to be measured by what it would cost in Federal gratuities if the irrigation project were not constructed. Included in these gratuities are the many social and administrative costs created by the existence of a large substandard population. The Federal Government owes it to the Indians to help them through their period of adjustment, keeping in mind the value of creating as the end result a self-sustaining rather than a dependent population. The Federal Government rightfully should contribute the funds necessary to construct and maintain irrigation projects, at least up to the level of the cost which it would otherwise have to bear to support the Indians.

In a large measure, these projects constitute the alternate of a Federal dole with its accompanying demoralizing effect on the recipients. The cost element must take into consideration the alternative possibilities of purchasing and using adequate resources elsewhere. Much of the Indian country is devoted to stock raising and this activity is closely related to the irrigation projects through the greater range use and the supply of winter and off-season feed for the range cattle which the irrigated lands afford.

Greater and more intensive use by the Indians of their irrigation facilities can be confidently expected by reason of the many benefits and opportunities provided by the Indian Reorganization Act. This act, now 3 years old, is bringing about profound changes in Indian life and Indian administration. Under it, the tribes are legally organized, Federal credit is extended and land purchases authorized, and the further alienation of Indian land has ceased. The mental attitude of the Indian has changed from one of apathy and despair to one marked by a desire to face the future with a determination to go forward. At this time, approximately 40 percent of the Indian-owned, irrigated land is leased to white operators, but this practice is constantly decreasing as the means of utilizing their own irrigated lands are placed in Indian hands. Furthermore, the Indian is in no way different from the average white landowner; in both races a certain percentage will prefer the role of landlord to that of actual operator.

3. To revert to the need of protecting the Indians' water rights, as pointed out above, it should be remembered that any failure to protect those rights has been, and is, a failure on the part of the Federal Government. The Indians are not prepared or equipped to develop their own water rights, and it is the Government's duty to do so. In the last analysis, an Indian water right should enjoy a privileged status. For the Federal Government owes a peculiar responsibility to the Indians, one of the means of discharging this responsibility is

through the development of Indian water rights, and if these water rights are lost the development of the Indians' resources through some other means becomes a charge upon the Government.

4. Congress, facing the difficulties of Indian self-use of irrigated land and realizing the subsistence character of their farming operations, passed in 1932 what is commonly known as the Leavitt Act (47 Stat. 564). This legislation provides in effect that no irrigation construction assessments shall be made against Indian lands so long as title remains in the Indian or his heirs, and that the Secretary of the Interior may adjust or cancel any unpaid maintenance and operation assessments that are a lien against the land. The Indian is generally entitled to this assistance as to the construction charge assessments, and should in general be further aided through Treasury appropriations for maintenance and operation costs until such time as he can assume the burden of his share of these costs without undue hardship. The assessment and collection of these annual maintenance and operation charges should be left to the discretion of the Secretary of the Interior as at present.

5. Patent in fee land, or land in private ownership within an Indian irrigation project presents another problem. On these projects, which are similar in many ways to the regular Federal reclamation projects, it is believed that the present plan, that the water users shall repay all construction costs, is unjust and creates a charge in many instances in excess of the individual benefits. We do not undertake to say just how the payment of these costs should be prorated. It seems, however, that this problem is one of determining beneficiaries and then adopting some means of assessing them proportionately according to benefits. This would, of course, include a spread over urban as well as rural areas.

White land owners and farmers benefiting by an Indian irrigation project should be required to pay their way, but consideration should be given to the fact that, as noted above, a different test of economic feasibility applies to Indian irrigation projects. Because of the ensuing benefits, the Government is justified in constructing projects at a higher per-acre cost than would be justified in the case of an all-white project. It would seem proper, therefore, to scale down the per-acre charges levied against the whites who happen to come within an Indian project, the Government assuming a certain portion of the charges as part of its contribution to the maintenance and advancement of the Indians.

Reapportionment of costs is undoubtedly needed on several of these partially white-owned Indian irrigation projects. This reapportionment should take into account and rectify the overdevelopment of land beyond available water resources, the productivity of the soil, and various other factors. The governing principle of this readjustment should, of course, follow the pattern or plan adopted by Congress which is it hoped will follow the recommendations of the present Repayment Commission.

The definite need for adjustments has prompted the Service to undertake an economic survey, including a detailed soil investigation and inquiry into other features affecting the economic status. This investigation is being made pursuant to the act of Congress, approved June 22, 1936 (49 Stat. 1803), entitled "An act to authorize the Secretary of the Interior to investigate and adjust irrigation charges

on irrigation lands within projects on Indian reservations, and for other purposes." As the result of this survey, it is expected that new construction assessment schedules will probably be recommended, and in some instances cancelation, in whole or in part, of the construction charge may be justified. Where legislation is a requisite, definite recommendations supported by the facts and conclusions arrived at by the economic survey, will be made to the Congress.

6. Continuation of irrigation development for Indians, together with the construction of works to serve such privately owned land as may be included in Indian irrigation projects, is justified and should be continued by an organization directly under the control of the Indian Office. This is so because the success of an Indian irrigation project depends not only upon its being properly and economically constructed and operated, but also upon the development of the Indian to a point where he will make use of the facilities provided. This is a human and social problem which necessarily must be worked out in company with the other elements essential to Indian advancement. An Indian irrigation project must dovetail into an integrated reservation program. This can only be accomplished by the Indian Office, which is charged with and responsible for the guardianship of the Indian and his property.

Conservation and proper land use constitute another factor requiring the development of irrigation projects for Indians to be under the control of the Indian Office. Were such projects to be developed with no continuing supervision in prospect, there might be danger of encouraging further breaking of the grass lands and the increase of unsound commercial agriculture. The guidance and supervision of the Indian Service constitute a guaranty of proper land use and conservation, which are particularly important in the essentially livestock regions of the Great Plains.

7. Irrigation development for the Indian should include the construction of small subsistence projects, forage areas, and subsistence gardens around which the Indian can build his livestock and other industries. Once again, per-acre cost is not a true measure of the value of these projects, but their benefits must be measured against the cost of the alternate methods which the Government will be forced to adopt if life for the Indians on their present reservations is not made reasonably secure and decently comfortable.

The larger projects, especially those containing privately owned lands which have water-right contracts, such as the Wapato, Flathead, San Carlos, and so forth, should be completed as promptly as possible. This is necessary in connection with the protection of valuable water rights as previously mentioned and is altogether advisable in connection with the economic development of the reservation resources.

8. Recent studies indicate that there are approximately 1,200,000 acres of irrigable land within the present Indian irrigation projects, of which about 500,000 acres, or a little less than 50 percent, have been provided with irrigation facilities and have an adequate water supply. The total construction cost of all Indian irrigation projects to date is approximately $50,000,000 and the estimated cost to complete the various projects for the ultimate irrigable area of 1,200,000 acres is $50,000,000 additional. The work planned includes supplemental storage, extension of irrigation facilities, and the expenditure

of approximately $5,000,000 in assisting the Indian in subjugating his land. The completion of this program will result in an average construction cost of less than $100 per acre, including subjugation. Of the 500,000 acres now supplied with Indian irrigation facilities and for which there is an adequate water supply, some 470,000 acres were irrigated last year, 150,000 acres of which were irrigated by Indians, 120,000 acres of Indian land were farmed under lease, and 200,000 acres were in white ownership.

Sufficient funds should be made available for a careful study of all feasible Indian irrigation projects in order that a complete analysis can be made of the needs and possibilities. In addition to the 1,200,000 acres in Indian irrigation projects now started, or proposed, it is estimated that perhaps an additional 300,000 acres might be provided with irrigation facilities to advantage. The Indian Office should have at least $50,000 a year for the next several years to study the needs and possibilities of irrigation.

PART V. PLANS OF REPAYMENT OF CONSTRUCTION COSTS NOW IN EFFECT AND PROPOSED

Plans of repayment of construction costs now in effect show wide variations from the original 10-year repayment plan, and may be broadly classified under 20-year annual payment, 30-year annual payment, and 40-year annual payment plans, crop-production plan, special plans, and plans covering nonproject lands under the Warren Act. These are listed in the following tables with the acreage affected:

20-YEAR CONTRACTS

Project and division	Paying acreage	Total acreage
Yuma:		
Bard division	5,543	6,134
Reservation	7,743	7,743
Minidoka:		
Gravity [1]	68,629	68,909
Gooding [2]	44,000	44,000
Yakima:		
Sunnyside Valley	100,384	102,117
Tieton	29,537	29,537
Total	255,836	258,440

30-YEAR CONTRACTS

Yuma: Valley	48,626	49,762

40-YEAR CONTRACTS

Grand Valley	23,257	30,412
Orchard Mesa	9,122	10,027
Boise: Emmett	22,500	22,500
Minidoka: Gooding	36,000	36,000
Frenchtown	5,000	5,000
Huntley	19,295	29,500
Milk River:		
Chinook	30,989	43,484
Malta	37,556	56,652
Glasgow	18,721	21,997
Carlsbad	25,055	25,055
Newlands	73,069	82,260
Vale	30,000	30,000
Owyhee	107,421	117,072

[1] Part of old lands, 10 years.
[2] 44,000 acres old lands, 20 years; 36,000 acres new lands, 40 years.

40-YEAR CONTRACTS—Continued

Project and division	Paying acreage	Total acreage
Klamath:		
Main	32,854	33,000
Tule Lake	34,973	41,097
Hyrum	8,000	8,000
Ogden River	21,750	21,750
Sanpete	12,000	12,000
Shoshone: Willwood	10,808	11,789
Riverton	[3] 32,000	100,000
Total	591,270	737,595

CROP-PRODUCTION PLAN

Boise:		
Big Bend	1,602	1,695
Black Canyon (Notus)	6,874	6,874
Boise-Kuna	48,348	48,540
Nampa-Meridian	40,004	40,407
New York [4]	17,382	17,382
Wilder	53,898	56,699
Minidoka: Burley (pumping)	42,772	43,138
Sun River:		
Fort Shaw	9,814	13,811
Greenfields	[3] 55,273	93,000
Lower Yellowstone	47,403	58,313
North Platte:		
Pathfinder	86,632	110,153
Gering and Fort Laramie	52,703	54,797
Goshen	45,576	51,383
Umatilla	17,665	18,229
Strawberry Valley:		
High Line	16,941	16,941
Spanish Fork	4,113	4,113
Yakima-Kittitas	69,227	70,186
Shoshone:		
Frannie	15,618	19,941
Garland	35,053	41,627
Total	666,958	767,229

SPECIAL CONTRACTS

Salt River	242,403	242,403
Yuma: Mesa	1,801	6,319
Orland	20,633	20,633
Uncompahgre	72,077	105,381
Bitter Root	16,666	16,666
North Platte: Northport division	12,417	16,170
Rio Grande:		
Elephant Butte	88,000	100,176
El Paso	67,000	74,926
Stanfield (supplemental water)	8,400	8,400
Westland (supplemental water)	4,500	9,000
Belle Fourche	61,459	73,093
Strawberry Valley	32,835	32,835
Okanogan	10,000	10,000
Yakima:		
Grandview	3,220	3,941
Granger	1,250	1,660
Outlook	4,741	4,741
Prosser	1,795	2,156
Snipes Mountain	1,915	1,915
Sunnyside irrigation district	3,694	4,630
Total	654,806	734,986

[3] Construction not completed.
[4] 3,860 acres, 20-year plan.

Project served by Government works under the provisions of the Warren Act or other service contracts

Project:	Irrigable acreage, 1936
Salt River	93, 967
Yuma	165
Grand Valley	10, 027
Uncompahgre	1, 650
Boise	143, 343
Minidoka	742, 703
North Platte	123, 550
Rio Grande	78, 000
Umatilla	930
Klamath	63, 410
Weber River (Salt Lake Basin)	89, 000
Strawberry Valley	7, 544
Yakima	172, 442
Riverton	277
Grand total, 1936	1, 527, 008

Acreage under various contracts (project and supplemental)

	Paying acreage	Total acreage
20-year contracts	255, 836	258, 440
30-year contracts	48, 626	49, 762
40-year contracts	591, 270	737, 595
Crop production (all project land)	666, 958	767, 229
Special	654, 806	734, 985
Total	2, 217, 496	2, 548, 011

Grand totals (1936 crop summary)

	Irrigable	Irrigated	Cropped
Project	2, 166, 409	1, 702, 192	1, 629, 174
Warren Act contracts	1, 527, 008	1, 335, 995	1, 272, 745
Total	3, 693, 417	3, 038, 187	2, 901, 919

The differences are represented by acreage under Warren Act and special contracts.

Several projects are satisfied with their repayment plan and desire no change in their contracts. Some farmers on projects where construction charges are repaid under annual installment contracts criticize their inflexibility when crop losses due to natural causes or low prices reduce their income. Similar criticism is made by some farmers of the projects having gross crop production repayment plans.

There are several projects that cannot possibly repay construction charges within the 40-year limit prescribed by the Adjustment Act and must be given a more liberal schedule of repayment.

Several new plans for repayment were proposed at the hearings. These generally were modifications of the repayment plan of the project and were proposed to meet the effects of crop losses and low income. Some proposed a flat per-acre repayment plan, without regard to land classification, with the annual payments so low that the time for repayment would extend far beyond the 40-year period. This plan makes no provision for low productive lands; in fact, it is

simply a reduction of the present annual construction payment. Several projects whose lands are devoted to general farming requested a change in their gross crop production repayment contract to the plan of repayment approved by the Federal Irrigation Congress and recommended to the National Reclamation Association at its 1937 meeting. This plan provides:

> That future repayment of Federal project construction charges be placed upon a sliding scale beginning with a base figure which shall be the average gross per acre crop return of the district for the preceding 10 years. Upon which figure the district shall pay 3 percent when the current or preceding year return shows that same figure. That the percentage shall rise or fall as follows:
>
> When the crop return average for the district for the current or preceding year drops 25 percent below the base figure of the preceding 10 years, the construction charge shall be 1 percent less, each time that such current return shows 25 percent below the base figure. The percentage shall increase in the same ratio when the crop returns show an increase above the base figure.
>
> The current year's return more nearly reflects the ability to pay, but it is assumed that the census cannot be taken in time to make the levy, in which case the charge will be based upon the preceding year.
>
> Interpolations in fractions of a percent may be made for points falling between the 25 percent rise or fall.
>
> That at no time shall the annual payment be less than 1 percent or more than 9 percent of the current or preceding year return.
>
> That classification or reclassification of project lands be made to facilitate the application of this plan.

Other plans based on comprehensive production records kept for crops and farms under accepted land classification, and with annual repayment charges worked out on a sliding scale, were proposed. The Commission arranged for a careful study of repayment plans now in use and of the several modifications and plans proposed, also of the payment plan used by Federal Land Banks and other agencies. As a result of this study, the following fixed normal plan of repayment was worked out under its direction. This plan follows in general principle the plan described above, but with some modifications which it is believed make it conform more closely to the ability of the water users to pay construction charges, when production drops below the long-time project average.

This fixed normal plan of repayment is based on a normal gross crop value per acre on which a payment of 5 percent is required. For an increase in average crop value above the normal, the rate of payment increases one twenty-fifth, or four-hundredths, of 1 percent for each dollar of increase. For decreases in average crop value below the normal, the rate of payment decreases one-third of 1 percent for each dollar of decrease. The normal gross crop value per acre is determined from the available records of crop production of the area in cultivation for 10 or more years with due consideration of extra good years and of extra poor years. Where projects are still in the development stage, normal crop values are based on the record of projects having similar soil and climatic conditions that have attained full development. The determination of normal crop value is of considerable importance in this method of repayment and should be left to the Secretary of the Interior, with authority to change the normal value from time to time to conform with changing economic conditions, and his decision thereon shall be conclusive.

A crop-production-repayment plan should provide for lower annual installments on lands of low production, rather than the same average installment for all lands. Under the provisions of subsection D of

the act of December 5, 1924, the Secretary is authorized to do this, and the lands on a number of projects have been classified and charges fixed upon the average gross value of the crops on each class of land.

In the application of the fixed normal plan of payment to the several classes of land on a project, after the normal crop value per acre for the project has been established, the following steps are necessary:

First, determine from the crop census for the current or the preceding year, as may be practicable, the average gross crop value per acre for the project, division or district (whichever is applicable) in in which the classified lands are located.

Second, establish the percentage of the gross crop value per acre to be paid for the current year by comparison with the fixed normal base If the current average gross value per acre is equal to the normal base, this percentage is 5 percent; if above or below the normal base, the percentage increases or decreases according to the rates described above. The percentage so established multiplied by the current average crop value per acre will constitute the average current construction installment per acre. This installment applied to the total paying acreage in the project, division or district (whichever is applicable) will fix the total amount of the construction charge installment to be paid.

Third, on projects where lands and farms have been classified determine from the crop census for the preceding year the average gross crop value per acre for each class.

Fourth, determine the relation, expressed as a percentage, that such average value per acre for each class bears to the average gross value per acre for the entire project, division or district (whichever is applicable) and then multiply each such percentage by the average rate of the current construction installment per acre for the project, division or district as a whole (determined as described under the second step above), to determine the average rate per acre to be paid as the construction charge installment by the lands in each class.

Provided, however, that no annual payment shall be less than 15 cents per acre.

Experience shows that such plan of repayment is applicable to projects whose lands are devoted to general farming but not applicable to projects producing specialty crops. The inserted graphs show the rate of repayment under the present 5 percent average gross crop value for the past 10 years, also the plan approved by the Federal Irrigation Congress and submitted to the National Reclamation Association, and the plan developed under the direction of the Commission, for several normal crop values used as a base.

PROCEDURE FOR DETERMINING WATER RIGHT PAYMENTS FOR RECLAMATION PROJECTS

No repayment plan now in use is found generally applicable or acceptable to all the projects, The Commission is convinced, however, that "the best, most feasible and practicable comprehensive permanent plan for such water-right payments, with due consideration for the development and carrying on of the reclamation program of the United States, and having particularly in mind the probable ability of such water users, districts, associations, or other reclamation organizations to meet such water-right charges regularly and fully

from year to year during periods of prosperity and good prices for agricultural products as well as during periods of decline in agricultural income and unsatisfactory conditions of agriculture," desired by Congress can be worked out for each project through procedure which takes into consideration the factors influencing ability to pay for water rights or construction charges, particularly the efficiency of the project irrigation system, the right use of land and water, the uncertainties in agricultural production, the means of effective marketing, and which provides for adjustment of repayment contracts from time to time. This procedure should enlist cooperation of Federal, State and local agencies to maintain the agricultural production of projects, encourage the economic disposal of their products, insure the conservation of their land and water resources, and give consideration to the time, labor and expense necessary to bring the farms of the project into normal production and provide normal home facilities.

This procedure should recognize the economic, civic, and sociological value of reclamation by irrigation in the West and carefully consider its importance for the general welfare of the States and Nation.

PART VI. RECOMMENDATIONS

The Repayment Commission recommends:

1. That the Secretary of the Interior be empowered by Congress to:

(*a*) Reclassify lands from time to time.

(*b*) Suspend payment of part or all of the construction charges on low or nonproducing lands that are in the paying classes.

(*c*) Eliminate from future reclamation repayment contracts with water users, districts, or associations all requirements for joint or general liability and upon revision of present contracts or upon advance full payment of construction charges, release water users from joint liability.

(*d*) Fix a plan for the repayment of construction charges, either upon an installment basis per acre or per acre-foot of water delivered, or based upon ability to pay, as indicated and regulated by the average gross returns for lands of a project or a division of a project, on the basis of the percentage of the average gross acre income for the year nearest the date of payment for which the crop returns are available, scaling up or down from a basic percentage of 5 percent of the average gross acre income at normal value with an increase at the rate of one-twenty-fifth of 1 percent for each dollar of average annual production above the normal base and a decrease at the rate of one-third of 1 percent for each dollar of average annual production below such normal base. The normal base and the installments may vary as to projects or divisions of a project. The normal base should be subject to revision from time to time by boards of adjustment appointed by the Secretary.

(*e*) Provide suitable plans to reward water users for the efficient use of water and to penalize water users for the waste of water.

(*f*) Authorize the advance payment of one or more installments of the construction charge at a discount computed on the basis of that sum of money which, when placed at interest at 4 percent, will provide sufficient revenue to pay the annual installments without interest as they become due.

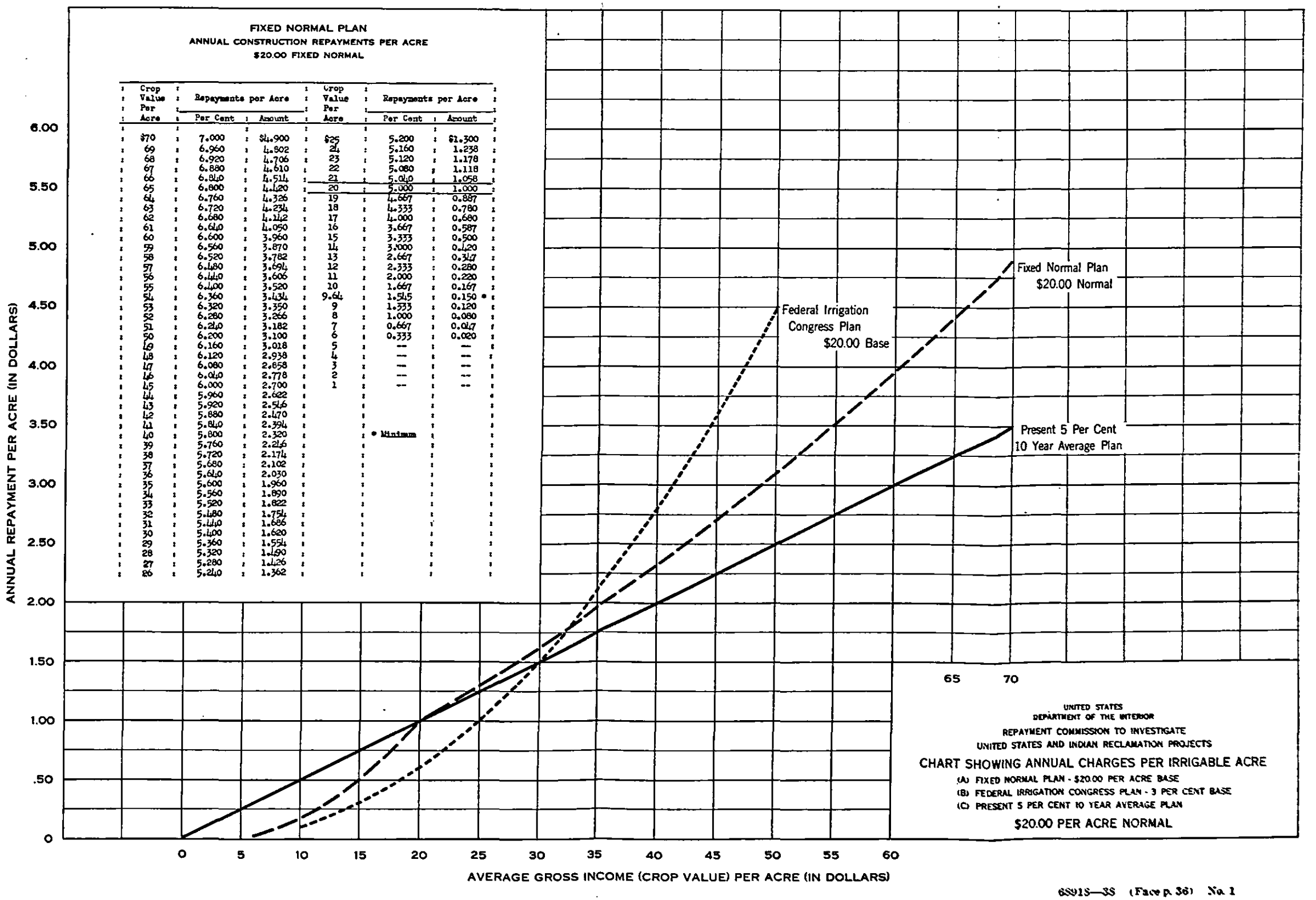
FIXED NORMAL PLAN

ANNUAL CONSTRUCTION REPAYMENTS PER ACRE

$20.00 FIXED NORMAL

Crop Value Per Acre	Repayments per Acre		Crop Value Per Acre	Repayments per Acre	
	Per Cent	Amount		Per Cent	Amount
$70	7.000	$4.900	$25	5.200	$1.300
69	6.960	4.802	24	5.160	1.238
68	6.920	4.706	23	5.120	1.178
67	6.880	4.610	22	5.080	1.118
66	6.840	4.514	21	5.040	1.058
65	6.800	4.420	20	5.000	1.000
64	6.760	4.326	19	4.667	0.887
63	6.720	4.234	18	4.333	0.780
62	6.680	4.142	17	4.000	0.680
61	6.640	4.050	16	3.667	0.587
60	6.600	3.960	15	3.333	0.500
59	6.560	3.870	14	3.000	0.420
58	6.520	3.782	13	2.667	0.347
57	6.480	3.694	12	2.333	0.280
56	6.440	3.606	11	2.000	0.220
55	6.400	3.520	10	1.667	0.167
54	6.360	3.434	9.64	1.545	0.150 *
53	6.320	3.350	9	1.333	0.120
52	6.280	3.266	8	1.000	0.080
51	6.240	3.182	7	0.667	0.047
50	6.200	3.100	6	0.333	0.020
49	6.160	3.018	5	--	--
48	6.120	2.938	4	--	--
47	6.080	2.858	3	--	--
46	6.040	2.778	2	--	--
45	6.000	2.700	1	--	--
44	5.960	2.622			
43	5.920	2.546			
42	5.880	2.470			
41	5.840	2.394			
40	5.800	2.320			
39	5.760	2.246			
38	5.720	2.174			
37	5.680	2.102			
36	5.640	2.030			
35	5.600	1.960			
34	5.560	1.890			
33	5.520	1.822			
32	5.480	1.754			
31	5.440	1.686			
30	5.400	1.620			
29	5.360	1.554			
28	5.320	1.490			
27	5.280	1.426			
26	5.240	1.362			

* Minimum



UNITED STATES
DEPARTMENT OF THE INTERIOR
REPAYMENT COMMISSION TO INVESTIGATE
UNITED STATES AND INDIAN RECLAMATION PROJECTS

CHART SHOWING ANNUAL CHARGES PER IRRIGABLE ACRE

(A) FIXED NORMAL PLAN - $20.00 PER ACRE BASE
(B) FEDERAL IRRIGATION CONGRESS PLAN - 3 PER CENT BASE
(C) PRESENT 5 PER CENT 10 YEAR AVERAGE PLAN

$20.00 PER ACRE NORMAL

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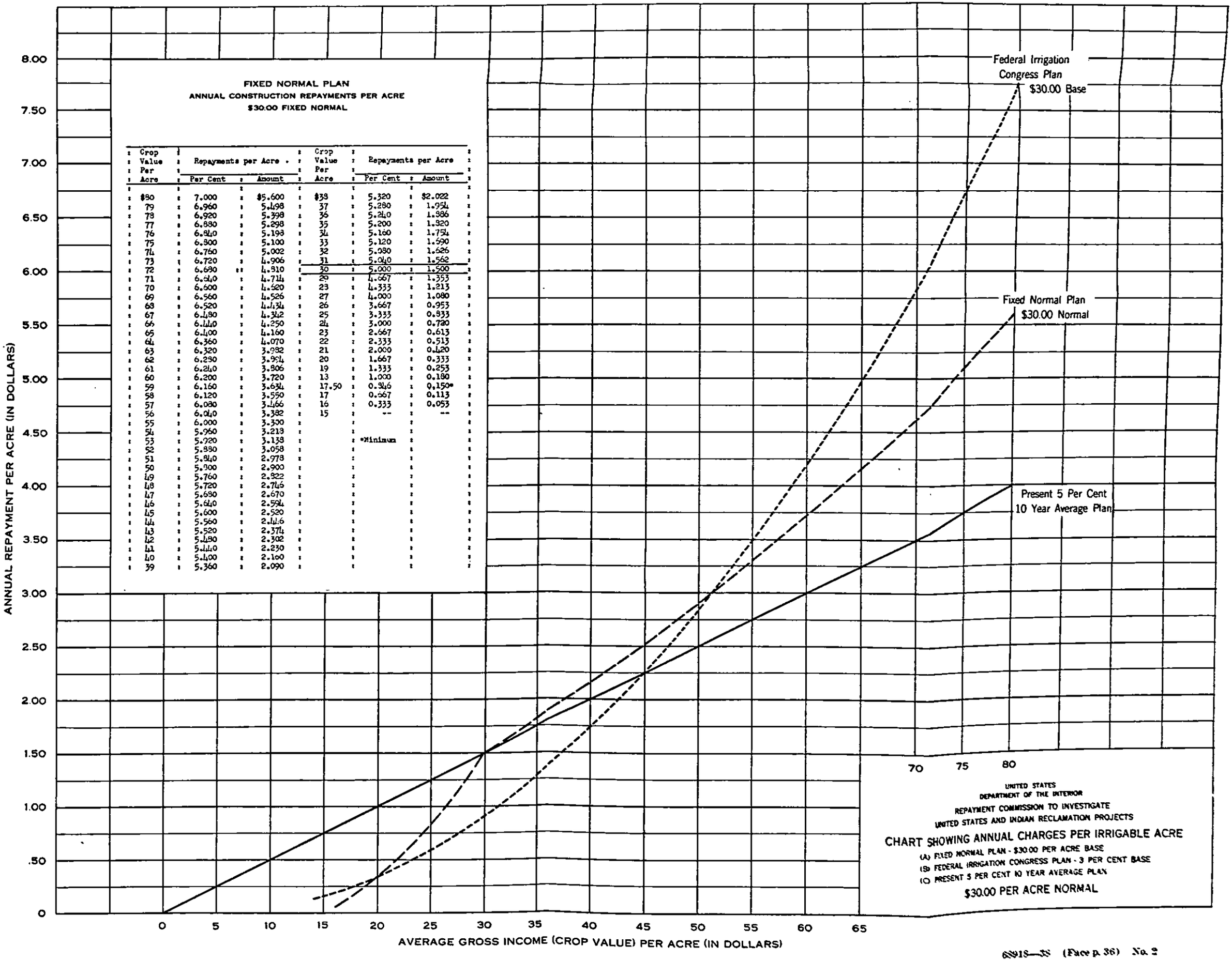
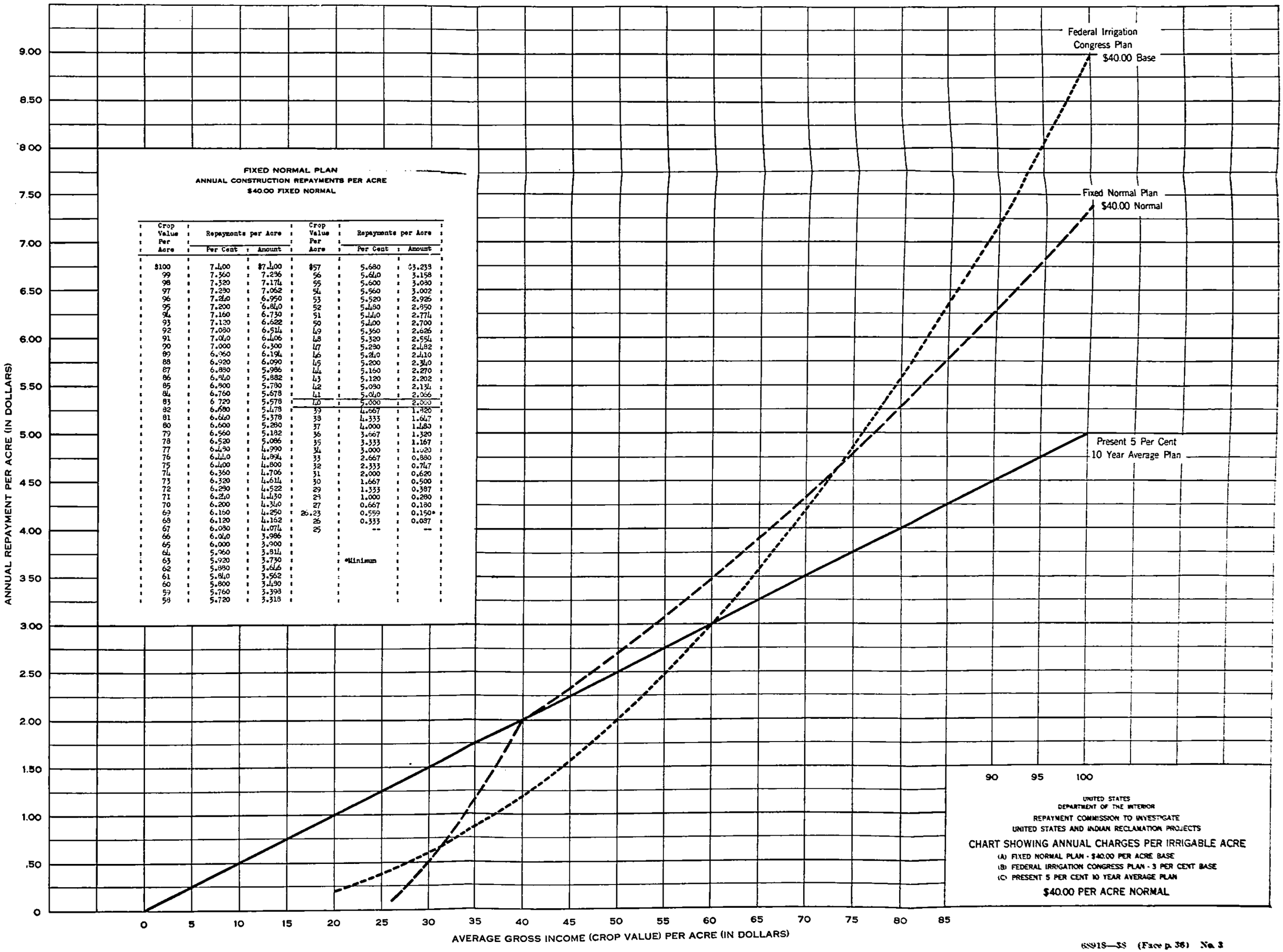
FIXED NORMAL PLAN
ANNUAL CONSTRUCTION REPAYMENTS PER ACRE
$30.00 FIXED NORMAL

Crop Value Per Acre	Repayments per Acre · Per Cent	Repayments per Acre · Amount	Crop Value Per Acre	Repayments per Acre · Per Cent	Repayments per Acre · Amount
$80	7.000	$5.600	$38	5.320	$2.022
79	6.960	5.498	37	5.280	1.954
78	6.920	5.398	36	5.240	1.886
77	6.880	5.298	35	5.200	1.820
76	6.840	5.198	34	5.160	1.754
75	6.800	5.100	33	5.120	1.690
74	6.760	5.002	32	5.080	1.626
73	6.720	4.906	31	5.040	1.562
72	6.680	4.810	30	5.000	1.500
71	6.640	4.714	29	4.667	1.353
70	6.600	4.620	28	4.333	1.213
69	6.560	4.526	27	4.000	1.080
68	6.520	4.434	26	3.667	0.953
67	6.480	4.342	25	3.333	0.833
66	6.440	4.250	24	3.000	0.720
65	6.400	4.160	23	2.667	0.613
64	6.360	4.070	22	2.333	0.513
63	6.320	3.982	21	2.000	0.420
62	6.280	3.894	20	1.667	0.333
61	6.240	3.806	19	1.333	0.253
60	6.200	3.720	13	1.000	0.180
59	6.160	3.634	17.50	0.846	0.150*
58	6.120	3.550	17	0.667	0.113
57	6.080	3.466	16	0.333	0.053
56	6.040	3.382	15	--	--
55	6.000	3.300			
54	5.960	3.218			
53	5.920	3.138		*Minimum	
52	5.880	3.058			
51	5.840	2.978			
50	5.800	2.900			
49	5.760	2.822			
48	5.720	2.746			
47	5.680	2.670			
46	5.640	2.594			
45	5.600	2.520			
44	5.560	2.446			
43	5.520	2.374			
42	5.480	2.302			
41	5.440	2.230			
40	5.400	2.160			
39	5.360	2.090			



FIXED NORMAL PLAN
ANNUAL CONSTRUCTION REPAYMENTS PER ACRE
$40.00 FIXED NORMAL

Crop Value Per Acre	Repayments per Acre		Crop Value Per Acre	Repayments per Acre	
	Per Cent	Amount		Per Cent	Amount
$100	7.400	$7.400	$57	5.680	$3.238
99	7.360	7.286	56	5.640	3.158
98	7.320	7.174	55	5.600	3.080
97	7.280	7.062	54	5.560	3.002
96	7.240	6.950	53	5.520	2.926
95	7.200	6.840	52	5.480	2.850
94	7.160	6.730	51	5.440	2.774
93	7.120	6.622	50	5.400	2.700
92	7.080	6.514	49	5.360	2.626
91	7.040	6.406	48	5.320	2.554
90	7.000	6.300	47	5.280	2.482
89	6.960	6.194	46	5.240	2.410
88	6.920	6.090	45	5.200	2.340
87	6.880	5.986	44	5.160	2.270
86	6.840	5.882	43	5.120	2.202
85	6.800	5.780	42	5.080	2.134
84	6.760	5.678	41	5.040	2.066
83	6 720	5.578	40	5.000	2.000
82	6.680	5.478	39	4.667	1.820
81	6.640	5.378	38	4.333	1.647
80	6.600	5.280	37	4.000	1.480
79	6.560	5.182	36	3.667	1.320
78	6.520	5.086	35	3.333	1.167
77	6.480	4.990	34	3.000	1.020
76	6.440	4.894	33	2.667	0.880
75	6.400	4.800	32	2.333	0.747
74	6.360	4.706	31	2.000	0.620
73	6.320	4.614	30	1.667	0.500
72	6.280	4.522	29	1.333	0.387
71	6.240	4.430	28	1.000	0.280
70	6.200	4.340	27	0.667	0.180
69	6.160	4.250	26.23	0.559	0.150*
68	6.120	4.162	26	0.333	0.087
67	6.080	4.074	25	--	--
66	6.040	3.986			
65	6.000	3.900			
64	5.960	3.814			
63	5.920	3.730		*Minimum	
62	5.880	3.646			
61	5.840	3.562			
60	5.800	3.480			
59	5.760	3.398			
58	5.720	3.318			



UNITED STATES
DEPARTMENT OF THE INTERIOR
REPAYMENT COMMISSION TO INVESTIGATE
UNITED STATES AND INDIAN RECLAMATION PROJECTS

CHART SHOWING ANNUAL CHARGES PER IRRIGABLE ACRE

(A) FIXED NORMAL PLAN - $40.00 PER ACRE BASE
(B) FEDERAL IRRIGATION CONGRESS PLAN - 3 PER CENT BASE
(C) PRESENT 5 PER CENT 10 YEAR AVERAGE PLAN

$40.00 PER ACRE NORMAL

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In cases where the time element or amount of installment is indefinite, the Secretary of the Interior shall fix the time and the amount of the installment, and the sum to be deposited.

(*g*) Authorize a discount of 10 percent for the payment in full of the current annual installment of construction charges if paid on or before the due date, diminishing the percentage of discount by 1 percent per month for each month or fraction thereof after the due date that said installment remains unpaid. After the time for any discount has expired, the full value of the current installment shall be collected without interest or penalty. If the installment is not paid within 1 year from the due date, delivery of water shall cease. The payment of all sums of money deducted as discounts under the provisions of this paragraph shall be automatically deferred to the end of the repayment period covered by the repayment contract and such deferred charges shall be paid in annual installments as provided in the contract, but shall not be subject to discounts herein recommended.

2. That the Secretary of the Interior be given funds to expand the program under his authority to enter into cooperative agreements with the several States acting through the State colleges of agriculture or other agency, for the purpose of improving the agricultural production of the project water users by giving advice and information in the selection of land, equipment, and livestock; the preparation of land for irrigation, the selection of crops, methods of irrigating and general farm management, the United States to contribute such portion of the expense as may be agreed upon.

3. That the Secretary of the Interior be authorized to appoint a board of adjustment to make a technical and economic study of project conditions, together with an audit of the financial accounts of the projects and report findings and recommendations to the Secretary when the farmers of the projects do not meet their repayment obligations or petition for revision of their repayment contracts or whenever such survey is considered necessary by the Secretary.

4. That on projects which have been turned over to the water users for operation and maintenance and which fail to perform their contract the Secretary of the Interior be authorized to appoint project superintendents who are qualified by training and experience to operate and maintain project canal systems and to fix the compensation to be paid to such superintendents from the operation and maintenance funds of the project, and prescribe and enforce rules and regulations for the economical and efficient distribution and use of water.

5. That the auditing service now rendered by the Bureau of Reclamation be expanded so as to provide for annual audits of project books and for cooperation with project and district officers and water users in the solution of financial problems and securing financial aid, all without any charge to the project or district during the time of any indebtedness to the United States.

6. That the Secretary of the Interior provide for an annual inspection of project structures with provision for making such repairs and renewals as may be necessary in order to maintain the canal system in good operating condition and cause payment therefor to be made from the operation and maintenance funds of the project.

7. That the Secretary of the Interior require a technical and economic survey of each reclamation project with data concerning the

lands, crops, farm management, irrigation methods, marketing and general economic and financial conditions, including taxes and mortgage debt, and other pertinent matters at least every 5 years, with recommendations for improvements based on the findings of such survey.

8. That the Secretary of the Interior be authorized to make necessary rules and regulations to govern boards, officers, and employees in hearing complaints and making adjustments with the right of appeal to the Commissioner of the Bureau of Reclamation and to the Secretary.

9. To insure the development and carrying on of the reclamation program of the United States, and safeguard the public and private funds invested in Federal reclamation projects, the services herein recommended by the Commission should be at Federal expense and not reimbursable.

RECOMMENDATIONS FOR CERTAIN PROJECTS

10. That the Secretary of the Interior arrange for a special study of the Umatilla project in Oregon, the Northport and Bridgeport irrigation districts of the North Platte project in Nebraska, and the Frannie division of the Shoshone project in Wyoming, for the purpose of determining ways and means for the rehabilitation of these projects and that such study give special consideration to problems of drainage, wind erosion, and the subduing of soils affected thereby, together with other problems of land and water use. Such work should be carried on in cooperation with the State colleges of agriculture and other interested State and Federal agencies and that sufficient appropriation of nonreimbursable funds be authorized and made to carry on such work. During the period of this work water should be delivered on a rental basis, the repayment of construction charges should stand suspended and a consideration of the question of further payments should be postponed until the establishment of a program as a result of such studies.

RECOMMENDATIONS FOR INDIAN RECLAMATION PROJECTS

11. That the foregoing recommendations, modified as may be necessary to conform to the requirements of the Office of Indian Affairs, apply to the repayment plan and contracts of white settlers on Indian reclamation projects, and to the project operation, and assistance and supervision of agricultural and farming practice of both white and Indian farmers.

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