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AUDIT REPORT
TO
THE CONGRESS OF THE UNITED STATES

COLUMBIA RIVER BASIN WATER RESOURCES DEVELOPMENT PROGRAM
CORPS OF ENGINEERS (CIVIL FUNCTIONS), DEPARTMENT OF THE ARMY
BUREAU OF RECLAMATION AND BONNEVILLE POWER ADMINISTRATION
DEPARTMENT OF THE INTERIOR

FOR THE FISCAL YEAR ENDED JUNE 30, 1956

BY

THE COMPTROLLER GENERAL OF THE UNITED STATES

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GAO Wash., D.C.

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON 25

DEC 30 1957

B-114858

Honorable Sam Rayburn
Speaker of the House of Representatives

Dear Mr. Speaker:

Herewith is our report on the audit of the activities of the Corps of Engineers (Civil Functions), Department of the Army, and the Bureau of Reclamation and Bonneville Power Administration, Department of the Interior, in the Columbia River basin for the fiscal year ended June 30, 1956.

This report combines the related activities of the Corps of Engineers, Bureau of Reclamation, and Bonneville Power Administration in the Columbia River basin. The report contains comments concerning most of the activities of these agencies in the basin, including power generation and marketing. Included are matters for consideration by the Congress having to do with allocations of cost to power and nonpower purposes and recommendations to the Chief of Engineers and the Secretary of the Interior on establishing policies jointly for accounting and financial practices necessary to present fairly the financial position of and results from the Government's water resources operations.

A copy of this report is being sent today to the President of the Senate.

Sincerely yours,

Joseph Campbell

Comptroller General
of the United States

Enclosure

Contents

REPORT ON AUDIT

OF

COLUMBIA RIVER BASIN WATER RESOURCES DEVELOPMENT PROGRAM

CORPS OF ENGINEERS (CIVIL FUNCTIONS), DEPARTMENT OF THE ARMY

BUREAU OF RECLAMATION AND BONNEVILLE POWER ADMINISTRATION

DEPARTMENT OF THE INTERIOR

FOR THE FISCAL YEAR ENDED JUNE 30, 1956

The General Accounting Office has made an audit of the activities of the CORPS OF ENGINEERS (Civil Functions), Department of the Army, and BUREAU OF RECLAMATION and BONNEVILLE POWER ADMINISTRATION, Department of the Interior, in the Columbia River basin. This audit was made pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53), and the Accounting and Auditing Act of 1950 (31 U.S.C. 67). This report by the General Accounting Office combines the activities of these three agencies in the Columbia River basin. The scope of the audit work performed is described on page 91 of this report.

GENERAL COMMENTS

Federal water resources development in the Columbia Basin is primarily the responsibility of three agencies, the Corps of Engineers, Department of the Army, and the Bureau of Reclamation and Bonneville Power Administration (BPA), Department of the Interior. To an important extent, the various water resources projects in the basin are inseparable, both from an engineering and a financial standpoint. In recognition of this integration, the General Accounting Office has prepared the following report which presents

in financial terms and on a combined basis the power, irrigation, flood control, and navigation activities of these agencies in the basin.

Presentation of the activities of the Corps of Engineers, the Bureau of Reclamation, and the Bonneville Power Administration on a combined basis emphasizes certain inconsistencies and shortcomings in financial and accounting policies. The most notable of these deficiencies find their origin with the sharp increase in the number of multiple-purpose projects and the relatively recent advent of power as a major purpose. It is a fair generalization to say that financial and accounting policies have not always kept pace with the nature and magnitude of water resources construction in the past 25 years. Because of these deficiencies, as summarized on pages 3 to 10, we have been unable to say that the financial statements (pp. 94 through 116) present fairly the assets and liabilities of the water resources projects in the Columbia River basin or the results from power and other operations.

To provide some background for subsequent sections of the report, the first two sections (pp. 11 through 20) have been devoted to a brief description of the basin and a review of the historical pattern of the water resources development, with emphasis on the multiple-purpose nature of recent projects. The next two sections (pp. 21 through 56) discuss the currently followed financial and accounting policies including the allocation problems experienced with multiple-purpose projects. The report also contains sections (pp. 59 through 86) that describe, by purpose, the plant in service, its operation, and the related financial information for fiscal year 1956. The construction work in progress at the end of

the fiscal year is described on pages 87 through 90. The scope of audit, opinion of the financial statements, and the financial statements and notes thereto conclude the report.

STATUS OF RECOMMENDATIONS IN PRIOR REPORT

Our report to the Congress on the audit of the Columbia River Power System and Related Activities for the fiscal year ended June 30, 1955, dated November 26, 1956, included recommendations which are repeated in this report. These recommendations are as follows:

Construction cost allocations for multiple-purpose projects where the allocating agency is unspecified by law

Firm and final allocations of construction costs have not been made for 8 of the 11 multiple-purpose projects producing power during fiscal year 1956. The projects lacking a final allocation have been in service for periods up to 5 years. Half of the projects lacking a final allocation have been made subject to the Flood Control Act of 1944 insofar as disposal of power excess to project needs is concerned.

The Flood Control Act of 1944 did not specifically designate the agency responsible for making the allocation of construction costs, although the Corps of Engineers as the constructing agency, the Department of the Interior as the power-marketing agency, and the Federal Power Commission (FPC) as the rate-approval agency all have a direct interest. Neither did the act provide policies or criteria to be applied for allocation of construction costs of multiple-purpose projects.

The Corps of Engineers and the Department of the Interior are attempting to arrive at allocations through a general agreement on allocation methods and have provided for an exchange of information and discussion at field and Washington levels. However, our audit for fiscal year 1956 disclosed that the conditions relating to construction cost allocations for multiple-purpose projects subject to the power-marketing provisions of the Flood Control Act of 1944 were virtually unchanged from those observed in the fiscal year 1955 audit.

We believe that the lack of policies and criteria to be applied in making allocations of construction costs and the existing confusion on responsibility for making these allocations should be resolved by legislative action. Accordingly, we repeat our recommendation that the Congress provide policies and criteria to be applied for making allocations of construction costs of multiple-purpose projects, the results of which serve as the basis for establishing commercial power rates. We are also repeating our recommendation that the Congress designate specifically the agency to make the allocation where one agency is authorized to construct the project and another agency is authorized to market the products of the project. The Congress may wish also to define the role of the Federal Power Commission in these allocations.

As an alternative to specific designation of the agency to make allocations of construction costs, we stated in the report dated November 26, 1956, that the Congress may wish to provide for a final allocation to purposes on projects including power to be made jointly by the Corps of Engineers, the Department of the

Interior, and the Federal Power Commission and reported to the Congress for review and approval. These allocations should be reported for approval about the time project operations are initiated.[1]

Allocations of construction costs to purposes on projects in the Columbia River basin where the allocating agency is unspecified by law are discussed on pages 33 through 37 and pages 40 and 41 of this report.

Construction cost allocations for the multiple-purpose Hungry Horse Project and other related problems

The act of June 5, 1944 (43 U.S.C. 593a), authorizing construction of the Hungry Horse Project, does not specifically provide for certain provisions of reclamation law to be applied to the project by the Bureau of Reclamation. In our report dated November 26, 1956, we stated that Congress might wish to examine this problem and to establish a clear-cut congressional policy on this project and thereby avoid future fiscal problems. Identical

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[1]In a letter dated September 4, 1957, the Assistant Chief of Engineers for Civil Works, Corps of Engineers, reaffirmed the position of the Corps that the substantial and increasing degree of agreement on cost allocation methods and procedures, achieved through the combined efforts of the three Federal agencies primarily concerned, made the matter of agency responsibility for allocations of less importance. The letter also stated that (1) the Corps believes that the problems should be resolved on the basis of interagency understandings and (2) the Chief of Engineers was undertaking to form an interagency work group which would have as one of its objectives the development of mutually satisfactory procedures.

The Administrative Assistant Secretary of the Interior expressed similar views in a letter dated October 30, 1957, stating a belief that, where one agency constructs and another markets, both should participate in making the cost allocation.

bills have been introduced in the Senate and House of Representatives (S. 847 and H.R. 3401, 85th Cong., 1st sess.) which would make the Hungry Horse Project subject to Federal reclamation law.

The Hungry Horse Project is discussed on pages 37 and 38 of this report.

Accounting and financial policies

The financial statements included in this report have been prepared from the official accounting records of the Corps of Engineers, Bureau of Reclamation, and Bonneville Power Administration. Until construction cost allocations to power and nonpower purposes are firm and the Corps of Engineers and the Department of the Interior reach agreement on certain accounting and financial policies, financial statements cannot be presented that fairly show the financial results of operations of the Columbia River Basin Water Resources Program.

We recommended in our report dated November 26, 1956, that the Chief of Engineers and the Secretary of the Interior jointly establish comparable accounting and financial policies and apply practices thereunder uniformly and consistently on:

a. Allocations to power and nonpower purposes of joint costs and expenses of operating and maintaining multiple-purpose projects.

b. Provisions for depreciation on plant in service and allocation of the provision on multiple-purpose plant to purposes.

c. Computing and recording of interest on the Federal investment in commercial power and municipal and industrial water-supply facilities.

The establishment jointly of comparable policies and effective application of them by each agency is necessary before financial

statements can be presented which fairly show the Government's water resources operations.

General agreement has been reached between the Corps of Engineers, Department of the Interior, and Federal Power Commission and concurred in by the General Accounting Office on the use of simple interest during construction and the proportionate method of accounting for the operation of joint facilities on multiple-purpose projects. The Corps of Engineers has reached decisions on certain of the other major accounting and financial policies, but decisions thereon have not been made by the Department of the Interior. Accordingly, the establishment of comparable policies by the Corps of Engineers and the Department of the Interior remains virtually unchanged in status from that in the previous report, and the recommendation is repeated in this report.

Our November 26, 1956, report also recommended that the financial statements be expanded to show the status of repayment of the Federal investment, based on memorandum records for scheduled repayment requirements. The Bonneville Power Administration prepared a schedule of repayment requirements for inclusion in the 1956 financial statements of the Columbia River Power System and Related Activities. However, neither agreement nor disagreement

on the methods used in the computation has been expressed by the Corps of Engineers.[1]

Allocations to power and nonpower purposes of joint costs and expenses of operating and maintaining multiple-purpose projects are discussed on pages 43 through 45. Accounting policies on depreciation, interest, and other matters are discussed on pages 46 through 56.

Costs incurred by Corps of Engineers in preliminary surveys and investigations not included in project costs

Under Corps of Engineers accounting procedures, the cost of preliminary investigations and surveys leading to project construction is not considered a project cost. To provide for an adequate disclosure of total project costs and to permit consideration of all proper costs for allocations of total construction costs to purposes, we recommended in our report dated November 26, 1956, that the Corps of Engineers include an appropriate share of these costs as costs of the project. Our audit for fiscal year 1956 disclosed that the accounting procedures relating to costs of

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[1] In a letter dated September 4, 1957, the Assistant Chief of Engineers for Civil Works, Corps of Engineers, reacknowledged the importance of the matters in question. The letter also stated, with respect to the recommendations on cost and financial accounting practices, that the Chief of Engineers was undertaking to form an interagency work group which would have as one of its objectives the development of mutually satisfactory procedures.

The Administrative Assistant Secretary of the Interior, in a letter dated October 30, 1957, stated that the recommendations on accounting and financial policies made in the November 26, 1956, report, particularly items a, b, and c, were still under consideration by the Department.

preliminary investigations and surveys have not changed; accordingly, the recommendation in our previous report is repeated.[1]

Treatment of preliminary surveys and investigations costs in the accounting records is covered on pages 50 through 52.

NEW RECOMMENDATION IN THIS REPORT

In this report we are including a new recommendation as summarized below:

Construction cost allocations for the multiple-purpose McNary Dam Project

McNary Dam Project is one of the eight multiple-purpose projects in the Columbia Basin lacking a firm and final allocation of construction costs. Authorizing legislation made McNary Dam Project subject to the Bonneville Project Act for power-marketing purposes.

The Bonneville Project Act assigns responsibility for allocating construction costs to the Federal Power Commission. The Commission made a tentative allocation of McNary Dam Project costs in an interim report issued December 4, 1953. A firm and final allocation has not yet been made, although McNary Dam Project has been producing power since fiscal year 1954.

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[1]The letter dated September 4, 1957, from the Assistant Chief of Engineers for Civil Works stated that the Chief of Engineers was undertaking to form an interagency work group which would have as one of its objectives the development of mutually satisfactory cost and financial accounting procedures.

The Administrative Assistant Secretary of the Interior has previously concurred with the policy expressed in this recommendation.

We are recommending to the Federal Power Commission that the Commission make a final allocation of McNary Dam Project costs as soon as practicable.[1]

Allocation of McNary Dam Project construction costs is discussed on page 37.

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[1] The Federal Power Commission has informed us in a letter dated August 5, 1957, that the Commission intends to reconsider its interim cost allocation for the McNary Dam Project when final cost data and revised navigation benefits become available from the Corps of Engineers. The revised navigation benefits are being developed by the Corps in connection with a review of the "308" report published as House Document 531, 81st Congress. This review was scheduled for completion late in 1957, but the completion date has been extended.

THE COLUMBIA RIVER BASIN

AND ITS WATER RESOURCES POTENTIAL

With a total area of about 220,000 square miles, the United States portion of the Columbia River basin comprises most of the region known as the Pacific Northwest and constitutes approximately 7 percent of the total area of the Nation. It embraces most of Washington, Oregon, and Idaho, a considerable area in Montana, and small portions of Nevada, Utah, and Wyoming. An additional 39,000 square miles extend into Canada on the north.

The major framework of the basin is established by a few primary physical features. On the east the broad north-south trending Rocky Mountains constitute the chief source of water supply of the Columbia and three of its largest tributaries--the Kootenai, Pend Oreille-Clark Fork, and Snake Rivers. In Canada, the portion of the basin extending from the Rocky Mountains to the western boundary, formed by the Fraser Plateau and the Monashee Mountains, is a predominately mountainous area cut by narrow valleys which form the drainage outlets. Westward from the Rockies in the United States are the Columbia Plateaus through which the Columbia and Snake flow in deeply incised canyons. These plateaus are bounded on the west by the Cascade Range, through which the Columbia has cut the gorge which bears its name. Between the Cascades and the lower Coast Range lies the southern part of the Puget Trough, a lowland along which the Willamette, Lewis, and Cowlitz Rivers flow to the Columbia from sources in the Cascades.

The entire basin is located in the belt of prevailing westerly winds whose direction and moisture content vary with the seasons. In the winter months strong, moisture-laden air masses flow into this area from the southwest. These air masses are cooled as they rise over the Coast Ranges, the Cascades, and the Rocky Mountains and the resulting condensation causes rain or snow on the higher elevations. Conversely, the same air masses are warmed as they move down from the crest of the Cascades, with the result that the annual precipitation over a major part of the basin interior is generally low. The interior areas of high altitude that have the most precipitation usually receive it as snow during late fall and winter months and retain it until the spring runoff. That part of the basin west of the Cascades, however, has much higher annual precipitation and receives most of it in the form of rain.

During the spring and summer months the intensity of the southwesterly winds declines and low humidities, less cloudiness, higher temperatures, and more sunshine generally prevail throughout the basin.

The interplay of basin topography and atmospheric conditions has given the region a huge water potential. But, at the same time, the greater part of the precipitation is not on land physically suited to agriculture, but high on rugged mountain terrain. The precipitation comes not during the growing season, but in the

colder winter months. The water does not flow steadily to the Pacific within the river channels, but in surges which overtop the banks and flood the valleys. The descent to the sea is not gradual and uniform but is turbulent and beset with snags, bars, and rapids. And, most important, the potential energy represented by the vast weight of water moving down from the mountain and plateau heights is of no benefit without the hydroelectric plants to utilize it.

To harness the water potential of the basin, the Federal Government has undertaken a comprehensive scheme of development which has as its core the main control plan of the Corps of Engineers. Through the Corps of Engineers, Department of the Army, and the Bureau of Reclamation and Bonneville Power Administration, Department of the Interior, the Federal Government has constructed, and in many cases operated and maintained, a variety of facilities designed to serve the beneficial purposes of power, irrigation, flood control, navigation, and municipal water supply. This report is intended to present, in financial terms and on a consolidated basis, the coordinated, and to a great extent interrelated, water resources activities of these three agencies in the Columbia Basin.

THE PATTERN OF WATER RESOURCES DEVELOPMENT

Over the many years since the white man first came to the Columbia Basin, utilization of basin water has advanced from a preoccupation with immediate needs to planned development on a scale equal to the tremendous water resources potential. There are several early dates to be noted in this evolution, such as 1867, the date of the first Federal navigation work in the basin, or 1902, the date of the first reclamation law, but none is so significant as the year 1932 which marked the publication of the first planning report with ultimate, maximum resource development as a primary consideration. The subsequent paragraphs review the water resources development to 1932 and the basin planning since that time. Water resources development as it existed June 30, 1956, is taken up under the sections of the report dealing with operations for the fiscal year.

WATER RESOURCES DEVELOPMENT PRIOR TO 1932

Transportation is an early concern in the settlement of a new area, and for the 35 years from 1867 to 1902 navigation was the sole water resource benefiting from improvements undertaken by the Federal Government. In 1902, the Federal interest was extended to irrigation and a number of such projects were constructed. Hydroelectric power development and flood control were left to non-Federal undertaking. The navigation, irrigation, power, and flood control activities are taken up in order of their relative importance during the years prior to 1932.

Navigation

Prior to Federal intervention, boats using the rivers of the Columbia Basin had to contend with these streams in their near natural state. The first major obstacle lay at the mouth of the Columbia where the rapidly shifting channels provided depths of only 18 to 19 feet at low water. Getting across the bars at this point frequently involved waiting periods of 10 to 30 days or sailing with a less-capacity cargo.

Once over the bars at the river mouth, river traffic could move relatively unimpeded to St. Helens, Oregon, a point 85 miles upstream from the sea. The United States Engineer Officer at Portland gives a good description of the St. Helens situation in his 1871 report.

> "The British iron ship Dorenby *** in port now *** grounded on the St. Helens Bar, and was brought into port only by lightering *** The American bark Garibaldi, just arrived with a full cargo from China, was delayed for some time on the St. Helens Bar *** The British ship Bristolian, drawing 19 feet of water is now in the

> mouth of the Columbia River, and steamboats are going down from here, a distance of 110 miles to lighter her ere she can ascend the river to this point. All these ships are chartered to take return cargos, one-half of which they will take at the wharves of this city, then dropping down below St. Helens, a distance of 35 miles, will there receive the remainder from steamboats."

Nor was this the last obstacle according to the 1871 report. A bar at the mouth of the Willamette River (mile 100 on the Columbia), which had been improved somewhat by emergency dredging, still provided a hazard for river traffic, a preponderance of which left the Columbia at this point for Portland. A similar bar on the Willamette River at Portland (Swan Island Bar) furnished a final obstacle for the Pacific-to-Portland shipping.

In 1867 the absolute limits for continuous navigation from the Pacific Ocean were determined by Willamette Falls (12 miles above Portland) on the Willamette and by the Cascade Rapids on the Columbia, 150 miles from its mouth. The use of privately constructed portage wagon roads, tramways, and eventually a steam portage railway, served during these early years to move passengers and freight around Cascade Rapids and around The Dalles and Celilo Falls some 40 to 50 miles further upstream. Light draft navigation was then possible as far inland as Lewiston on the Snake River.

The first Federal navigation project in the basin introduced a period of single-purpose navigation development that was to last until the 1932 Corps report on comprehensive development of all basin water resources. During these 65 years, a number of Federal projects for dredging and the construction of dikes and jetties brought the tidal waters of the Columbia and Willamette Rivers to approximately their present state of navigability. Federally constructed canals and locks by-passed the Cascade Rapids, The Dalles, and Celilo Falls on the Columbia and extended a measure of navigation beyond tidewater, but feasibile navigation improvement of the river above tidewater for modern barge traffic proved beyond the reach of the single-purpose project.

By 1932, ships entering the Columbia at its mouth were assured, through dredging and jetty construction, a fixed channel with a 40-foot depth and a width of 1/2 mile. Proceeding upstream, a 30-foot channel was provided to the junction of the Willamette and Columbia Rivers, and thence up the Willamette to Portland. From the junction of the Columbia and Willamette, a 25-foot channel was available to Vancouver. A project modification calling for a 35-foot channel between Portland and the sea was about 85 percent completed.

Navigation improvements effected on the Columbia River above tidewater, prior to 1932, had proven something less than successful. Controlling depths were 8 feet in the locks and canals at

Cascade Rapids, The Dalles, and Celilo Falls, and about 4 feet over the shoals upstream to the mouth of the Snake River. Because of the shallow depths and swift currents, including the currents at the approaches to the locks at Cascade Rapids, river commerce between the head of the tidal section and the mouth of the Snake was practically nonexistent.

A lock and canal at the Willamette Falls had been constructed, and this by-pass, in conjunction with channel and other improvements, provided low-water depths of 6 to 7-1/2 feet to Oregon City and 2 to 2-1/2 feet from there to Salem on the Willamette and McMinnville on the tributary Yamhill. Other basin navigation improvement was generally restricted to minor work on such rivers as the Lewis, Cowlitz, and Lake for log-raft commerce.

Irrigation

In the Columbia Basin east of the Cascades, most of the land physically suited to agriculture receives insufficient rainfall for crops other than wheat or grass. The earliest settlers in the basin met this problem through irrigation where circumstances were favorable. Small tracts onto which water could be diverted from nearby streams--notably the Yakima and Walla Walla Rivers in Washington, the Powder and John Day Rivers in Oregon, and the Bitterroot River in Montana--were the first to be developed. By 1890, almost all suitable lands in this category were taken up and irrigation was being practiced on over 300,000 acres of basin land.

The Reclamation Act of 1902 opened the way for Federal irrigation construction in the Columbia Basin and elsewhere. In the 30 years that followed, a number of essentially single-purpose Federal projects were undertaken by the Bureau of Reclamation. These projects, in most cases, added to, improved, or superseded some limited non-Federal development. Projects authorized and receiving basin water during the period 1902 to 1932 were:

Project	Authorization	Location	Acreage
Baker	President, 1931	Oregon	5,598
Bitter Root	Act of July 3, 1930	Montana	15,825
Boise	Secretary of the Interior, 1905	Idaho-Oregon	289,389
King Hill	Act of June 12, 1917	Idaho	7,042
Minidoka	Secretary of the Interior, 1904	Idaho-Wyoming	752,854
Okanogan	Secretary of the Interior, 1905	Washington	3,564
Owyhee	President, 1926	Oregon-Idaho	-
Umatilla	Secretary of the Interior, 1905	Oregon	11,533
Vale	President, 1926	Oregon	4,915
Yakima	Secretary of the Interior, 1905	Washington	277,963

Water was delivered to project lands by means of gravity and combination gravity-pumping facilities, and, in most cases, increased irrigation water was made available by construction of storage facilities. At Minidoka and Boise Projects, small hydroelectric plants were constructed in connection with Minidoka Dam and the Boise Diversion and Black Canyon Dams, primarily to produce irrigation pumping power.

Hydroelectric power

Hydroelectric development in the Northwest began near the end of the 19th century. The earliest projects were developed by local private utilities and a few municipalities. Notable examples are the installations at Willamette Falls, Oregon, in 1897, which were associated with the first long-distance transmission of alternating current in the United States, and Seattle's Cedar Falls plant, completed in 1904 and believed to be the first municipal hydroelectric plant in the United States. By 1930, the almost exclusively non-Federal development in the Columbia River basin was still less than 2,000,000 kilowatts of capacity and the minor generating facilities at the Minidoka and Boise Projects of the Bureau of Reclamation represented the only Federal power in the basin.

Flood control

Early basin-wide floods caused comparatively little damage because of the limited economic development at the time of occurrence. As development of the basin progressed, the damages caused by floods of even moderate magnitude increased accordingly. Flood protection levees were built in various localities by individual property owners, groups, or local agencies. Federal participation in basin flood control activities did not begin until 1936.

COMPREHENSIVE WATER RESOURCES PLANNING SINCE 1932

The first Corps of Engineers "308" report on the Columbia Basin, submitted to Congress in several parts during the years 1930 to 1933, signaled a new Federal approach to basin water resources development.[1] From 1867, the date of the earliest

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[1] "308" reports and their authorization: The River and Harbor Act of March 3, 1925, directed the Chief of Engineers to prepare and submit to Congress an estimate of the cost of surveying the major navigable streams and their tributaries throughout the United States where power developments appeared feasible, with a view to navigation development in combination with power, flood control, irrigation, and other uses. A report containing such an estimate was submitted April 7, 1926, and published as H. Doc. 308, 69th Cong., 1st sess. The identification number of this House Document has served as a short title for a series of reports on various river basins of the United States, including the Columbia.

navigation work in the basin, Federal water resources planning had been on a project-by-project basis and the work was generally confined to navigation improvements in the lower Columbia and Willamette Rivers and irrigation along the Yakima and Snake Rivers. In contrast to these early years, the over-all Federal program since the first "308" report has looked forward to a coordinated system of major projects which would eventually achieve a maximum in control and utilization of basin water. During the past 25 years, power generation and flood control have joined with navigation and irrigation as important spheres of Federal activity and the so-called multiple-purpose project has come into its own.

The comprehensive plan of 1932

This early "308" report had as its stated purpose the "formulation of general plans for the most effective improvement of the river for the purposes of navigation and the prosecution of such improvement in combination with the most efficient development of the potential water power, the control of floods and the needs of irrigation." From the studies made, it was concluded that the most feasible plan for ultimate utilization of the resources of the Columbia River would be:

1. A system of 10 dams along the main stream at:

"308" reference	Present name
Head of Grand Coulee, Wash.	Grand Coulee, Columbia Basin Project (USBR)
Foster Creek, Wash.	Chief Joseph (Corps)
Chelan, Wash.	-
Rocky Reach, Wash.	-
Rock Islands Rapids, Wash.	Rock Island (non-Federal)
Priest Rapids, Wash.	Priest Rapids and Wanapum (non-Federal)
Umatilla Rapids, Oreg.	McNary (Corps)
John Day Rapids, Oreg.	-
The Dalles, Oreg.-Wash.	The Dalles (Corps)
Warrendale, Oreg.-Wash.	Bonneville (Corps)

2. Provision for locks through the dams below the mouth of the Snake to be installed simultaneously with the construction of those dams.

3. Additional dams, with locks, for navigation only, above the mouth of the Snake and two low navigation dams with locks between the mouth of the Snake and the Priest Rapids site, to be built when justified by prospective traffic.

4. Irrigation on a large scale by pumping from the river at the Grand Coulee and similar irrigation on a smaller scale at some or all of the other sites.

5. Maintenance, strengthening, and possible extension by local interests of the flood control works which they have built in the tidal section of the river.

The benefits that would accrue from storage and regulation at the Hungry Horse and Albeni Falls sites were recognized, as were the power potentials of the Willamette and Snake River subbasins. However, the first "308" report generally refrained from making specific recommendations in regard to power development which could not be prosecuted "in combination" with navigation improvements.

The comprehensive plans of 1950

Two factors contributed heavily to the early obsolescence of the 1932 report as a comprehensive guide for basin water resources development. The first of these related to the scope of the proposed plan which was limited to improvements that could be prosecuted in combination with navigation. The second was the rapid and unforeseen economic expansion in the basin during subsequent years. Together, these two factors account for the report views that flood control was a minor interest and susceptible of easy solution through local levee construction and that a market for most of the basin's potential hydroelectric power would not materialize in the near future. Accordingly, the implementation of the original report had hardly begun before a number of flood control studies were made which led to authorization of levee improvements along the lower Columbia River and a general comprehensive scheme of flood control and power works in the Willamette subbasin.

The statement of Federal flood control policy by the Flood Control Act of 1936, in conjunction with the demands for flood protection and power generation of the expanding economy, eventually led to a more thorough and up-to-date appraisal of the basin situation. Acting under a resolution by the Senate Committee on Commerce, adopted in September 1943, the Corps of Engineers undertook a review of the earlier comprehensive plan. The resulting "308" review report was transmitted to the Congress in February 1950 and published as House Document 531, Eighty-first Congress.

The philosophy underlying the 1950 version of the "308" report differed substantially from that which governed the preparation of its predecessor. Navigation was no longer considered a necessary ingredient of projects to be recommended for construction. Flood control advanced from a "minor interest" to one of the "immediate and more urgent needs," and the earlier concern over potential power market was replaced with the optimistic inclusion of major power facilities on all major dams presented in connection with the flood control and navigation aspects of the main control plan. The comprehensive plan put forth by House Document 531 was not approved by the Congress, but many of the projects included in the plan were authorized for construction by the Flood Control Act of 1950.

A second comprehensive plan of water resource development in the Columbia Basin, prepared by the Bureau of Reclamation, was published in 1950. Printed as House Document 473, Eighty-first Congress, the plan was based on a report of the Regional Director dated June 28, 1946, and, like the Corps report, gave recognition to navigation, flood control, power, and irrigation needs.

The reports of the Corps of Engineers and the Bureau of Reclamation were coordinated during preparation at the regional and divisional levels, and differences in over-all physical plans were reviewed and resolved. Projects in the respective plans were reviewed also from technical and engineering standpoints, and agreements were reached. Consideration was given to plans of the Bonneville Power Administration.

A map of the Columbia River basin showing the major projects in service at the end of fiscal year 1956 will be found on page 58. Facilities presently in operation, facilities under construction, and their relationship to the over-all plans are discussed in some detail under sections of this report dealing with fiscal year 1956 operations and construction work in progress.

MULTIPLE-PURPOSE DEVELOPMENT

The term "multiple-purpose project" has been used a number of times in the preceding review of basin history, and some exploration of its full meaning is desirable as a preliminary to the balance of the report. The typical multiple-purpose project has as its nucleus a dam and a reservoir which jointly serve two or more purposes. The dam and reservoir provide two conditions necessary for water resources development--storage and head.

Storage capacity may serve any one or all the basic purposes. It does so in the following manner:

1. Flood control storage acts as a hydraulic shock absorber, accumulating the surges of upstream flood water and permitting regulated release within the capabilities of downstream river channels.

2. Power storage makes it possible to run a large proportion of the total river flow through the generating facilities of the power system when needed as opposed to spilling all river flow in excess of the instant power requirements.

3. Irrigation storage serves to make maximum consumptive use of the natural flow by holding the water until the agricultural growing season. Municipal water supply storage also serves to make water available consistent with the need.

4. Navigation storage permits the regulated release during low-water periods necessary to maintain minimum channel depths downstream. It also provides slack water and channel depth in the reservoir pool.

Head is primarily associated with the at-site generation of power although it is in many cases an essential condition of irrigation development as well.

1. Power potential of a given quantity of water is roughly proportional to the distance through which it falls. A dam serves to localize the natural head of the river, and the head is measured from the top of the reservoir pool to the water level at the base of the dam.

2. Head is necessary for the operation of gravity-type irrigation works, and in some cases, where pumping is from a reservoir pool, the head provided by the dam for other purposes indirectly benefits irrigation by reducing the pumping lift.

The typical multiple-purpose project, in addition to the multiple-purpose facilities, might include such specific-purpose facilities as a navigation lock, a power house, or irrigation canals, pumps, and laterals.

One of the financial management problems raised by the multiple-purpose project has been the allocation of project costs, particularly the cost of multiple-purpose facilities.

FINANCIAL POLICIES

The basic policies governing financial management of the major water resources functions are found in a wide range of congressional legislation. Where legislation has been silent, administrative determinations, reinforced over the years by custom and usage, have expanded on the legislative directives. These policies are so material to a report centering about financial administration and financial statements that an early discussion of them is desirable.

REIMBURSABLE AND NONREIMBURSABLE FUNCTIONS

In the broadest classification, power, irrigation, and municipal water-supply activities are styled as "reimbursable," while flood control and navigation activities come under the heading of "nonreimbursable." These are reasonable generalizations sufficient for many purposes. But, for a closer financial scrutiny, a simple division of water resources activities between reimbursable and nonreimbursable would constitute oversimplification. Local interests, for example, are sometimes called upon to bear a part of the costs for "nonreimbursable" flood control and navigation projects. Irrigation costs are generally reimbursable, but subject to the important qualification that they are reimbursed by power revenues to a greater extent (in the Columbia Basin) than by collections from irrigators. It then follows that power is more than reimbursable, having to meet certain irrigation subsidy requirements as well as its own costs. These and other considerations are discussed in the succeeding paragraphs.

Commercial power

Ninety-nine percent of the commercial power produced by the Federal Government in the Columbia River basin originates with a group of projects interconnected by the transmission facilities of the Bonneville Power Administration and known collectively as the Columbia River Power System. The Administration, which acts as marketing agent for the System, has the responsibility of fixing commercial power rates at a level which will, over a number of years consistent with the requirements of law, insure repayment of the investment in commercial power and the investment in related irrigation activities assigned for repayment from commercial power revenues.

Repayment requirements for the Columbia River Power System are found in the varying provisions of the several acts authorizing construction and in the administrative interpretations thereof. Accordingly, System power rates are based upon a composite of the requirements of these acts applied to the individual projects and the Bonneville Power Administration. An allocation of System power receipts among the generating projects and the Administration, designed to satisfy their respective requirements, is made annually pursuant to agreements reached by the Administration with the Corps of Engineers and the Bureau of Reclamation.

The rate and repayment requirements established by law or administrative policy pursuant to law for the individual projects and the Administration are given in the following paragraphs.

Bonneville Dam Project, Bonneville Power Administration, and McNary Dam Project. The Bonneville Project Act provides that rate schedules shall be drawn having regard to the recovery of the cost of producing and transmitting electric energy excess to project needs, including the amortization of the capital investment over a reasonable period of years. This provision of the Bonneville Project Act was also applied to McNary Dam by the authorizing legislation.

In determining the rate and repayment requirements for the Bonneville Dam Project, the Bonneville Power Administration, and the McNary Dam Project, the "cost of producing and transmitting electric energy" is the same cost, exclusive of depreciation, as is used in preparing the accompanying financial statements. The amortization of the capital investment over a reasonable number of years has been administratively determined to be the recovery, during the periods of their respective service lives, of the original cost of the power facilities having lives of less than 50 years and the amortization of the remainder of the capital investment in power facilities over a period of 50 years subsequent to the "in service" date of such facilities.

The Corps of Engineers has not yet agreed or disagreed with the methods used by Bonneville Power Administration in calculating repayment requirements for the Bonneville and McNary Dam Projects but expects this matter to be discussed by a newly established interagency work group.

Albeni Falls, Detroit-Big Cliff, Lookout Point-Dexter, and Chief Joseph Projects. Rate and repayment requirements for these projects are governed by section 5 of the Flood Control Act of 1944. The provisions of this section are similar to the corresponding provisions of the Bonneville Project Act and state that rate schedules shall be drawn having regard to the recovery of the cost of producing and transmitting electric energy excess to project needs, including the amortization of the capital investment over a reasonable period of years. The act of July 27, 1954 (68 Stat. 568), authorized the Secretary of the Interior to construct irrigation facilities comprising the Foster Creek Division of the Chief Joseph Project under reclamation law and provided that excess power revenues should be used to assist in repayment of the irrigation investment.

Rate and repayment requirements for these projects have been determined by Bonneville Power Administration in the same manner as for Bonneville Dam Project, McNary Dam Project, and the Administration. It has been assumed in determining

the requirements that the assistance in repayment of the irrigation investment in the Foster Creek Division of the Chief Joseph Project will not be required until after repayment of the project commercial power investment.

As in the case of Bonneville and McNary Dam Projects, the Corps of Engineers has not yet agreed or disagreed with the methods used by Bonneville Power Administration in calculating repayment requirements.

Hungry Horse Project. Construction of Hungry Horse Dam and Reservoir was authorized by the act of June 5, 1944 (43 U.S.C. 593a). The act made no provision for allocations of cost, rate and repayment criteria, or the application of revenues. There has been a question as to whether the Hungry Horse Project is subject to the requirements of reclamation laws, including the rate and repayment requirements of section 9 of the Reclamation Project Act of 1939. Identical bills have been introduced in the Senate and House of Representatives (H.R. 3401 and S. 847, 85th Cong., 1st sess.) which would make the Hungry Horse Project subject to Federal reclamation law.

The interest rate and other financial data used by the Bonneville Power Administration in determining the investment to be repaid are not consistent with that used in the preparation of the financial statements. Commercial power investment for repayment purposes includes interest at 2.5 percent during construction and on net investment during operations, as opposed to the investment used in the official accounting records of the Bureau of Reclamation which includes interest at 3 percent on net commercial power investment during operations only. Otherwise, rate and repayment requirements for this project have been determined in the same manner as for Bonneville Dam Project and other projects of the Corps of Engineers.

Columbia Basin Project. Reclamation law, as supplemented, and Executive Order 8526 require that payments be made into the reclamation fund of the United States Treasury, for the account of Columbia Basin Project, of such revenues received by Bonneville Power Administration from the sale of electric energy as may be properly allocable to the project. By agreement between Bonneville Power Administration and the Bureau of Reclamation, entered into to effect these requirements, the Administration is making payments which will, together with revenues from other sources credited to power, over a period of 80 years equal:

1. Operation, maintenance, and replacement of facilities allocated to commercial power.

2. Interest at 3 percent on unamortized investment in facilities allocated to commercial power.

3. Investment in commercial power facilities.

4. Assistance to irrigators in repaying the investment in irrigation, estimated to require about $470,000,000.

The rate and repayment study by the Bureau of Reclamation indicates that commercial power investment will be repaid 33 years after installation of the first generator, or about the year 1975. Net power revenues after that date are expected to render the assistance necessary to repay all irrigation costs by the year 2022, which is 50 years after the last block of land is scheduled to receive water.

Yakima Project (Kennewick Division). Rate and repayment requirements for the Kennewick Division of the Yakima Project are governed by the Reclamation Project Act of 1939 and the authorizing act of June 12, 1948 (62 Stat. 382). The latter act provides an over-all pay-out period of 66 years for the reimbursable investment in power and irrigation, with power revenue assistance to irrigators in repayment of the irrigation investment. It provides also for an interest return of not less than 2.5 percent on the unpaid balance of the commercial power investment and permits the inclusion of one fifth of such interest in the net power revenues assigned to assist water users in repaying irrigation investment.

Repayment of investment in commercial power is expected to require 38 years, and net revenues after that date are to render the assistance necessary to repay the irrigation investment (about $4,500,000) over the remaining 28 years of the project pay-out period.

Since 1938, the Bonneville Power Administration has marketed Columbia River Power System energy on the assumption that a basic wholesale rate of $17.50 per kilowatt-year would be sufficient to meet the above rate and repayment requirements. It is practicable and desirable to compare, at interim dates, the repayment of commercial power investment achieved through the current power-rate levels with a scheduled repayment that assures ultimate compliance with the rate-setting criteria of law or administrative policy pursuant to law. The Administration has prepared such a comparison for projects and transmission facilities of the System at June 30, 1956, and has ascertained that the $17.50 rate level has produced funds somewhat in excess of repayment requirements:

Funds applied to repayment of the capital investment	$202,178,224
Scheduled repayment requirements	125,032,739
Excess repayment over schedule	$ 77,145,485

It is anticipated by the Administration, however, that, as additional amounts of higher cost generation and related transmission facilities are placed in operation, this trend will be reversed and that ultimately an upward adjustment of the rate level may be necessary.

The Boise and Minidoka Projects are not integrated with the Columbia River Power System, and the relatively minor amount of commercial power generated by these projects is marketed by the Bureau of Reclamation. Rate and repayment arrangements for these projects are:

Boise and Minidoka Projects. Commercial power rate and repayment requirements for the Boise and Minidoka Projects are governed by the Reclamation Project Act of 1939. The Bureau of Reclamation interprets section 9(a) of the act as requiring the repayment in full of all reimbursable costs of the projects, including power investment, irrigation investment which is to be repaid by the water users, and the irrigation investment which is beyond the ability of the water users to repay and is, therefore, assigned for repayment out of power revenues. Section 9(c) of the act requires recovery of an appropriate share of the annual operation and maintenance cost, interest on an appropriate share of the construction investment at not less than 3 percent per annum, and such other fixed charges as the Secretary deems proper.

Rates have been set at a level which is expected to recover commercial power investment in the Anderson Ranch Dam, and other electric facilities of the Boise Project in service since 1951, by the year 1966, together with interest at 3 percent on the unamortized balance. The repayment of commercial power investment in 15 years will permit net power revenues of the Boise Project to render $12,651,688 in repayment assistance to irrigators between the years 1966 and 1998.

Rates will repay commercial power investment of the Minidoka Project (represented by generating unit 7 which was initially placed in service in 1942) by the year 1966, together with interest on the unamortized balance at a rate of 3 percent. The Bureau of Reclamation does not prepare scheduled pay-out requirements for comparison with realized returns.

The composite effect of the factors that go into determining the general level for commercial power rates, such as the different interest rates, the various repayment periods, and the several subsidies to irrigation, is not easily judged. The only means by which the effect of these factors can be reduced to commonly understood terms are financial statements based on a sound depreciation policy and other generally accepted accounting principles.

To the extent that rates are set at a level requiring the return of commercial power investment in less than service lives of facilities, and to the extent that rates must furnish a subsidy to irrigation, the revenues produced must exceed current power operating costs including provisions for depreciation based on service life. In short, the financial impact of the rate factors and their application are expressed in terms of dollars and cents by the annual and accumulated net revenues from power operations. Unfortunately, the financial statements included in this report do not present such a summary of the effects of repayment policies and their application through lack of sound and consistent accounting practices, particularly with respect to Bureau of Reclamation projects.

Irrigation

The basic financial philosophy underlying the reclamation program is that irrigation costs should be repaid the United States without interest. The reimbursable nature of irrigation costs was expressed in the first reclamation act (1902) which provided that project costs should be recovered in annual installments, not to exceed ten, with the monies to be derived from levies on project acreage. Subsequent legislation has reaffirmed this philosophy. However, there have been important modifications in general repayment requirements since the original act, as well as special legislation affecting reimbursement for individual projects.

Section 4 of the Fact Finders' Act of 1924 marked the first departure from absolute reimbursability. Cost and expenses of the main office of the Bureau at Washington and the cost and expense of general investigations were authorized as nonrepayable to the reclamation fund by water users. Section 4 also provided that the Secretary be authorized to survey projects (1) where, due to soil infertility, inadequate water supply, or other physical causes, settlers were unable to pay construction costs or (2) whenever the cost of a reclamation project had been charged upon a smaller area of land than the total area of land under the project, for reporting to the Congress with his recommendations. Since that time, Congress has provided relief in the case of a number of projects, although charge-offs in the Columbia Basin have been relatively insignificant.[1]

Periods allowable for repayment of reimbursable irrigation construction costs have been considerably revised since 1902. Where the 1902 act specified repayment over a period of not more

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[1]To June 30, 1956, construction costs of $5,664,574 had been declared nonreimbursable by acts of Congress. Operation and maintenance costs amounting to $411,662 had also been charged off by Congress.

than 10 years, the Reclamation Act of 1939 allows 40 years, in addition to a development period of not more than 10 years. The 1939 act permits the option of water rental contracts for repayment of water-supply works cost allocated to irrigation with no limit on the repayment period. The latter type of contract has had only limited use in the Columbia Basin.

Perhaps the most important modification of irrigation repayment philosophy, insofar as Columbia Basin is concerned, is the concept of using power revenues to assist the water users in repaying irrigation costs. The Reclamation Act of 1939, as interpreted by the Bureau of Reclamation, provides that amounts "properly allocated to irrigation" and the amounts that can "probably be repaid by the water users" need not be the same. Under this interpretation, revenues from power have been applied to repay a portion of the construction costs allocated to irrigation. In the Columbia Basin, power revenues carry the bulk of the irrigation repayment load.

The plant costs allocated to irrigation totaled $442,360,338 at June 30, 1956. An additional $354,435,421 in irrigation construction costs will be subject to repayment when these projects are brought to completion. The estimates of ultimate cost and the anticipated repayment arrangements at June 30, 1956, are summarized in the following table:

Ultimate costs allocated to irrigation on existing projects		$796,795,759
Less:		
Construction costs not recoverable under acts of Congress	$5,664,574	
Other credits, including contributions in aid of construction	3,646,387	9,310,961
Repayable cost allocated to irrigation		$787,484,798
With payment anticipated from these sources:		
Power revenues (note a)		$518,339,591
Water users repayment contracts		257,720,934
Water rental contracts and other revenues		11,424,273
Repayable cost allocated to irrigation		$787,484,798

[a]Bureau of Reclamation average rate and repayment studies do not isolate net revenues of irrigation pumping from net revenues of commercial power operations. This precludes a precise determination of the assistance from commercial power to irrigation. Irrigation power revenues during project pay-out periods will amount to about $83,000,000. The assistance from commercial power therefore becomes $518,339,591 less the amount by which the $83,000,000 exceeds related operation, maintenance, and replacement expense of irrigation pumping operations.

Repayment assistance to water users of the Columbia Basin, Chief Joseph, Yakima, Boise, Palisades and Michaud Flats, Minidoka, and Deschutes Projects is provided by the power revenues accruing or allocated to those projects. With the exception of Yakima, Minidoka, and Deschutes Projects, assistance does not begin until all commercial power investment has been repaid. The assistance required by individual projects and the periods during which it is scheduled to occur, where applicable, are as follows:

Project	Assistance from power revenues	Fiscal years
Columbia Basin	$473,771,700	1975-2023
Chief Joseph	2,086,100	2006-2007
Boise	443,651	1939-1951
Boise	12,208,037	1966-1998
Palisades and Michaud Flats	19,544,790	1978-1996
Yakima	8,891,754	1957-2022
Minidoka	1,250,390	-
Deschutes	143,169	-
Total	$518,339,591	

Legislation authorizing the Kennewick Division of the Yakima Project provided for an interest return of not less than 2.5 percent on the unpaid balance of the commercial power investment and permitted the inclusion of one fifth of such interest in the net power revenues assigned to assist water users in repaying irrigation investment. The assistance, therefore, begins in 1957, the first full year of operation.

Minidoka Project is the subject of some special arrangements. The Fact Finders' Act of 1924 provided that the accumulated net profits derived from operation of the Minidoka Project power plant (units 1-6) should accrue to the benefit of the water users. Inasmuch as the power plant cost is primarily covered by water-user payment contracts, accumulated net revenues have been applied to construction maturities, operation and maintenance assessments, plant improvements, and reserves for future replacements of power plant facilities. The excess of income over expense through 1956 is $4,234,792 of which the Bureau has reserved $295,436 for future replacements. Of the remaining $3,939,356, accumulated net revenues of $1,250,390 have been identified with the cost of improvements to the units 1-6 facilities, and the balance has been applied to the various obligations of the water users to the United States.

At Deschutes Project, the Bureau installed an additional power unit for the Cove Plant of the Pacific Power and Light Company to compensate for reduced power output due to decreased stream flow during the storage season. Revenue from the sale of power during the irrigation season (off-season power accrues to

PP&L) is being applied to repayment of the cost, the repayment to date being $143,169. When and if the Crooked River irrigation development is constructed, the unit will furnish pumping power to that area and the remaining costs will be covered by water-user repayment contract.

Flood control

The Federal flood control program is generally referred to as a nonreimbursable activity. Federal funds expended on behalf of flood control developments are not returned to the Treasury through assessment of non-Federal sources or from excess power revenues generated by related power development. Where some local contribution toward project construction or operation is required by law, that contribution takes the form of direct local expenditure, as opposed to meeting all project costs from Federal funds initially and later requiring some reimbursement.

Existing general flood control law provides that, for local flood protection work, local interests shall, as minimum requirements of local cooperation, furnish, free of cost to the United States, all lands and rights-of-way required, alter or relocate highway bridges and certain other public utilities, hold the United States free from damages, and undertake to maintain and operate the project after completion.

The first general flood control act (1936) required similar local cooperation for reservoirs, but it was not practicable to obtain assurances for provisions of lands and relocations from distant downstream communities and areas and it was unfair to place the entire burden on people in the reservoir areas who would in general obtain lesser benefits from the projects. These practical considerations and the urgent necessity for proceeding with the work led Congress to provide in the Flood Control Act of 1938 that, in general, reservoirs would be constructed entirely at Federal cost and would be operated and maintained by the Federal Government.

Navigation

Navigation is similar to flood control in matters of financing and is classified as a nonreimbursable activity. Like flood control, Federal funds expended are not returnable to the treasury from non-Federal sources, and, like flood control, local responsibilities are met by direct expenditure of local funds. Local participation requirements on navigation projects are a little more flexible than those prescribed for flood control.

Navigation law prescribes that every navigation report submitted to Congress shall contain a statement of the respective general and local benefits and of the amount of local cooperation that should be required, if any, on account of such special or local benefit. Such cooperation may include such matters as

provision, without cost to the United States, of all lands, easements, and rights-of-way; holding and saving the United States free from all claims of damages; providing and maintaining at local expense adequate public terminal and transfer facilities open to all on equal terms; accomplishing, without expense to the United States, alterations and maintenance of sewer, water-supply, drainage, and other utilities; making necessary changes in highways and highway bridges and approaches and assuming their subsequent operation; and making a suitable cash contribution toward the first cost of the project when deemed warranted and appropriate.

SOURCE AND APPLICATION OF FUNDS

Preceding paragraphs have discussed the basic financial policies governing the various water resources activities. The statement presented here is intended to demonstrate the financial mechanics involved in carrying out these policies. Explanatory notes are given immediately following the statement.

Source of Funds, Fiscal Year 1956

Line		
	Appropriations by the Congress:	
1	Construction and rehabilitation	$124,475,959
2	Operation and maintenance	21,425,547
3	Assessment of irrigation water users for United States operation and maintenance of facilities with appropriated funds	1,394,833
4	Assessment of irrigation water users for direct financing of United States operation and maintenance of facilities	562,054
5	Assessment of irrigation water users, pursuant to contract, for repayment of United States construction expenditures, operation and maintenance funded, and interest and penalties funded	1,498,753
	Revenues from operations:	
6	Power	63,166,194
7	Other	491,551
8	Contributions	217,037
9	Materials and services furnished by other Federal agencies, net	-27,870
10	Total	213,204,058

Application of Funds, Fiscal Year 1956

11	Plant, construction work in progress, and construction facilities	138,715,151
	Operation and maintenance of revenue-producing activities with appropriated funds:	
12	Power	15,627,375
13	Other	337,913
	Operation and maintenance of nonreimbursable activities with appropriated funds:	
14	Flood control	1,960,850
15	Navigation	3,469,635
16	Other	7,046
17	Operation and maintenance of irrigation facilities with appropriated funds	1,444,876
18	Operation and maintenance of irrigation facilities with funds advanced by water users	328,393
19	Funds returned to United States Treasury	64,233,200
20	Total	226,124,439
21	Balance, representing a decrease in working assets and other selected accounts as adjusted	$ 12,920,381

Construction, all activities

Construction was accomplished with funds appropriated by the Congress (line 1) and some minor amounts from contributions (line 8) and materials and services transferred (line 9). Application of funds from these sources, in conjunction with a net increase or decrease in working assets and other miscellaneous net assets (line 21), is included on line 11.

Power operations

Expenditures for operation and maintenance of power facilities (line 12) were made from funds appropriated by the Congress (included in line 2). Funds received from power sales (line 6) are not generally available for expenditure and were returned to the Treasury (line 19).

Irrigation operations

Operation and maintenance of irrigation facilities by United States forces were financed and reimbursed in three ways:

1. Expenditures for operation and maintenance (line 17) were made from funds appropriated by the Congress (included in line 2). Water users advanced funds (line 3) to cover annual operation and maintenance expense, the advances being deposited to the Treasury (line 19). Any excess or deficiency was credited or charged to the water users.

2. Expenditures for operation and maintenance (line 18) were made directly from funds advanced by the water users (line 4).

3. Expenditures for operation and maintenance (line 17) made from funds appropriated by the Congress (line 2) are in some instances included as a part of the construction contract obligation of the water users and repaid accordingly.

Funds received from water users pursuant to contracts for repayment of construction and other costs, including operation and maintenance as in item 3 above, (line 5) were deposited with the Treasury (line 19).

Flood control and navigation operations

Operation and maintenance of facilities and other activities associated with flood control and navigation (lines 14 and 15) were financed by congressional appropriation (included in line 2).

ALLOCATION OF MULTIPLE-PURPOSE CONSTRUCTION COSTS

The expanding role of the multiple-purpose project, which was discussed in the section on the pattern of water resources development (pp. 13 to 20), has raised the problem of allocating the cost of facilities jointly serving two or more purposes. In an undertaking characterized by heavy capital expenditures, the allocation of construction costs to purposes is a step fundamental to adequate financial management and accounting. The allocation is an essential element in establishing power-rate levels, approval of power rates by regulatory authorities, setting irrigation assessments, and determining the annual costs of operations. Any doubt or uncertainty with regard to a cost allocation necessarily extends to all financial matters.

Status of allocations at June 30, 1956

A tentative cost allocation is doubtful and uncertain by its very nature, and firm allocations have been made for only four operating multiple-purpose projects in the Columbia River basin, one of which is nonpower producing:

Projects	In-service date, joint plant	Construction agency	Allocating agency	Status of allocation
Power producing:				
Bonneville Dam	1938	Corps	FPC	Firm
Columbia Basin	1942	Bureau	Interior	Firm
Minidoka	1906	Bureau	Interior	Firm
Hungry Horse	1953	Bureau	Unspecified	Tentative
McNary Dam	1954	Corps	FPC	Tentative
Detroit-Big Cliff	1954	Corps	Unspecified	Tentative
Lookout Point-Dexter	1955	Corps	Unspecified	Tentative
Albeni Falls	1955	Corps	Unspecified	Tentative
Chief Joseph	1956	Corps	Unspecified	Tentative
Yakima	1956	Bureau	Interior	Tentative
Boise	1951[a]	Bureau	Interior	Tentative
Non-power producing:				
Lewiston Orchards	1952	Bureau	Interior	Firm

[a] Year of initial operations at Anderson Ranch Dam.

It has become an annual necessity for the General Accounting Office to qualify its opinion of all financial statements drawn in part from the projects lacking a firm allocation of construction costs.

The problem of obtaining firm allocations is most acute with respect to those projects where allocation responsibility has not been assigned specifically by law. As the above table illustrates, the Department of the Interior exercises the allocation responsibility for projects constructed by the Bureau of Reclamation and

the Federal Power Commission has been given similar responsibility for certain Corps of Engineers projects.[1] But, for other Corps projects, there is no designation although the Corps of Engineers as the construction agency, the Department of the Interior as the power marketing agency, and the Federal Power Commission as the power-rate approval agency, all have a direct interest in the allocations.

The advent of Detroit-Big Cliff, Lookout Point-Dexter, Albeni Falls, and Chief Joseph Projects introduced to the Columbia River basin a perplexity which has also been experienced in the Missouri River basin and in the Southeastern and Southwestern United States. Tentative allocations prepared by the Corps of Engineers for the first three projects named are now under review by the Department of the Interior, and it still remains for an agreement to be reached.

Allocations where the allocating agency is unspecified by law

The Flood Control Act of 1944 designated the Department of the Interior as marketing agency and the Federal Power Commission as rate-approval authority for power produced at certain projects to be constructed by the Corps of Engineers; but the act did not specify which agency should allocate the project costs to power and nonpower purposes. The Detroit-Big Cliff, Lookout Point-Dexter, Albeni Falls, and Chief Joseph Projects have been made subject to the power-marketing and rate-approval provisions of this act by authorizing legislation.

All efforts to resolve the allocation problem on projects such as Detroit-Big Cliff have been thus far directed toward achieving interagency agreement on policies and methods, rather than securing legislation. The Subcommittee on Benefits and Costs prepared a report (May 1950) to the Federal Inter-Agency River Basin Committee entitled "Proposed Practices for Economic Analysis of River Basin Projects," commonly referred to as "The Green Book," recommending the separable costs--remaining benefits method of cost allocation. The desirable attributes of the separable costs--remaining benefits method were that costs could not be allocated to any purpose in excess of corresponding benefits, each purpose was assigned at least its separable costs, and, within these minimum and maximum limits, each purpose obtained a proportional share of the savings resulting from multiple-purpose development.

On December 31, 1952, Circular No. A-47 relating to water resources projects was issued by the Bureau of the Budget. This circular provided certain standards and procedures to be used by the

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[1]See page 37 for discussion of Hungry Horse Project, which is an exception.

Executive Office of the President in reviewing proposed water resources project reports and budget estimates to initiate construction of such projects. The Bureau of the Budget recognized the absence of uniform standards and procedures in many of the problems related to water resources development and expressed the hope that the circular would encourage the adoption of uniform standards and procedures as a better basis for evaluating the merits of proposed projects. On allocations of costs of multiple-purpose projects, the circular provided:

> "The costs of facilities or features of a program or project used jointly by more than one purpose of water resource development shall be allocated among the purposes served in such a way that each purpose will share equitably in the savings resulting from combining the purposes in a multiple-purpose development."

The circular did not, however, suggest or require the use of any specific method of allocation.

In a memorandum dated April 2, 1954, to heads of Bureaus and Offices in the Department of the Interior, the Assistant Secretary of the Interior stated that general agreement on cost allocation of multiple-purpose projects had been reached with the Corps of Engineers and the Federal Power Commission. Similarly, on March 29, 1954, the Chief of Engineers issued a release to division and district engineers that contained a like statement. These communications described acceptable methods of allocation of costs of multiple-purpose projects as:

1. Separable costs--remaining benefits

2. Alternative justifiable expenditure

3. Use of facilities

The separable costs--remaining benefits method was described as preferable for general application. The latter two were deemed acceptable alternatives under special circumstances. It was understood that both the marketing and the constructing agencies should participate in making the cost allocations and, so far as possible, agreement would be reached through an exchange of information and discussion. The remaining points of disagreement were to be referred to the Chief of Engineers and the Secretary of the Interior.

Our previous report on the audit of the Columbia River Power System and Related Activities, for the fiscal year ended June 30, 1955, dated November 26, 1956, commented on the progress that had been made under the agreement between the Corps and the Department of the Interior.

> "In our report dated July 11, 1955, to the Congress on the Bonneville Power Administration for the fiscal year

1954, we stated (p. 2) that firm allocations of the construction costs for all the projects in operation have not been made and tentative allocations were used in determining the amount of operating revenues allocated to the projects. Note was made of the memorandum of April 2, 1954, from the Assistant Secretary of the Interior, but a recommendation was not made as the effectiveness of the agreement had not been determined.

"There apparently still exists some disagreement, because at June 30, 1955, and at the date of this report, final agreement has not been reached between the interested agencies on any project cost allocations where the basic legislation does not state which agency has the responsibility to make the allocation. It is our belief that the conflicting contentions that have existed and the existing confusion on the responsibility for cost allocations can be resolved with finality only through legislative action. Accordingly, we recommend that the Congress designate specifically the agency to make the allocation of construction costs of multiple-purpose projects authorized for construction in the Columbia River basin by the Corps of Engineers under authorizing legislation other than the Bonneville Project Act and the River and Harbor Act of 1945.

"We believe also that the Congress may wish to clarify the role of the Federal Power Commission to approve allocations of construction costs and rate schedules for sale of power from Federal power installations. The basic legislation authorizes the Federal Power Commission to make the allocation of construction costs of the Bonneville Dam, McNary Dam, and lower Snake River Projects in the Columbia River basin, but does not specify the agency responsible for these allocations in the others. Under the Reclamation Project Act of 1939 (43 U.S.C. 485h), the Secretary of the Interior is responsible for allocations of construction costs of reclamation projects, but there is doubt that the Hungry Horse Project is a reclamation project.

"As an alternative to specific designation of the agency to make the allocation of costs, the Congress may wish to provide for a final allocation of construction costs to purposes on projects including power to be made jointly by the Corps of Engineers, Department of the Interior, and the Federal Power Commission and reported to the Congress for review and approval. These allocations should be reported for approval about the time of initiating operations of the project."

At June 30, 1956, no firm allocation had been decided upon for any Corps projects made subject by authorizing legislation to the

power-marketing provisions of the Flood Control Act of 1944, which does not specify the agency responsible for allocating construction costs. For this reason we are repeating our recommendations.

Allocation for McNary Dam Project

Although there is no problem as to the allocating agency for the McNary Dam Project, where authorizing legislation designates the Federal Power Commission, a final allocation has not been made. McNary Dam Project has been producing power since fiscal year 1954. The Commission made a tentative allocation of McNary Dam Project costs in an interim report issued December 4, 1953, and that has been the last action in the matter.

At the time a project begins producing power, the ultimate costs as used in the allocation procedure can be fixed with a reasonable certainty. The advantage of having an exact, completed project cost for determining allocation percentages is overshadowed by the assumptions necessary for other factors used in allocation procedures, such as the estimated costs of alternative single-purpose projects. The disadvantages of delaying the final allocation are more clear. Rate studies and financial accounting for project (and system) operations must be qualified for as long as the final allocation is lacking. For these reasons we are recommending that the Federal Power Commission make a final allocation of McNary Dam Project costs as soon as practicable.

Allocation for Hungry Horse Project

The act of June 5, 1944 (43 U.S.C. 593a), authorizing the construction of Hungry Horse Project (dam, reservoir, and power plant), included no provisions relating to the allocation of costs. Neither did the act make clear whether the project was to be governed by reclamation laws, although section 3 authorized the Secretary, under provisions of the reclamation laws, to construct, operate, and maintain such additional works as he might deem necessary for irrigation purposes. A decision has not been reached by the Bureau of Reclamation and the Secretary of the Interior as to whether the Hungry Horse Dam, Reservoir, and Power Plant should be treated as a reclamation project subject to reclamation laws, including section 9 of the Reclamation Project Act of 1939 and provisions of the Hayden-O'Mahoney amendment of April 9, 1938. If this project is not a reclamation project, an allocation of the construction costs by the Secretary of the Interior would be without express legislative authority.

Our previous report on the audit of the Columbia River Power System and Related Activities for the fiscal year ended June 30, 1955, dated November 26, 1956, commented on the administrative doubt as to whether the Hungry Horse Project is a reclamation project and stated that it might be desirable for the Congress to examine the problem and establish a clear-cut congressional policy which would avoid future fiscal difficulties. Identical bills have been introduced in the Senate and House of Representatives

(S. 847 and H.R. 3401, 85th Cong., 1st sess.) which would make the Hungry Horse Project subject to Federal reclamation law.

Methods used in allocating plant-in-service costs for this report

Subsequent paragraphs review the pertinent information relative to the allocations (final or tentative) of multiple-purpose plant in service at the end of fiscal year 1956. The total joint construction costs and the amounts allocated to each purpose for the individual projects will be found on schedule 7 of the financial statements.

Bonneville Dam Project. Allocation of the construction cost of the Bonneville Dam Project is governed by the Bonneville Project Act (16 U.S.C. 832). Section 7 of the act provided:

> "*** In computing the costs of electric energy developed from water power created as an incident to and a by-product of the construction of the Bonneville Project, the Federal Power Commission may allocate to the cost of electric facilities such a share of the cost of facilities having joint value for the production of electric energy and other purposes as the power development may fairly bear as compared with such other purposes."

The report by the Chief Engineer of the Federal Power Commission stated that, in the light of a careful study of the language of the act, and particularly section 7, it was concluded that the Congress did not intend that a major share of the joint costs should be allocated to electric facilities. Accordingly, the Chief Engineer's report proceeded on a premise that the language of the act permitted allocation of joint costs to the primary navigation purpose of 50 percent as a minimum limit and to the subordinate power purpose of 50 percent as a maximum limit. After determining that rate schedules in effect would repay power costs including amortization of specific power facilities and a 50 percent allocation of joint costs, the Commission divided joint costs equally between power and navigation.

Columbia Basin Project. Allocations of the construction costs of this project have been made by the Secretary of the Interior under the provisions of the Reclamation Project Act of 1939 (43 U.S.C. 485h). Property, plant, and equipment costs determined to be jointly useful for power generation and for other purposes, consisting principally of the dam, reservoir, and general service facilities, have been allocated 56 percent to commercial power (including future downstream river regulation) and 44 percent to irrigation purposes

after assigning $1,000,000 to navigation. Specific power facilities (principally powerhouses and generating equipment), exclusive of the cost of the 3 generating units and related electrical facilities installed in addition to the original 15 units, have been allocated to commercial power and to irrigation pumping power in proportion to the relative value of the power delivered for each purpose. The cost of the 3 additional generating units and related electrical facilities has been assigned to commercial power.

The percentages of 56 for power and 44 for irrigation were determined on the basis of differences between costs of single-purpose irrigation and power projects and the corresponding direct irrigation and power costs, respectively, in the multiple-purpose Columbia Basin Project. A gravity plan was used as the irrigation alternative to the present multiple-purpose project. A combination of three projects on the Columbia River that would produce about the same benefits to power, including downstream power benefits, was used as the power alternative.

Minidoka Project. The Minidoka Project was authorized under reclamation laws and the allocation of construction cost has been made by the Secretary of the Interior.

Although the project has always been multiple-purpose in nature, there was no problem of allocating costs to purpose prior to the installation of the seventh unit in the powerhouse. The costs of the project, including costs of the dam and the hydroelectric plant (units 1-6), were primarily recoverable through repayment contracts with the water users. In turn, all net revenues from the operation of units 1-6 accrued to the water users. When unit 7 was installed as a commercial power unit with revenues accruing to the United States, some allocation of joint costs became essential.

To avoid disrupting existing repayment arrangements relative to the dam and other joint facilities, it was arranged that unit 7 should pay an annual rental to the water users, equal over 40 years to one fourth of the joint costs allocated to hydroelectric power. Because of this rental arrangement, which in effect substitutes for an allocation of joint construction costs, there are no joint costs allocated to commercial power on schedule 7.

Lewiston Orchards Project. The Lewiston Orchards Project was authorized under reclamation laws, and the allocation of cost has been made by the Secretary of the Interior.

It was determined that use of water for domestic purposes would constitute less than 6 percent of total water

usage. Accordingly, 6 percent of the joint costs were allocated to domestic water and the remainder to irrigation.

Hungry Horse Project. It has not yet been determined whether the Hungry Horse Project is subject to reclamation laws. Pending a decision on the above matter, a tentative allocation of the joint costs has been made by the Bureau of Reclamation for interim accounting. The allocation percentages for joint costs are 74.32 for commercial power and 25.68 for flood control. The allocation to flood control was obtained by capitalizing net flood control benefits at 2.5 percent for 100 years. The allocation to power is the remainder after deducting the allocation to flood control.

McNary Dam Project. The River and Harbor Act of 1945 makes provisions of the Bonneville Project Act applicable to the marketing of electric energy from the McNary Dam Project. Accordingly, the Federal Power Commission is authorized to allocate the construction costs of the project to power and nonpower purposes. In an interim report issued December 4, 1953, the Commission allocated 97.5 percent of the joint costs to commercial power and 2.5 percent to navigation. The separable costs--remaining benefits method was used.

Albeni Falls, Detroit-Big Cliff, Lookout Point-Dexter, and Chief Joseph Projects. Authorizing legislation for these Corps of Engineers projects did not specifically state which agency should make an allocation of the construction costs. Tentative allocations have been made by the Corps of Engineers to be used in accounting for project operations pending the establishment of some final allocation. Agreement has not been reached with the Department of the Interior or the Federal Power Commission on these allocations. The tentative allocation percentages being used are:

	Albeni Falls	Detroit-Big Cliff	Lookout Point-Dexter	Chief Joseph
Commercial power	97.37	44.27	25.94	100.00
Flood control	1.48	46.72	65.66	-
Navigation	1.15	.30	1.21	-
Irrigation	-	7.77	7.19	-
Municipal water supply	-	.94	-	-
Total	100.00	100.00	100.00	100.00

The separable costs--remaining benefits method has been used in arriving at the percentages applicable to the first three projects. It has not been necessary to use an allocation method for the Chief Joseph Project as the entire construction cost has been considered tentatively applicable to power.

Because of related irrigation development by the Bureau of Reclamation, the final allocation of the Chief Joseph construction costs may charge some amount of the joint construction costs to irrigation.

Yakima Project. An allocation of the costs of the Yakima Project has not been made by the Secretary of the Interior. The Bureau of Reclamation, however, has made a tentative allocation of the costs of joint facilities (Roza Division). One million dollars of the costs of multiple-purpose facilities, consisting of the main canal and diversion dam, was assigned to power. This amount was further allocated between irrigation pumping and commercial power on an 80:20 ratio, based on the proportion of peak demands of irrigation pumping to total name-plate capacity of the Roza generating plant. Certain specific power facilities, including Roza Substation, were allocated between irrigation (power) and commercial power on the same 80:20 ratio.

The cost of the 34.5-kv transmission line of the Roza Division, a specific power facility, was allocated between irrigation and commercial power on a 93:07 ratio, based on the proportion of REA loads to total load on a section of the line.

Although the Chandler Power Plant of the Kennewick Division was generating power during fiscal year 1956, and certain related multiple-purpose facilities were functioning, the Bureau had not transferred these costs from construction work in progress to plant in service on the official accounting records. Therefore, allocations of Kennewick multiple-purpose costs are not pertinent to this report.

Boise Project. The Boise Project was authorized and constructed under reclamation laws, and a tentative allocation of the construction costs has been made by the Bureau of Reclamation.

Anderson Ranch and Arrowrock Dams are closely related multiple-purpose facilities serving jointly the purposes of power, flood control, and irrigation. The basis for allocation of the plant costs is relative acre-feet usage per the operating plan:

Function	Anderson Ranch	Arrowrock	Total	Percentage
Irrigation	418,000	285,000	703,000	47.5
Flood control	418,000	285,000	703,000	47.5
Power	75,000	-	75,000	5.0
Total	911,000	570,000	1,481,000	100.0

Black Canyon Dam, the other multiple-purpose facility of the Boise Project, furnishes the means by which irrigation water

is diverted from the Payette River as well as provides head for the generation of hydroelectric power. It has been determined that the allocation of joint costs of the dam should be 50 percent to each function.

Power facilities of the Boise Project, both specific and joint, are used to supply power for irrigation and commercial purposes. The total allocation of construction costs to power is therefore suballocated, on the basis of the loads carried, to irrigation and commercial power, 32.78 percent and 67.22 percent, respectively.

Although the allocation of Boise Project costs is not final, Congress approved the principles set forth in the allocation and repayment report (dated September 21, 1953) by Public Law 660, Eighty-third Congress, second session.

ALLOCATION OF MULTIPLE-PURPOSE OPERATION AND MAINTENANCE COSTS

The operation and maintenance expenses of multiple-purpose projects present much the same problem as construction costs. The expense of operating and maintaining facilities jointly serving two or more purposes must be allocated to those purposes on some reasonable basis. Although the matter of allocating operation and maintenance expense has not always received the same degree of attention as construction costs, it is nevertheless true that operation and maintenance over the life of the project will amount to a substantial fraction of total project costs.

For fiscal year 1956, the percentages used in allocating the expense of operating and maintaining joint facilities were:

	Percent					
	Power	Flood control	Navigation	Irrigation	Other	Total
Corps of Engineers:						
Bonneville Dam	50.00	-	50.00	-	-	100.00
Detroit-Big Cliff	56.91	35.10	.25	-	7.74	100.00
Lookout Point-Dexter	38.25	54.89	.98	-	5.88	100.00
Chief Joseph	100.00	-	-	-	-	100.00
Albeni Falls	98.00	1.13	.87	-	-	100.00
McNary Dam	97.50	-	2.50	-	-	100.00
Bureau of Reclamation:						
Columbia Basin	99.21	-	.79	-	-	100.00
Hungry Horse	71.48	28.52	-	-	-	100.00
Yakima	100.00	-	-	-	-	100.00
Minidoka	-	-	-	100.00	-	100.00
Boise	19.18	14.21	-	66.61	-	100.00

The total joint operation and maintenance costs and the amounts allocated to each purpose, by individual project, will be found on schedule 11 of the financial statements.

The allocation of joint operation and maintenance costs for projects of the Corps of Engineers is consistent with the allocations of construction cost. On Bonneville Dam, McNary Dam, and Chief Joseph Projects, the above percentages are the same as those used for construction cost allocations. On Detroit-Big Cliff, Lookout Point-Dexter, and Albeni Falls Projects, where the separable costs--remaining benefits method of allocation was used, the above percentages will not agree with the construction cost allocation percentages. Conversion from separable and remaining operation and maintenance costs to specific and joint operation and maintenance costs does not necessarily result in percentages identical to those arrived at in converting from separable and remaining construction costs to specific and joint construction costs.

Bureau of Reclamation methods for handling joint operation and maintenance costs in the Columbia River basin do not yield as readily to generalization as do those of the Corps of Engineers. Whereas the Corps allocates joint operation and maintenance costs on the same basis as joint construction costs, the Bureau of Reclamation has, by various means, charged joint operation and maintenance costs to purposes in a manner based generally on the year-by-year use of the joint facilities. The Bureau of Reclamation practices appear to be in anticipation of the difficulties that might arise if an arbitrary measure of joint operation and maintenance cost were charged to the reimbursable purpose of irrigation before those responsible for repayment were receiving any or full benefits.

The cost of operating and maintaining joint facilities of the Bureau's Columbia Basin Project (power and irrigation purposes, with a nominal allocation to navigation) is charged to commercial power, except for a 0.79 percent allocation to navigation. Charges to water users for irrigation pumping power, computed at the rate of .5 mill per kilowatt-hour, are credited to commercial power operations as interdepartmental sales. Allocation percentages for joint operation and maintenance costs at the Hungry Horse Project have been determined through direction of effort studies by the project superintendent. Multiple-purpose facilities at the Yakima Project served only power during fiscal year 1956, and accordingly all operation and maintenance costs associated with these facilities were charged to the power purpose. All expense of operating and maintaining joint facilities at the Minidoka Project is charged to specific irrigation.

Operation and maintenance of the multiple-purpose Anderson Ranch and Black Canyon Dams of the Boise Project was allocated by different assumptions. Multiple-purpose operation and maintenance of Black Canyon Dam was allocated on the same ratio as corresponding construction costs, 50 percent to power and 50 percent to irrigation. Multiple-purpose operation and maintenance of Anderson Ranch Dam was allocated between flood control and the reimbursable purposes of power and irrigation in the same ratio as construction costs, 64.5 percent to flood control and 35.5 percent to reimbursable purposes. Of the 35.5 percent allocable to reimbursable purposes, an amount of 14.1 percent was suballocated to irrigation based on experience and costs of maintaining large storage dams and reservoirs where there were no power plants. The remainder of the suballocation was chargeable to power. Fourteen and one-tenth percent of the specific power costs, excepting wheeling expenses, were also allocated to irrigation.

Our report on the audit of the Columbia River Power System and Related Activities for the fiscal year ended June 30, 1955, dated November 26, 1956, commented on the fact that the Corps of Engineers and the Bureau of Reclamation had not established comparable policies and practices for allocating the operation and

maintenance costs of joint facilities. To provide a sound and consistent basis for allocating these costs, we recommended that the Chief of Engineers and the Secretary of the Interior adopt the policy of allocating joint operation and maintenance costs on the basis of current use of the facilities. Inasmuch as the inconsistencies in policy and practice still exist, we are repeating our recommendation.

ACCOUNTING POLICIES

The accounting systems of the Corps, the Bureau, and the Bonneville Power Administration are on an accrual basis and distinguish between capital expenditures and expenditures chargeable to current operations. Accounting systems of each agency have been designed to be an integral part of the budgeting-programing-accounting-reporting cycle. There are, however, several areas of inconsistency and deficiency which come to light when financial statements of the three agencies are presented on a consolidated basis. These areas are: depreciation of facilities, interest on the Federal investment, imputed costs, preliminary surveys and investigations costs, and accounting for repayment of power investment.

DEPRECIATION OF FACILITIES--A RECOMMENDATION TO THE SECRETARY OF THE INTERIOR AND THE CHIEF OF ENGINEERS

The Federal Power Commission, finding it necessary and appropriate for carrying out the powers conferred by the Federal Power Act, adopted a system of accounts entitled "Uniform System of Accounts Prescribed for Public Utilities and Licensees Subject to the Provisions of the Federal Power Act." One of the more important rules and regulations contained therein refers to depreciation and provides that "each utility shall record as at the end of each month the estimated amount of depreciation accrued during that month on depreciable electric plant."

By specific provision of Congress, the agencies of the United States engaged in the generation and sale of electric energy are subject to the uniform system of accounts and the rules and regulations contained therein, insofar as power distributed to the public is concerned. The language of the applicable legislation states:

> "All agencies of the United States engaged in the generation and sale of electric energy for ultimate distribution to the public shall be subject, as to all facilities used for such generation and sale, and as to the electric energy sold by such agency, to the provisions of sections 825 and 825a of this title, so far as may be practicable, and shall comply with the provisions of such sections and with the rules and regulations of the Commission thereunder to the same extent as may be required in the case of a public utility." (16 U.S.C. 825b)

The only qualifying language in this provision is found in the phrase, "so far as may be practicable."

Official accounting records of the Corps of Engineers and the Bonneville Power Administration are in accordance with the FPC directives concerning depreciation. Official accounting records

of the Bureau of Reclamation are not. While the Corps and BPA have found it "practicable" to comply with FPC rules and regulations on the matter of depreciating electric plant, the Bureau of Reclamation does not recognize depreciation on depreciable electric plant. There is nothing in reclamation law or its application that precludes the recording of depreciation on depreciable electric plant or justifies a difference on this matter between the Bureau of Reclamation and the Corps of Engineers and Bonneville Power Administration.

Plant devoted to purposes other than power may or may not be subjected to depreciation, depending on whether it was constructed by the Corps or Bureau and whether it is part of a single- or multiple-purpose project. The Bureau of Reclamation, which is very consistent on matters of depreciation, does not depreciate plant allocated to any purpose on any type of project. The Corps of Engineers records depreciation on all plant in service, regardless of purpose, for multiple-purpose projects including power. The Corps does not, however, record depreciation on navigation and flood control plant of single-purpose projects.

The report on audit of the Columbia River Power System and Related Activities for the fiscal year ended June 30, 1955, dated November 26, 1956, cited the lack of comparable financial data on all water resources programs and recommended that the Chief of Engineers and the Secretary of the Interior establish jointly, and apply consistently, a policy on depreciation that would provide (1) for recording in the books of account a cost of producing services and (2) the amounts attributable to reduction in service lives of plant, based on principles as follows:

"1. The computation of depreciation provisions under the straight-line method with a maximum service life of 100 years.

"2. The application of the policy to depreciable plant in service, whether or not revenues are derived from rendering of the service.

"3. The absorption, as depreciation or amortization, of costs of land and land rights (exclusive of acquisition costs in fee), canal excavations, excavation and grading of roads, relocations of existing facilities, and intangibles.

"4. Joint facilities and common facilities to be considered as plant in service in the ratio of installed capacity to total capacity based on a planned installation schedule of generators that are installed under an uninterrupted construction program of the project. For certain projects, such as those having substantial power storage benefits in addition to at-site generation, modifications may be required in this formula to obtain a proper determination of depreciation and interest expense.

5. The provision in the accounts for depreciation on plant in service not (and not to be) operated permanently by the Government.

6. Depreciation be computed from the first of the month succeeding the date the facilities are placed in service.

7. Adjustments be made for the deficient and unrecorded depreciation of the past, wherever the amounts are material and would have a significant effect in determining the results of operating and maintaining the facilities.

8. The presentation in the financial statements of the accumulated provisions for depreciation as a deduction from plant in service."

The most important of these principles have been adopted by the Corps of Engineers for multiple-purpose projects including power, but no depreciation has been recorded on the plant of projects that do not include power as a purpose. Decision by the Department of the Interior on depreciation has not been reached. The Department has informed us that these matters are receiving current consideration by the Interior Cost Allocation and Financial Practices Committee.

Inasmuch as the policy on depreciation has not been adopted, or the policy has been incompletely or inadequately applied, the recommendation on depreciation is repeated in this report.

INTEREST ON THE FEDERAL INVESTMENT--A RECOMMENDATION TO THE SECRETARY OF THE INTERIOR AND THE CHIEF OF ENGINEERS

Interest recorded as a part of the Federal investment by the Corps of Engineers, Bureau of Reclamation, and Bonneville Power Administration does not represent congressional appropriation of funds. In the case of the Corps of Engineers and Bonneville Power Administration, it is a recorded estimate of the Treasury borrowing costs applicable to funds provided for certain purposes. On Bureau of Reclamation projects in the basin, it represents an application of the percentage referred to in the commercial power rate-setting provisions of the Reclamation Project Act of 1939 to commercial power investment. Although all three agencies carry interest on Federal investment in their accounting records to some extent, the assumptions and applications differ widely between and within the agencies.

Interest is not uniformly provided on all water resources investment in the Columbia River basin. The Bonneville Power Administration, whose investment is wholly allocable to commercial power, computes interest on its entire net investment. The Corps of Engineers records interest on the net investment in all purposes of multiple-purpose projects that include power but does not

record interest on investment in its single-purpose flood control and navigation projects. The Bureau of Reclamation records interest on net investment in commercial power during the operating period but does not record interest on net investment in other purposes for either multiple- or single-purpose projects except as the Secretary of the Interior may provide for interest on investment in municipal water supply facilities. However, the Secretary has not provided for any interest on investment in municipal water supply facilities in the Columbia River basin.

Differing views exist with regard to treatment of interest during construction. Both Bonneville Power Administration and the Corps of Engineers recognize that interest would accrue before the project facilities go into operation, as well as after, and interest is calculated on investment during the construction period and capitalized. The Bureau of Reclamation, which records interest on commercial power investment during the operating period, does not recognize interest during construction in the accounting records.

The interest rate used by the Corps of Engineers and the Bonneville Power Administration differs from that used by the Bureau of Reclamation. A rate of 2.5 percent has been selected by the Corps and BPA as representative of long-term Treasury borrowing costs and is used in all interest calculations. The Bureau has used the 3 percent interest factor cited in the Reclamation Project Act of 1939 for calculating interest on commercial power investment unless authorizing legislation for the individual project provides otherwise.[1]

For the purpose of obtaining consistency and comparability of financial data on commercial power and municipal water supply operations of the Corps of Engineers and the Department of the Interior, we recommended in our report on audit of the Columbia River Power System and Related Activities for the fiscal year ended June 30, 1955, dated November 26, 1956, that the Chief of Engineers and the Secretary of the Interior adopt a policy for recording interest on the Federal investment based on the following principles:

> "The interest cost for each year should be determined on the net Federal investment in the project applicable to power or municipal water supply purposes at the beginning of the year and on the accrued Federal expenditures, plus transfers of property from other Federal agencies, less any funds returned to the United States Treasury, for the fiscal year. Computations of interest should be based on the average monthly expenditures plus property transfers for the month, less any funds returned to the Treasury. During the construction period, interest should not be computed on a compound basis.

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[1]Authorization of Kennewick Division, Yakima Project, provides for interest of not less than 2.5 percent.

"The rate of interest should be based on the long term borrowing rate for several years and determined in consultation with the Secretary of the Treasury, unless otherwise provided by law.

"Interest applicable to the investment in facilities to the in-service dates should be charged to construction costs as interest during construction, and interest cost thereafter should be classified as an operating expense."

Although present accounting procedures for the Corps of Engineers and Bonneville Power Administration incorporate most of the principles stated above, important differences still exist, particularly between these agencies and the Bureau of Reclamation. We have been informed that these matters are receiving current consideration by the Interior Cost Allocation and Financial Practices Committee.

Since final decisions on the matter of interest on the Federal investment have not been reached, the recommendation thereon is repeated.

PRELIMINARY SURVEY AND INVESTIGATION COSTS--
A RECOMMENDATION TO THE CHIEF OF ENGINEERS

Investigation and planning performed by the Corps are comprised of (1) preliminary examinations on the basis of reconnaissance and readily available data, to determine whether the proposed improvement has sufficient apparent merit to justify a detailed survey, and (2) surveys, based on more detailed field surveys and on engineering and economic studies to develop a general plan of improvement, estimate its approximate cost, and determine its economic value. Funds for this type of work are provided by the general investigations appropriations.

Under Corps accounting procedures, costs incurred in conducting preliminary surveys and investigations are not included in total project costs when construction is undertaken pursuant to authorization by the Congress.

The Bureau of Reclamation performs engineering, economic, and financial investigations; formulates plans; prepares designs and specifications; and engages in other activities preliminary to construction or rehabilitation of reclamation projects. Prior to project authorization, these activities are financed by the general investigations appropriations.

Under Bureau of Reclamation accounting procedures, project investigation costs and certain basin survey costs are transferred to construction-work-in-progress accounts and are included as a part of the total project costs after funds for construction of the project are appropriated.

The Bonneville Power Administration makes investigations with regard to determining the time and place of the Northwest's power requirements, the type of transmission facilities needed, and the integration of system generation and load. Preliminary planning by BPA is correlated with the Corps and Bureau construction program for power projects. Specific appropriations are not made to BPA for general investigations and planning, such activities being financed through the regular operation and maintenance or construction appropriation.

Preliminary investigations costs incurred by Bonneville Power Administration are included in the Administration property costs as appropriate.

We commented on the inconsistent treatment of preliminary survey and investigations costs in our report dated November 26, 1956, as follows:

> "We believe that the costs incurred in investigating and surveying approved projects should be included as part of the total construction costs of the project. We believe also that an appropriate share of the costs of basin surveys and investigations should be transferred to project costs upon authorization of a unit in the comprehensive plan of development. Costs incurred for investigations and surveys are as essential to the construction of the project as are costs incurred for materials and labor. The expenditures for preliminary surveys and investigations to be included as a part of construction costs of the project, however, should not exceed the amount that may be reasonably determined to contribute directly and without duplication to the construction of the project.
>
> "To provide for an adequate disclosure of total project costs and to permit consideration of all proper costs for allocations of total construction costs to purposes, we recommend that the Chief of Engineers:
>
> 1. Allocate an appropriate share of the costs of basin investigations to projects or units authorized for construction.
>
> 2. Classify the costs of surveys and investigations of authorized projects as construction costs at the time the projects are programed for construction, limited to the amounts that may be reasonably determined to contribute directly and without duplication to the construction of the project.
>
> "*** The adoption of this recommendation by the Corps of Engineers will provide for a more adequate disclosure of construction costs for Corps projects and

bring about comparable policies and procedures on investigations costs between the several water resource development agencies."

In a letter dated July 27, 1956, the Assistant Chief of Engineers for Civil Works stated that the importance of this matter was recognized and efforts would be continued to resolve it as soon as practicable. Our audit for fiscal year 1956 disclosed that procedures which prompted the above recommendation have not changed. Accordingly we are repeating our recommendation.

IMPUTED COSTS

The Bonneville Power Administration has recorded in its accounts actual or estimated costs for rentals, materials, and other services furnished without charge by the General Services Administration and other Federal agencies; death and disability claims on account of the Administration employees paid by the Bureau of Employees' Compensation, Department of Labor; and the amounts applicable to the Administration's operations of the cost of Civil Service Retirement System. For the fiscal year 1956 the Administration recorded in its accounts $1,600,000 of such costs, of which $600,000 was included in operating expenses.

It is not the practice of the Corps of Engineers or the Bureau of Reclamation to include in their accounts amounts incurred by other Federal agencies and not assignable to the projects pursuant to law or administrative policy.

THE EFFECT OF ACCOUNTING POLICY CONFLICTS

Divergent accounting practices within the Department of the Interior are well illustrated by the conflicting financial information now available for several projects in the Columbia Basin. Financial statements included in the annual report of the Bonneville Power Administration on operations of the Columbia River Power System show the net revenues from commercial power operations to have been $5,949,412 in fiscal year 1956. The official accounting records of the Corps of Engineers, the Bonneville Power Administration, and the Bureau of Reclamation, on which the financial statements of this report are based, show the net revenues from commercial power operations for the same projects and the same period to be $9,028,454. (See schedule 2, page 95.) The difference of $3,079,042 is, with one minor exception of $4,599, wholly attributable to the fact that financial statements for the Columbia Basin, Hungry Horse, and Yakima (Kennewick Division) Projects, prepared by the Bureau of Reclamation for inclusion in the annual report of the Bonneville Power Administration, are based in part on "memorandum" accounting records. An analysis of the difference shows the following components:

	Total	Projects		
		Columbia Basin	Hungry Horse	Yakima (Kennewick)
Depreciation recorded in memo accounts for Columbia River Power System statements	$3,031,798	$2,038,884	$974,354	$18,560
Interest differences in rates and application, as a result of memo accounts for Columbia River Power System statements	109,202	340,499	-262,590	31,293
Allocation of joint costs to irrigation pumping in lieu of interdepartmental sales of power, for Columbia River Power System purposes	-42,060	-42,060	-	-
Allocation of net income from incidental activities to power for Columbia River Power System purposes	-24,497	-23,459	-1,038	-
Total accounting differences	3,074,443	2,313,864	710,726	49,853
Roza Division revenues not included in Columbia River Power System statements	4,599	-	-	4,599
All differences	$3,079,042	$2,313,864	$710,726	$54,452

The same type of differences has accumulated in the asset and liability accounts, with an additional discrepancy resulting from interest capitalized during construction. The following amounts are necessary to reconcile the assets and liabilities of the Columbia Basin, Hungry Horse, and Yakima (Kennewick Division) Projects, as

published by the Bonneville Power Administration, with the corresponding assets and liabilities as shown in the official accounting records and included in the financial statements of this report.

	Total difference	Accounting policy differences: Columbia Basin	Hungry Horse	Yakima (Kennewick)	Miscellaneous classification variations
Fixed assets	$15,643,303	$ 9,274,494	$5,911,953	$453,000	$ 3,856
Accumulated depreciation	-20,491,144	-16,737,913	-3,715,475	-37,756	-
Other assets	-306,936	-	-	-	-306,936
Total	$-5,154,777	$-7,463,419	$2,196,478	$415,244	-$303,080
Interest on Federal investment	$34,553,682	$26,061,669	$7,980,027	$511,986	$ -
Nonreimbursable expense	-2,220,198	-	-2,220,198	-	-
Accumulated net revenues for power and nonpower	-37,185,181	-33,525,088	-3,563,351	-96,742	-
Other liabilities	-303,080	-	-	-	-303,080
Total	$-5,154,777	$-7,463,419	$2,196,478	$415,244	-$303,080

The 1956 Annual Report of the Secretary of the Interior has difficulty with these same conflicts in accounting policy where it cites the costs of plant, property, and equipment for the Hungry Horse and Columbia Basin Projects. On pages 52 to 55 of the report, the cost of plant for these projects is stated at one amount, while on page 71 the same plant is stated at a different amount. In one instance the financial statements prepared by the Bureau of Reclamation especially for the annual report of the Bonneville Power Administration were relied on, and in the other the official statements of the Bureau of Reclamation.

ACCOUNTING FOR REPAYMENT OF REIMBURSABLE COSTS--A RECOMMENDATION TO THE SECRETARY OF THE INTERIOR AND THE CHIEF OF ENGINEERS

Financial and statistical data on reimbursable operations prepared by the Corps of Engineers and the Bureau of Reclamation do not make a clear comparison of the actual repayment of investment of the United States Government with a scheduled repayment or theoretical return of funds which would be sufficient to repay the Federal investment within the repayment period determined by law or administrative policy pursuant to law.

In the Columbia River basin, such an analysis is particularly appropriate to power which is the only substantial revenue-producing function. Because power revenues may vary considerably due to a number of not entirely predictable factors, it is desirable to have some indication during the repayment period as to whether the project (or system of projects) is ahead or behind in repaying the investment. This disclosure is a matter completely divorced from conventional cost accounting. A statement showing

repayment versus scheduled repayment demonstrates the extent to which rate-making policies are being adhered to, while conventional cost accounting has the broader responsibility of demonstrating, among other things, the effects of the policies themselves.

Our report on the audit of the Columbia River Power System and Related Activities for the fiscal year ended June 30, 1955, dated November 26, 1956, commented on the desirability of comparing the status of repayment of investment with a scheduled repayment:

> "Scheduled repayments of the investment of the United States Government in relation to the actual repayments from funds derived from operations *** should be disclosed to readers of the financial statements. We believe that data on status of repayment of investment should be supplemental to financial statements based on accounting for costs. Accordingly, we recommend that the Corps of Engineers and the Department of the Interior design statements specifically for the purpose of showing clearly the status of repayment of capital investment and provide information for reviews and evaluation of rates."

Since our recommendation, the Bonneville Power Administration has taken the lead on the matter and has prepared a schedule of annual repayment requirements for projects and transmission facilities of the Columbia River Power System, making the necessary calculations for Corps of Engineers projects. (See pp. 24 and 25.) The Corps has not yet agreed or disagreed with the methods used by the Administration but expects this matter to be discussed by a newly established interagency work group.

Inasmuch as the Corps of Engineers and the Bureau of Reclamation have not taken action on this matter, our recommendation is repeated.

MAP OF THE COLUMBIA RIVER BASIN

SHOWING MAJOR WATER RESOURCES PROJECTS

IN OPERATION DURING FISCAL YEAR 1956

There are well over a hundred water resources projects in the Columbia River basin, but the 23 projects presented on this map generate 100 percent of the Federal power, supply water to 97 percent of the irrigated acreage served by Federal facilities, include all dams and levees of the main control plan for flood protection, and carry most of the important navigation traffic. Transmission facilities of the Bonneville Power Administration have been necessarily omitted to avoid excessive detail.

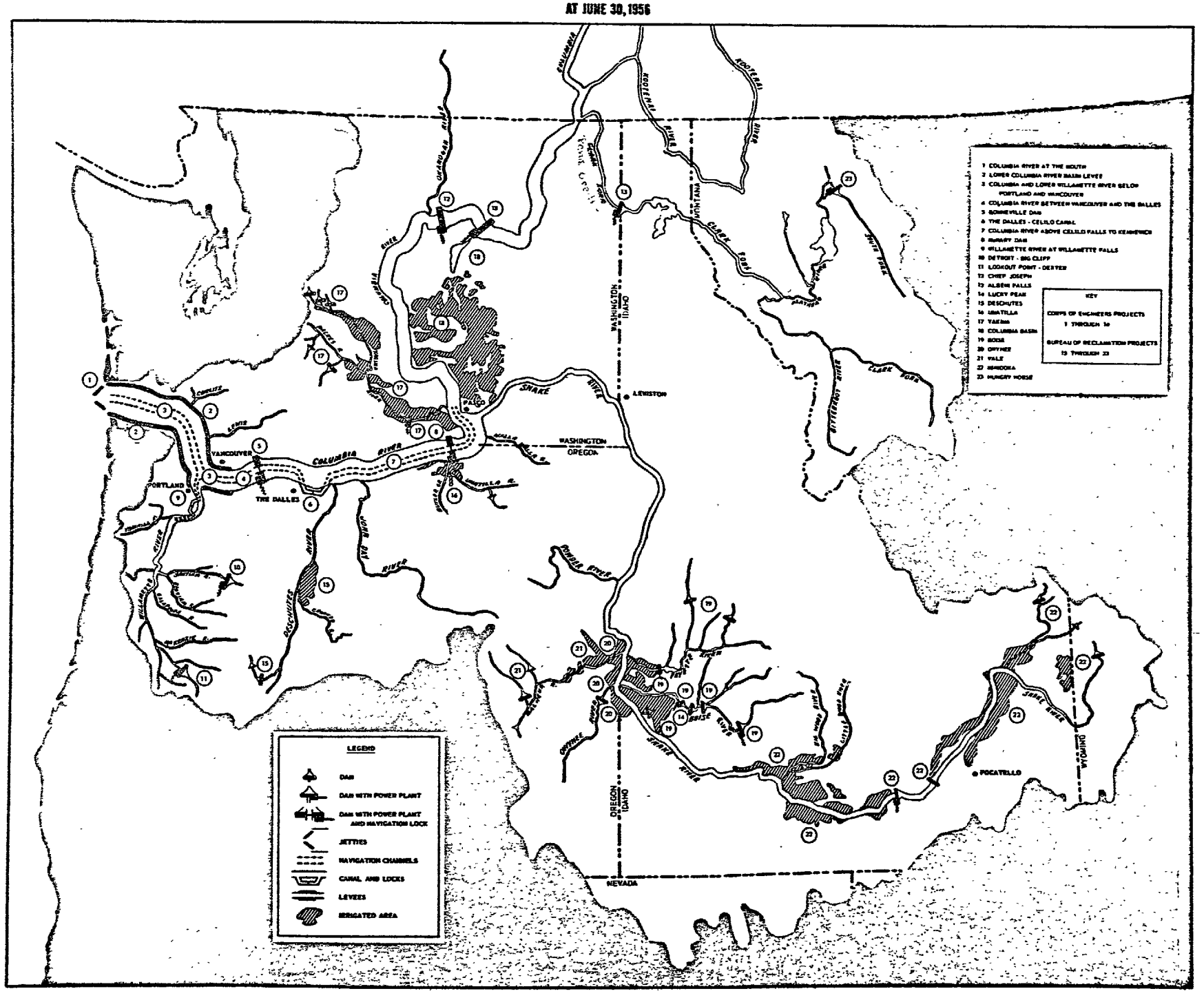
Commercial power, irrigation, flood control, navigation, and other operations of these projects during fiscal year 1956 are described on pages 59 through 86 of this report.

COLUMBIA RIVER BASIN

MAJOR WATER RESOURCE PROJECTS IN OPERATION

CORPS OF ENGINEERS AND BUREAU OF RECLAMATION

AT JUNE 30, 1956



COMMERCIAL POWER OPERATIONS

IN FISCAL YEAR 1956

Nearly all Federal generating capacity in the Columbia Basin is included as a part of the Columbia River Power System. The generating projects of the System are bound together by the transmission system and common marketing activities of the Bonneville Power Administration. Pursuant to various legislative acts and administrative orders, the Bonneville Power Administration has been authorized to transmit and sell power excess to project needs for all Corps of Engineers and Bureau of Reclamation projects now operating in the basin excepting the Boise and Minidoka Projects. Excess power from the isolated and relatively minor generating facilities at the Boise and Minidoka Projects of the Bureau of Reclamation is transmitted over project lines and sold at rates established by the Bureau.

COMMERCIAL ELECTRIC PLANT IN SERVICE

A primary objective of the comprehensive plan submitted by the Corps of Engineers in 1950 was to provide sufficient generating capacity to meet the peak load of about 10,000,000 kilowatts that was expected between 1960 and 1970 on the Federal system. The plan recognized existing and authorized power projects, and an additional number of projects were recommended for authorization by the Chief of Engineers. The status at June 30, 1956, of projects existing, authorized, or recommended for authorization in 1950 is given in the following table:

	Stream	Kilowatts: Installed name-plate capacity at June 30, 1956	Kilowatts: Ultimate name-plate capacity proposed
Existing projects:			
Bonneville Dam	Columbia	518,400	518,400
Columbia Basin	Columbia	1,944,000	1,944,000
Hungry Horse	South Fork Flathead	285,000	285,000
Albeni Falls	Pend Oreille	42,600	42,600
Lookout Point-Dexter	Middle Fork Willamette	135,000	135,000
Detroit-Big Cliff	North Santiam	118,000	118,000
McNary	Columbia	840,000	980,000
Chief Joseph	Columbia	256,000	1,024,000
Yakima	Yakima	12,000	23,250
Boise	Boise, Payette	36,500	50,000
Minidoka	Snake	13,400	43,400
		4,200,900	5,163,650
Projects under construction:			
The Dalles	Columbia	-	1,119,000
Ice Harbor	Snake	-	270,000
Hills Creek	Middle Fork Willamette	-	30,000
Cougar	South Fork McKenzie	-	25,000
Palisades	Snake	-	114,000
			1,558,000
Authorized projects:			
Libby	Kootenai	-	516,000
Lower Monumental	Snake	-	270,000
Little Goose	Snake	-	270,000
Lower Granite	Snake	-	225,000
John Day	Columbia	-	1,200,000
Green Peter-White Bridge	Middle Santiam	-	96,000
		-	2,577,000
Unauthorized:			
Glacier View (note a)	North Fork Flathead	-	210,000
Hells Canyon (note b)	Snake	-	850,000
Priest Rapids (note c)	Columbia	-	1,219,000
Mountain Home	Payette	-	165,000
		-	2,444,000
Total		4,200,900	11,742,650

[a]Not recommended because of opposition by recreation and wildlife interests.

[b]License granted to Idaho Power Company by FPC for alternative development. Oxbow and Brownlee Dams are under construction, and a third is scheduled for construction.

[c]Authorization modified to permit development by non-Federal interest. License granted to Grant County P.U.D. by FPC scheduled for construction.

Libby, Glacier View, and Hells Canyon, together with the existing Columbia Basin (Grand Coulee), Hungry Horse, and Albeni Falls Projects, were designed to provide storage for normal power operation whereby the prime power available at all downstream generating stations would be greatly increased.

Additions to the Columbia River Power System in fiscal year 1956 had a name-plate rating of 562,200 kw. The increase was represented by installation of the last unit at Albeni Falls (14,200 kw), four additional units at McNary Dam (280,000 kw), the first four units at Chief Joseph (256,000 kw), and the installation of all units at the Chandler Plant of the Yakima Project (12,000 kw).

About 85 percent of the Federal generating capacity is concentrated in two areas. The Columbia Basin (Grand Coulee Dam and Power Plant) and Chief Joseph Projects, with a combined capacity of 2,200,000 kw and 53 percent of the total, are located in central Washington. Bonneville and McNary Dam Projects, with a combined capacity of 1,358,400 kw and 32 percent of the total, are located on the border between Oregon and Washington. It is the primary function of the Bonneville Power Administration transmission grid to move this power to certain fairly well defined load centers:

Load centers	Percent of load
Portland	34
Seattle-Tacoma	21
Central Washington	15
Spokane	12
All other	18
Total	100

The Portland Area is the recipient of most of the Bonneville and McNary Dam Projects combined power while the bulk of the Columbia Basin (Grand Coulee Dam and Power Plant) and Chief Joseph Projects power is transmitted to Seattle-Tacoma, Spokane, and central Washington.

The Bonneville Power Administration transmission grid consisted of 7,195 circuit miles of transmission lines at June 30, 1956. This total includes 231 circuit miles of 287,000 volt lines, 4,054 circuit miles of 230,000 volt lines, 2,679 circuit miles of 115,000 volt lines, and 231 miles of lower voltage line. Additions to the Bonneville Power Administration transmission grid during fiscal year 1956 amounted to 493 circuit miles, chiefly 230,000 volt line. Transmission lines constructed by the Bureau of Reclamation in connection with Boise, Minidoka, and other projects totaled less than 350 circuit miles at the end of the fiscal year.

The Bonneville Power Administration transmission grid, in addition to transmitting Federal power to Federal customers, permits an electrical and hydraulic integration of the Columbia River Power System and the other electric power utilities of the Northwest. The 10 major utilities of this region, together with British Columbia Electric Company, coordinate their operations through a voluntary agreement known as the Northwest Power Pool. The Pool provides the region with many benefits. It coordinates the operation of the member utilities, including the use of both hydro and steam generation, to insure the maximum and most economical use of all power resources. The better continuity of service afforded by the large number of interconnections results in a saving in stand-by capacity needed to meet emergencies.

SOURCE AND DISPOSITION OF ENERGY

With the installation of new generating capacity and favorable water conditions, generation at Federal plants in the basin reached a new annual high of 28 billion kwh in fiscal year 1956. This generation represents an 18 percent increase over the preceding high set in fiscal year 1955. A summary of the basin electrical operations for fiscal year 1956, expressed in kilowatt-hours, is presented by the following table:

Source	Kilowatt-hours		
	Total	Columbia River Power System	Other basin projects
Generation:			
Columbia Basin	13,832,121,000	13,832,121,000	-
Bonneville Dam	4,310,002,300	4,310,002,300	-
Hungry Horse	1,208,009,400	1,208,009,400	-
Albeni Falls	236,788,000	236,788,000	-
McNary Dam	5,613,412,000	5,613,412,000	-
Detroit-Big Cliff	562,469,000	562,469,000	-
Lookout Point-Dexter	538,350,000	538,350,000	-
Chief Joseph	1,913,968,000	1,913,968,000	-
Yakima	26,303,795	26,303,795	-
Boise	282,875,950	-	282,875,950
Minidoka	101,729,728	-	101,729,728
Total generation	28,626,029,173	28,241,423,495	384,605,678
Purchased and interchanged in	3,453,731,332	3,453,564,530	166,802
Total energy available	32,079,760,505	31,694,988,025	384,772,480
Disposition			
Sales of commercial power:			
Public utilities	7,031,938,883	6,909,017,872	122,921,011
Private utilities	5,670,017,369	5,502,597,518	167,419,851
Federal agencies	1,677,468,928	1,677,468,928	-
Aluminum industry	10,140,529,749	10,140,529,749	-
Other industry	1,744,470,492	1,744,113,372	357,120
Total commercial sales	26,264,425,421	25,973,727,439	290,697,982
Project use:			
Irrigation pumping	584,631,083	511,300,646	73,330,437
Other	180,057,669	177,604,711	2,452,958
Total project use	764,688,752	688,905,357	75,783,395
Other disposition and losses:			
Interchanged out	3,162,762,317	3,161,319,679	1,442,638
Used by transmission system	56,545,972	56,545,972	-
Transmission losses	1,831,338,043	1,814,489,578	16,848,465
Total other	5,050,646,332	5,032,355,229	18,291,103
Total disposition and losses	32,079,760,505	31,694,988,025	384,772,480

PLANT-IN-SERVICE COSTS AND NET RESULTS FROM OPERATIONS

Commercial electric plant in service at June 30, 1956, is summarized in the following table:

	Total	Production	Transmission
Multiple-purpose projects and related transmission facilities	$1,132,857,842	$742,495,792	$390,362,050

A listing of the commercial electric plant in service for multiple-purpose projects and related transmission facilities will be found on schedule 7 of the financial statements.

The net results from commercial power operations during fiscal year 1956 were:

	Total	Columbia River Power System	Other basin projects
Operating revenues	$62,138,917	$61,253,605	$885,312
Operating expenses	31,013,578	30,670,973	342,605
Net operating revenues	31,125,339	30,582,632	542,707
Interest and other deductions	21,649,836	21,554,178	95,658
Net commercial power revenues	$ 9,475,503	$ 9,028,454	$447,049

Details of the operating revenues, operating expenses, and deductions from income will be found on schedule 2 of the financial statements. A further analysis of operating expenses and deductions from income, by project, will be found on schedule 11 of the financial statements.

SERVICE TO PREFERENCE CUSTOMERS

Section 4(a) of the Bonneville Project Act (16 U.S.C. 832c) provides:

> "In order to insure that the facilities for the generation of electric energy at the Bonneville project shall be operated for the benefit of the general public, and particularly of domestic and rural consumers, the administrator shall at all times, in disposing of electric energy generated at said project, give preference and priority to public bodies and cooperatives."

Preference in the sale of power to public bodies and cooperatives is provided also by the Reclamation Project Act of 1939 (43 U.S.C. 485h) and the Flood Control Act of 1944 (16 U.S.C. 825s). Authorizing legislation for the Hungry Horse Project (43 U.S.C. 593a) does not specify preference to any class of customers in the sale of power, although it does provide for geographical preference with the language, "*** for the generation of electric energy, and for other beneficial uses primarily in the State of Montana but also in downstream areas ***." With the exception of the Hungry Horse Project, therefore, all energy marketed by BPA and the Bureau of Reclamation in the basin is governed by legislation providing preference to certain classes of customers. In fiscal year 1956, 33 percent of sales (kilowatt-hours) were to public utilities, such as municipalities, cooperatives, and public utility districts, and to Federal agencies.

The future growth of public and Federal agencies is expected to absorb the majority of Federal firm power in the basin. Load forecasts prepared by BPA estimate that by 1965 about 70 percent of available firm power from Columbia River Power System projects now in operation or under construction will be sold to preferred customers. The remainder has been sold to directly consuming industrial customers.

IRRIGATION OPERATIONS IN FISCAL YEAR 1956

The President's Water Resources Policy Commission estimated in 1950 that 7.7 million acres of land in the Columbia Basin are suitable for irrigation, and the latest Census of Agriculture reports that about 4 million of these acres were receiving water. Over two thirds of the total irrigated lands lie in the Snake River subbasin, largely on the Snake River plain and in the broad valleys along the lower courses of the Boise, Payette, Weiser, Owyhee, and Malheur Rivers. Much of the remaining irrigated area is found along such minor tributaries as the Yakima, Wenatchee, Okanogan, Bitterroot, and Flathead Rivers. The only large-scale irrigation of the high central plateaus in the basin, directly from the Columbia River, has been provided by the Columbia Basin Project.

Development of the present acreage under irrigation has been a mixed effort by private, cooperative, or other agencies and the Federal Government. About 72 percent of the lands irrigated were initially developed without Federal assistance, but more than 40 percent of these lands, lands which were inadequately supplied, have become the recipients of supplemental water made possible by federally constructed facilities. The lands thus aided, together with the 28 percent of the total irrigated lands developed exclusively by the Federal Government, account for the nearly 60 percent of basin irrigated lands directly identified with Federal programs.

PROJECTS IN SERVICE AND ACREAGE IRRIGATED

The following table lists the projects which have been constructed or improved by the Bureau of Reclamation and their respective acreages in the calendar year 1955. Two multiple-purpose projects of the Corps (Detroit-Big Cliff and Lookout Point-Dexter) with an allocation to irrigation are not included as the irrigation function is currently inactive.

	Acreage for which the Bureau was prepared to supply water			Irrigated acreage
	Full	Supplemental	Total	
Boise	224,140	133,714	357,854	327,519
Columbia Basin	246,849	-	246,849	149,229
Minidoka	234,515	861,287	1,095,802	1,020,177
Yakima	267,068	182,031	449,099	393,955
Owyhee	105,139	13,800	118,939	112,326
Deschutes	50,000	49,662	99,662	94,550
Umatilla	18,033	14,736	32,769	23,717
Vale	32,000	-	32,000	30,415
Arnold	4,248	-	4,248	2,632
Avondale	927	-	927	287
Baker	-	7,312	7,312	7,305
Bitter Root	16,665	-	16,665	16,386
Burnt River	-	15,230	15,230	15,115
Crescent Lake Dam	6,831	-	6,831	5,611
Dalton Gardens	944	-	944	484
Frenchtown	4,810	-	4,810	3,932
Lewiston Orchards	3,528	-	3,528	2,198
Missoula Valley	977	-	977	830
Ochoco	8,500	-	8,500	8,140
Okanogan	5,316	-	5,316	3,983
Rathdrum Prairie	4,236	-	4,236	3,415
Total	1,234,726	1,277,772	2,512,498	2,222,206

A little more than half of the acreage harvested in the calendar year 1955 was devoted to hay, pasture, and forage crops. About one fourth of the harvested acreage had been planted to cereals, such as wheat, barley, and oats. The remainder was planted to beans, potatoes, and other crops.

FEDERAL AND NON-FEDERAL PARTICIPATION IN FEDERAL RECLAMATION PROJECTS

A summary of the construction work performed by the United States (US) and the irrigators (I) in connection with Federal irrigation projects, as well as the various operating arrangements at June 30, 1956, for storage, pumping and diversion, and distribution works, is given in the following table. (Projects are grouped by the acreage for which the Bureau of Reclamation was prepared to serve water.)

	Storage		Pumping, diversion		Distribution		Rehabilitation and betterment
	Construction	O&M	Construction	O&M	Construction	O&M	
Over 200,000 acres:							
Boise	US	US	US	US	US	I	-
Columbia Basin	US	US	US	US	US	US	-
Minidoka	US	US	US	US and I	US and I	US and I	-
Yakima	US	US	US and I	US and I	US and I	US and I	-
20,000 to 200,000 acres:							
Deschutes	US	I	I	I	US and I	I	-
Owyhee	US	I			US and I	I	US
Umatilla	US	US and I	US	I	I	I	US
Vale	US and I	I	US	I	US	I	-
Under 20,000 acres:							
Arnold	-	-	I	I	I	I	US
Avondale	-	-	I	I	I	I	US
Baker	US	I	-	-	I	I	-
Bitter Root	I	I	I	I	I	I	US
Burnt River	US	I	-	-	I	I	-
Crescent Lake Dam	I	I	-	-	-	-	US
Dalton Gardens	-	-	I	I	I	I	US
Frenchtown	-	-	US	I	US	I	-
Lewiston Orchards	-	-	US and I	I	I	I	US
Missoula Valley	-	-	-	-	US	I	-
Ochoco	I	I	-	-	I	I	US
Okanogan	US	I	US	I	US	I	-
Rathdrum Prairie:							
Post Falls Unit	-	-	US	I	US and I	I	US
Hayden Lake Unit	-	-	I	I	I	I	US
Other:							
Detroit-Big Cliff	US	US	-	-	-	-	-
Lookout Point-Dexter	US	US	-	-	-	-	-

Although there is no absolute policy governing the above operating arrangements, irrigation facilities constructed by the United States have been usually turned over to the irrigation districts for operation and maintenance unless one or more of the following conditions is present: (1) the facility is part of a large complex storage and diversion system which serves two or more irrigation districts, (2) the facility serves jointly, with irrigation, a function such as power or flood control, or (3) the facility is still incomplete or is being used during a developmental period.

PLANT-IN-SERVICE COSTS AND OPERATING EXPENSES

Irrigation plant of the United States in service at June 30, 1956, is summarized in the following table:

	Total	Storage	Power	Distribution	General
Multiple-purpose projects	$394,466,459	$128,705,288	$9,366,322	$256,394,849	$ -
Single-purpose projects	47,893,880	18,323,523	-	29,330,396	239,961
Plant in service	$442,360,339	$147,028,811	$9,366,322	$285,725,245	$239,961

A listing of the plant in service for the individual multiple- and single-purpose projects will be found on schedules 7 and 8 of the financial statements.

There is no irrigation revenue or expense accruing to the United States as a result of Federal operation and maintenance of reclamation projects in the Columbia Basin for irrigation purposes. Federal operation and maintenance, insofar as irrigation is concerned, is covered in advance by funds of the irrigators and is a reimbursed rather than revenue-producing service. A total of $2,157,289 was charged against advances by the irrigators to cover operating expenses in fiscal year 1956. Schedule 3 of the financial statements itemizes these expenses by project.

Recovery of construction costs under contract has not been classified as revenues by the Bureau of Reclamation.

REPAYMENT OF CONSTRUCTION AND OTHER COSTS UNDER CONTRACT

Under the discussion of financial policy relating to irrigation, pages 26 through 29, the arrangements for repaying irrigation construction costs were set forth. After the assistance from power, relief granted by acts of Congress, and other credits, the estimated construction costs to be ultimately repaid by irrigators amounted to $257,720,934. The relationship between the estimated construction costs to be ultimately repaid by irrigators and the construction costs presently under repayment contract is as follows:

Estimated costs to be repaid by irrigators	$257,720,934
Less amounts not yet covered by contracts	23,028,857
	234,692,077
Plus contracts executed in excess of projects costs ($1,869,578) and other differences ($47,322)	1,916,900
Estimated construction costs covered by contract	$236,608,977

Repayment contracts are frequently negotiated to cover, in addition to construction costs, the net expense of operation and maintenance during the construction or development periods and interest and penalty assessments. The face value of the contracts, therefore, include these amounts:

Estimated construction costs covered by contract as above	$236,608,977
Operation and maintenance expense funded	5,492,683
Interest and penalties funded	728,945
Face amount of repayment contracts	$242,830,605

By June 30, 1956, matured contract installments amounted to $46,524,717, or about 19 percent of the contract totals. Of these matured charges, less than one tenth of 1 percent was delinquent.

FLOOD CONTROL OPERATIONS

IN FISCAL YEAR 1956

An extensive flood plain and a high degree of urban, agricultural, and industrial development are the main requisites to heavy flood damage, and there are two areas in the Columbia Basin that combine these factors to an important degree. The first of these is the 170,000-acre flood plain of the lower Columbia River, lying chiefly downstream from Bonneville Dam and including the Portland-Vancouver area. Major floods along the lower Columbia occur in the late spring or early summer months, the magnitude depending on the amount and timing of the snowmelt in the various parts of the basin.

The second area lies in the Willamette River subbasin where about 20 percent of the urban, agricultural, and industrial area is located in the major flood plain. Floods in the Willamette are a matter separate and apart from floods elsewhere in the basin. The substantial winter precipitation, which accumulates as snow in the more westerly parts of the basin, falls generally as rain in the Willamette drainage area causing floods during the months of November, December, January, and February.

Flood damages elsewhere in the basin, although important, are relatively small in comparison with those experienced along the lower Columbia and Willamette. Of the other flood areas, the lands lying along the Snake River above Weiser, Idaho, present the most serious problem. With few exceptions, floods in these other areas (1) are the result of snowmelt, (2) happen about the same time as floods on the lower Columbia, and (3) are protected to some extent by the same reservoir facilities.

FLOOD CONTROL PLANT IN SERVICE (MAIN CONTROL PLAN) AND EFFECTS ON THE 1956 FLOOD

Only a fraction of the main control plan for flood protection along the Columbia, Snake, Kootenai, and Clark Fork-Flathead-Pend Oreille Rivers had been placed in service by 1956. Of the 21,000,000 acre-feet of flood control storage contemplated by the plan for control of a flood like that of 1894, less than 4,000,000 were available in the existing facilities at Hungry Horse Project (Hungry Horse Dam), Columbia Basin Project (Grand Coulee Dam, unmodified), Boise Project (Cascade, Anderson Ranch, and Arrowrock Dams), and Lucky Peak Project (Lucky Peak Dam).[1] Levee protection

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[1] Other storage projects in the main control plan are Hells Canyon, Garden Valley, John Day, Priest Rapids, Libby, Glacier View, Palisades, and modified outlet works for Grand Coulee. Alternative plans are being considered in connection with several of these projects.

was given in varying degrees to about 99,000 of the 170,000 acres in the flood plain of the lower Columbia through construction by local interests and subsequent raising, strengthening, and extension by the Corps; but no work had been done pursuant to the main control plan for raising, strengthening, and expanding the levee system as authorized by the Flood Control Act of 1950.

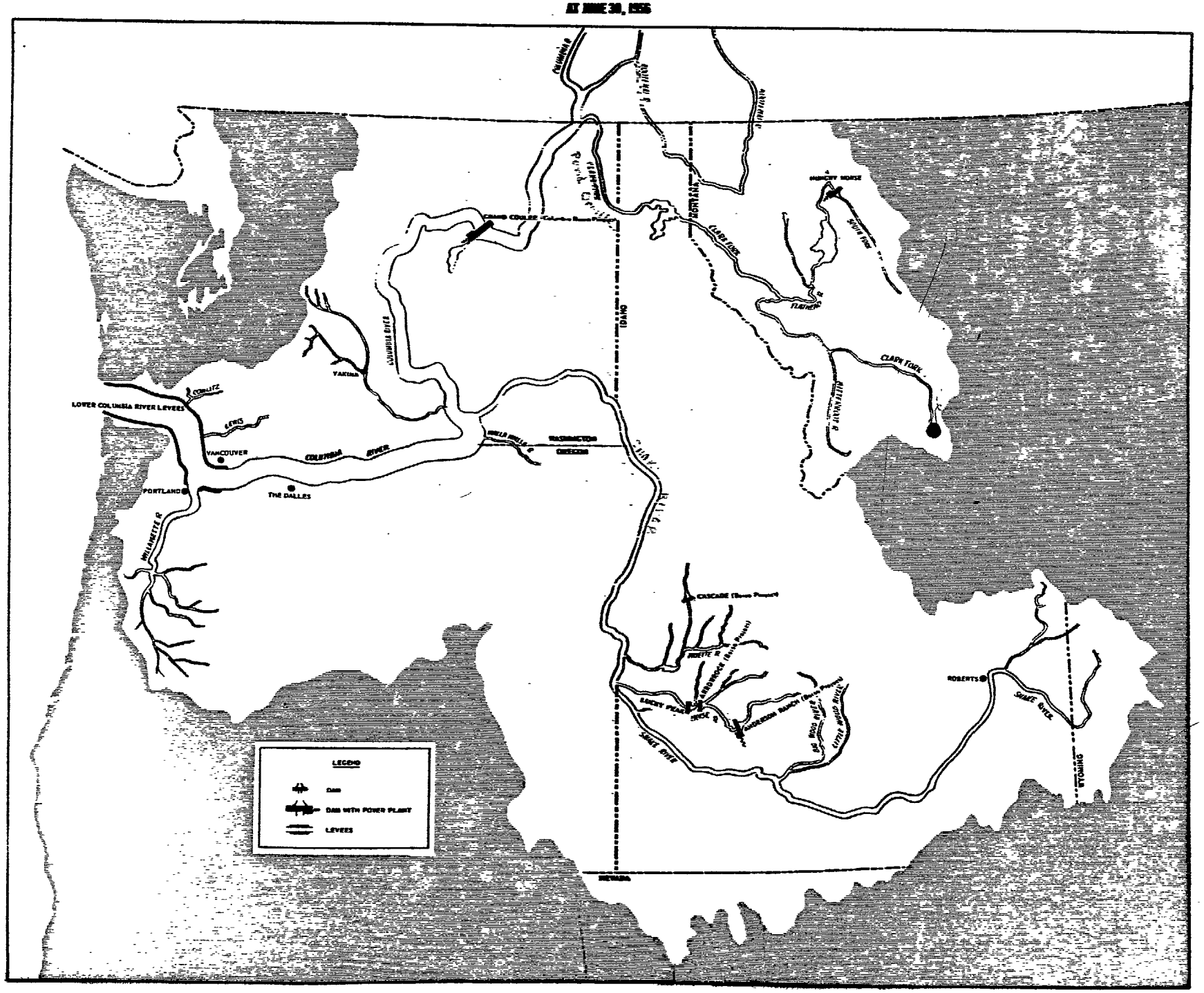
The map on the next page locates the major flood control facilities in operation on basin rivers other than the Willamette during fiscal year 1956.

COLUMBIA RIVER BASIN

MAJOR FLOOD CONTROL PROJECTS IN OPERATION

OTHER THAN IN THE WILLAMETTE SUB-BASIN

AT JUNE 30, 1956



Although Grand Coulee Dam is an important part of the existing main control plan for flood prevention, only a nominal $1,000,000 was allocated to flood control and navigation jointly (the $1,000,000 is shown as allocated to navigation in the financial statements). Cascade Dam also is a part of the main control plan for flood prevention that does not have an allocation to flood control.

In addition to the main control plan facilities, a number of minor flood control projects have been undertaken at scattered points for the protection of such sites as Yakima, Washington (Yakima River), St. Maries, Idaho (St. Joe River), Coeur d'Alene, Idaho (Spokane River), Walla Walla, Washington (Mill Creek), and Milton-Freewater, Oregon (Walla Walla River).

The 1956 spring and summer flood on the Columbia, Snake, Kootenai, and Clark Fork-Flathead-Pend Oreille Rivers was, in terms of unregulated discharge, the fourth largest in history. Operation of the reservoir capacity available reduced the 1956 flood from a computed unregulated peak of 940,000 cubic feet per second at The Dalles to an actual peak, on June 2, of 823,000 cubic feet per second. Important reductions of peak flows by means of storage operations were also effected at control points on the Yakima, Snake, Boise, Payette, and Clark Fork-Flathead-Pend Oreille Rivers:

Stream	Critical areas	Stage at control point	
		Unregulated	Observed
		(feet)	
Clark Fork-Flathead-Pend Oreille	Kalispell, Mont., to Flathead Lake. Pend Oreille Lake to Albeni Falls.	18.7	15.3
Yakima	Yakima, Ellensburg, Wash. Irrigated valley lands	13.8	10.8
Snake (upper)	Heise-Roberts, Idaho	12.1	9.5
Snake (middle)	Irrigated valley lands	14.8	11.4
Boise	Irrigated valley lands	10.1	6.9
Payette	Irrigated valley lands	14.1	10.5
Columbia	Flood plain below Bonneville, incl. Portland-Vancouver area	29.2	26.8

The Bureau of Reclamation operates the large irrigation reservoirs of the Yakima, Minidoka, and Boise Projects in the interests of flood control, consistent with reasonably safe operation for their primary purpose. These operations provided or contributed to the substantial flood reductions in the Yakima, Boise, Payette, and Upper Snake River Subbasins.

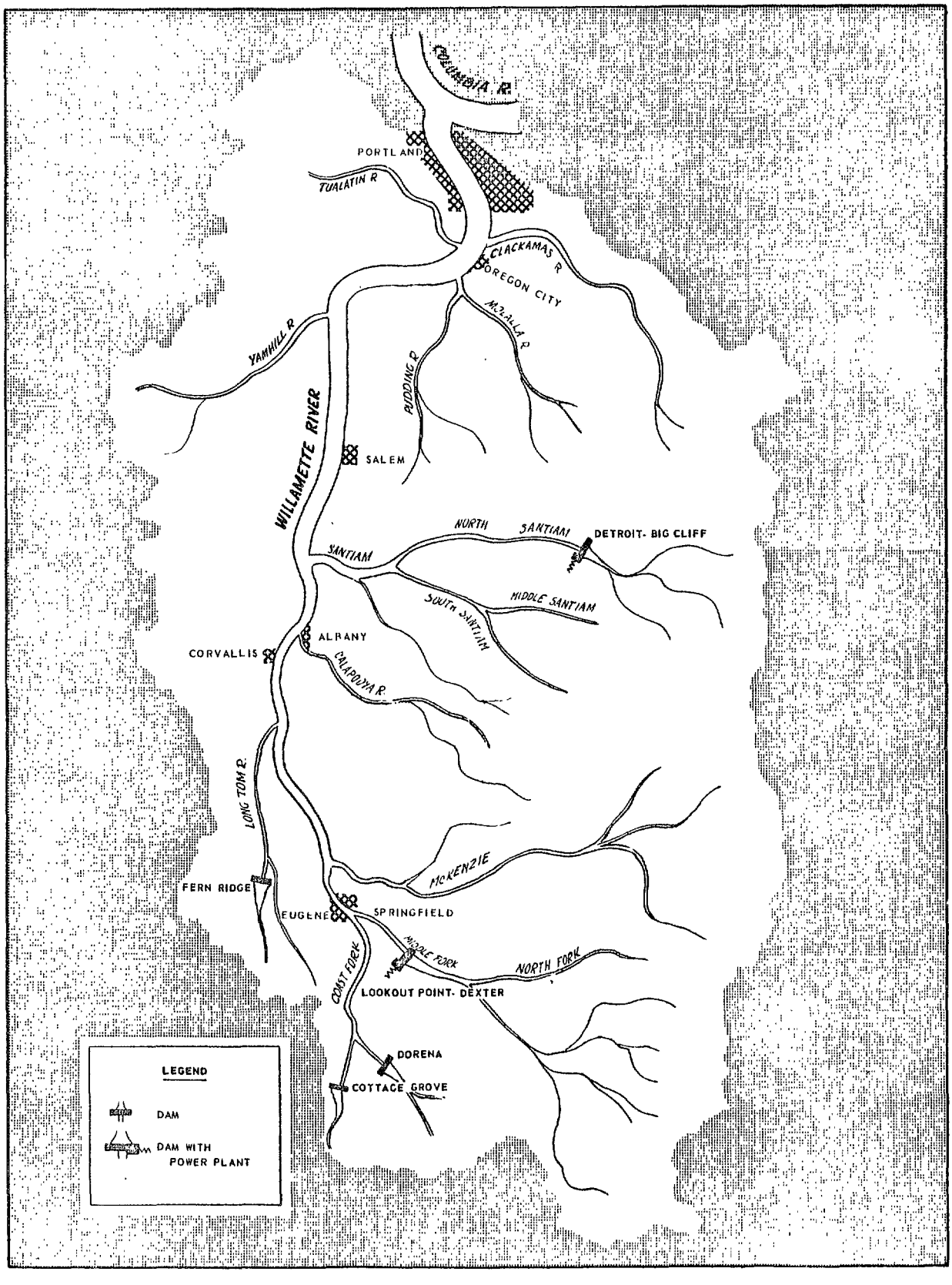
FLOOD CONTROL PLANT IN SERVICE (WILLAMETTE SUBBASIN) AND EFFECTS ON THE DECEMBER 1955 FLOOD

As is the case on the main stem of the Columbia and its other tributaries, the comprehensive plan for flood protection in the Willamette subbasin is not complete. Five of the fourteen reservoirs contemplated were in operation, however, and three of them--Lookout Point-Dexter, Dorena, and Cottage Grove--controlled runoff from about 67 percent of the area above Eugene, Oregon. The other two reservoirs in operation during the year were Fern Ridge and Detroit-Big Cliff. Location of these five reservoirs in relation to major cities in the valley is indicated by the following map:

WILLAMETTE SUB-BASIN

FLOOD WATER STORAGE PROJECTS IN OPERATION

AT JUNE 30, 1956



In addition to the reservoirs, bank protection had been provided at 119 locations along the Willamette and its tributary rivers and a project for improving Amazon Creek (in the vicinity of Eugene) was about 52 percent complete.

In December 1955 a serious flood occurred in the Willamette subbasin. Above Salem the flood was of a magnitude that can be expected about once every 20 years, while below Salem the relative magnitude was expressed in terms of a 10-year frequency. The regulatory effects of the five reservoirs in operation for flood control during December 1955 are shown for selected points by the following table:

	Bankfull stage	Observed maximum	Natural maximum
		(feet)	
Eugene	7.5	8.7	16.6
Corvallis	16.0	24.8	28.9
Albany	16.5	26.7	31.2
Salem	16.0	25.5	29.5
Oregon City	12.0	17.3	19.0

Although the storage regulation accomplished by the five reservoirs was not effective in keeping the streams within their banks, it did effect substantial reductions in flood stages at downstream points. The 7.9-, 4.5-, and 4-foot reductions in flood stage at Eugene, Albany, and Salem, respectively, were credited with preventing serious flooding in these populated areas. Natural stages would have inundated all the business district of Cottage Grove and Junction City and parts of the residential, industrial, and commercial properties in Springfield, Eugene, Albany, Salem, and Oregon City, as well as many smaller communities. The agricultural areas inundated were reduced from an estimated 227,800 acres in those parts of the subbasin having flood control works to about 100,700 acres. The stage reductions effected were sufficient to largely eliminate inundation of highways and railroads with the attendant disruption of transportation generally.

PLANT-IN-SERVICE COSTS AND OPERATING EXPENSES

Basin flood control plant in service at June 30, 1956, is summarized in the following table:

	Total	Storage	Levees, bank protection and channel improvements	Clearing and snagging
Multiple-purpose projects	$101,805,528	$101,805,528	$ -	$ -
Single-purpose projects	39,723,251	22,700,356	16,401,231	621,664
Plant in service	$141,528,779	$124,505,884	$16,401,231	$621,664

A listing of the plant in service for the individual multiple- and single-purpose projects will be found on schedules 7 and 9 of the financial statements.

The costs of operating and maintaining flood control plant in service and carrying out other flood control activities during fiscal year 1956 were as follows:

		Plant operations			
	Total	Storage	Bank protection	Emergency flood control	Other activities
Multiple-purpose projects	$2,509,651	$2,509,651	$ -	$ -	$ -
Single-purpose projects and activities	1,697,183	172,250	281,051	1,236,958	6,924
Cost of operations	$4,206,834	$2,681,901	$281,051	$1,236,958	$6,924

A detail of the operating costs for multiple- and single-purpose projects will be found on schedules 4 and 11 of the financial statements. The figures above and on schedule 4 include interest and depreciation of $1,638,047 and $650,573, respectively, for the Albeni Falls, Detroit-Big Cliff, and Lookout Point-Dexter Projects. Interest or depreciation has not been recorded as an operating cost on other projects serving the purpose of flood control.

BENEFITS FROM OPERATION OF FLOOD CONTROL PLANT

A report on flood control operations for the 1956 Columbia River flood (and tributaries other than the Willamette) was prepared by the Columbia Basin Inter-Agency Committee, and the damages averted through storage operations alone were estimated to have been more than 37 million dollars. This table presents a detail of the savings and other related data:

Stream	Calculated damages		
	Unregulated	Observed	Prevented
Columbia	$39,000,000	$14,000,000	$25,000,000
Snake (upper)	3,220,000	1,140,000	2,080,000
Snake (middle)	385,000	115,000	270,000
Boise and Payette	4,140,000	170,000	3,970,000
Yakima	2,866,000	116,000	2,750,000
Clark Fork-Flathead-Pend Oreille	3,970,000	369,000	3,601,000
	$53,581,000	$15,910,000	$37,671,000

These savings were from storage operations only and do not include savings from the existence of levees, floodwalls, and channel improvement projects. The savings attributable to these facilities, which would be in addition to those scheduled above, were not estimated.

The reservoirs, channel improvements, and bank protection works of the Corps of Engineers reduced damages in the Willamette subbasin by an estimated $13,630,000 during the December 1955 flood. Damage estimates are presented in the following table.

Section or stream	Damages		
	Estimated natural	Recorded actual	Reduction
Willamette River:			
Eugene-Springfield	$ 2,300,000	$ 30,000	$ 2,270,000
Harrisburg	1,300,000	450,000	850,000
Albany-Corvallis	2,200,000	670,000	1,530,000
Salem	4,150,000	1,550,000	2,600,000
Oregon City-Portland	1,930,000	550,000	1,380,000
Total, main stem	11,880,000	3,250,000	8,630,000
Coast Fork Willamette River	2,900,000	110,000	2,790,000
Middle Fork Willamette River	1,340,000	150,000	1,190,000
Long Tom River-Amazon Creek	1,100,000	520,000	580,000
North Santiam River	200,000	-	200,000
Santiam River	400,000	320,000	80,000
Other	160,000	-	160,000
Total	$17,980,000	$4,350,000	$13,630,000

As pointed out earlier, much of the comprehensive plan for flood control in the Willamette subbasin is not yet operative and a substantial part of the actual damages has been attributed to this fact.

NAVIGATION OPERATIONS IN FISCAL YEAR 1956

The Columbia River makes possible one of the principal west coast terminals for ocean shipping and is as well an important artery for internal commerce of the basin. Ocean-going vessels dock at Portland, Oregon, and other cities on tidewater, to load the forest and agricultural products of the region and to unload such nonregional products as petroleum. To some extent the ocean shipping is an extension of the internal barge and raft commerce which moves logs, wheat, and other commodities downstream to the tidewater area and incoming products upstream into the basin interior.

NAVIGATION PLANT IN SERVICE AND TRAFFIC

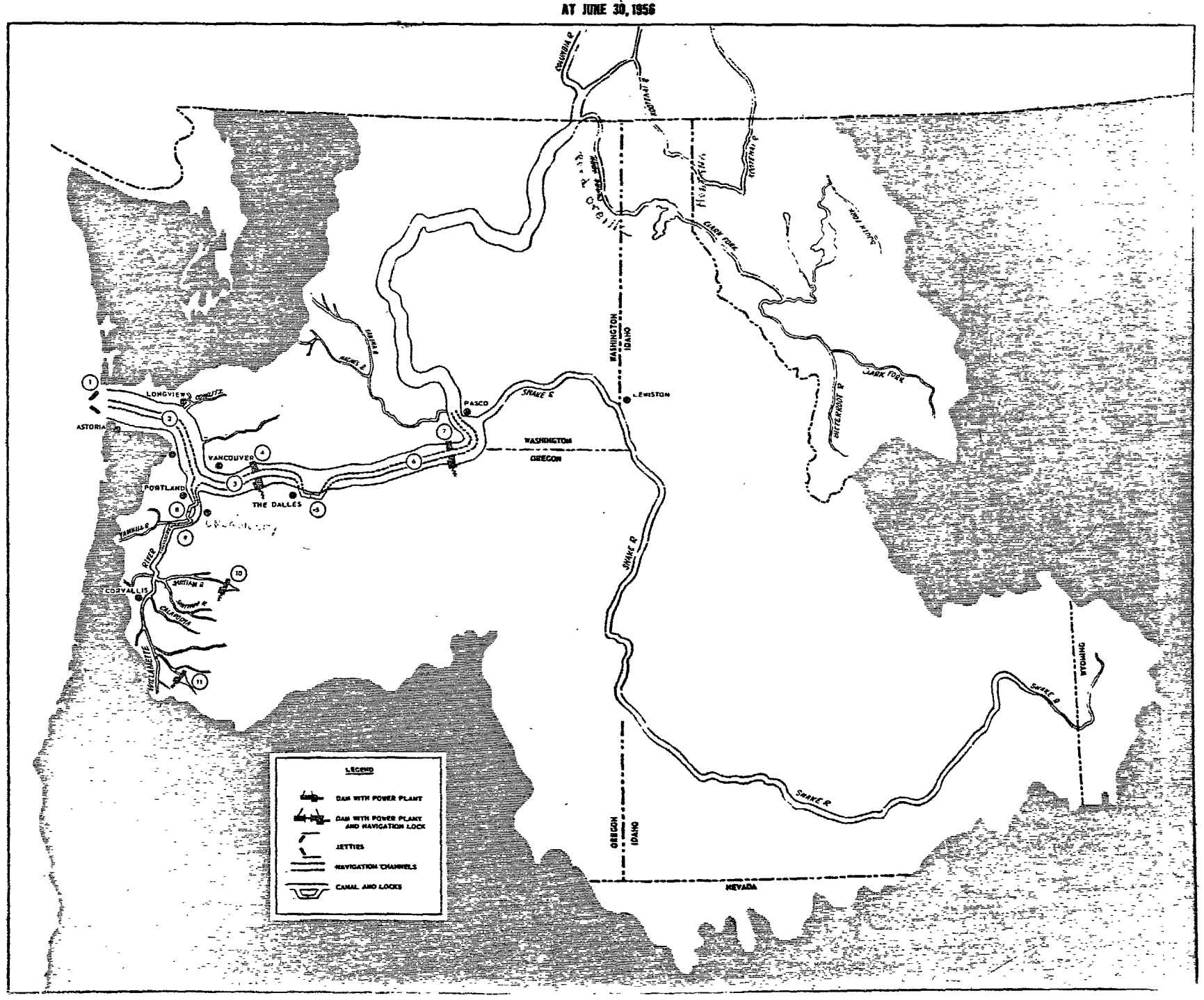
Dredging and the construction of jetties, dikes, and revetments have brought the Columbia and Willamette Rivers below Portland and Vancouver to a high degree of development. In addition, the "308" plan of the Corps of Engineers contemplates a series of reservoir pools, starting with Bonneville Dam, that would provide deep, slack water navigation on the Columbia River as far upstream as the mouth of the Yakima. Four dams planned for the lower Snake River would extend the sequence of navigable reservoir pools up the Snake to Lewiston, Idaho. Missing links in the over-all navigation scheme at June 30, 1956, were: The Dalles Lock and Dam (under construction), John Day Lock and Dam (advance planning status), Ice Harbor Lock and Dam (under construction), and Little Goose, Lower Monumental, and Lower Granite Locks and Dams (advance planning status).

Major navigation projects, as they existed in 1956, and their relative locations are illustrated by the following map and the accompanying key:

COLUMBIA RIVER BASIN

MAJOR NAVIGATION PROJECTS IN OPERATION

AT JUNE 30, 1956



1. Columbia River at the mouth. 40' depth project completed. 48' depth project 27 percent complete. Accomplished by dredging and jetty construction.

2. Columbia and Lower Willamette Rivers below Portland and Vancouver. 35' by 500' channel to Portland and 30' by 300' channel from the junction of the Willamette and Columbia Rivers to Vancouver.

3. Columbia River between Vancouver and The Dalles. 27' by 300' channel from Vancouver to Bonneville.

4. Bonneville Dam. Lock 76' by 500' with depth over sills of 24'. Reservoir pool provides channel of 20' or more and slack water to The Dalles.

5. The Dalles-Celilo Canal. Locks 45' by 265' with a canal depth of 8'. The project will be flooded out by The Dalles Dam and reservoir in 1957.

6. Columbia River above Celilo Falls to Kennewick. 7' channel between The Dalles and McNary Dam.

7. McNary Dam. Lock 86' by 675' with a depth over sills of 12'. Reservoir pool provides a channel of 12' and slack water to the confluence of the Yakima River 48 miles upstream.

8. Locks at Willamette Falls. 37' by 175' with a controlling depth of 6'.

9. Willamette River above Portland and Yamhill River. 8' channel Portland to Oregon City, 3.5' channel Oregon City to Corvallis, and 4' channel on the Yamhill to McMinnville.

10. Detroit-Big Cliff. Controlled releases during low water periods used to maintain navigable depths downstream.

11. Lookout Point-Dexter. Controlled releases during low water periods used to maintain navigable depths downstream.

Not shown are a number of minor but active channel projects located on small tributaries, sloughs, and similar areas along the Columbia River below its junction with the Willamette. This group includes projects on the Lake, Lewis, Cowlitz, Clatskanie, Deep, and Grays Rivers, at Westport and Elokomin Sloughs, at Skamokawa Creek, at Youngs and Baker Bay, on the Multnomah and Skipanon Channels, and at Chinook, Washington. Two projects on the Snake River and the Columbia River above Wenatchee, both of which had insignificant traffic, have been likewise omitted.

Navigation traffic in the basin can be separated into three major categories: (1) Foreign imports and exports, (2) coastwise receipts and shipments, and (3) internal and local traffic. Foreign and coastwise shipping originating or terminating in the Columbia Basin was nearly all accounted for in the Columbia and Willamette Rivers below Portland and Vancouver, with the loading and unloading of vessels drawing 31-33 feet occurring at the Ports of Portland, Longview, Vancouver, St. Helens, and Astoria. A little more than half of the internal and local traffic in the basin, represented by towboats, barges, and rafted logs, was also accounted for in these waters. With minor exceptions only internal and local barge traffic and rafted logs, generally drawing 8' or less, occurred on the Columbia and Willamette Rivers above Portland and Vancouver.

Foreign exports and coastwise shipments consist largely of basin agricultural and forest products, such as wheat and other grains, lumber, shingles, and paper. Coastwise receipts (foreign imports are relatively small) are primarily petroleum products and some cement. Most of this traffic (about 80 percent) loads and unloads at Portland.

Internal traffic on the Columbia and Willamette Rivers, both above and below Vancouver and Portland, may be summarized:

1. Wheat transported by barge downstream on the Columbia.

2. Rafted logs moving downstream on the Columbia, Willamette, and various tributaries.

3. Sand, gravel, and crushed rock moving by barge downstream on the Willamette.

4. Petroleum products moving upstream to points on the Columbia.

All water-borne commerce in the Columbia River basin during the calendar year 1955 can be summarized in the following manner:

	Short tons				
	Below Portland and Vancouver	Willamette above Portland	Columbia above Vancouver to Kennewick	Miscellaneous	Total
Foreign:					
Import	251,375	-	-	-	251,375
Export	2,530,303	-	-	-	2,530,303
Coastwise:					
Receipts	6,992,664	-	11,843	-	7,004,507
Shipments	1,141,681	-	1,279	-	1,142,960
Internal receipts and shipments	8,981,570	3,782,073	2,801,318	373,051	15,938,012
Local	1,057,556	1,165,331	35,395	194,490	2,452,772
Total	20,955,149	4,947,404	2,849,835	567,541	29,319,929

The calendar year basis on which navigation statistics are compiled precludes an exact period comparison with fiscal year navigation costs as presented by the financial statements.

PLANT-IN-SERVICE COSTS AND OPERATING EXPENSES

Navigation plant of the Columbia Basin, in service at June 30, 1956, is presented in summary by the following table:

	Total	Storage and locks	Canal and locks	Channel and harbor improvements	Other
Multiple-purpose projects	$55,137,697	$55,137,697	$ -	$ -	$ -
Single-purpose projects	34,439,315	-	5,459,288	27,873,221	1,106,806
Plant in service	$89,577,012	$55,137,697	$5,459,288	$27,873,221	$1,106,806

A list of the plant in service at the individual multiple- and single-purpose projects will be found on schedule 7 and 10 of the financial statements.

The costs of operating and maintaining navigation plant in service during fiscal year 1956 were as follows:

	Total	Storage	Combination storage and locks	Canal and locks	Channel dredging and clearance
Multiple-purpose projects	$2,174,206	$45,379	$2,128,827	$ -	$ -
Single-purpose projects	3,091,739	-	-	250,938	2,840,801
Cost of operations	$5,265,945	$45,379	$2,128,827	$250,938	$2,840,801

Details of the operating costs for multiple- and single-purpose projects will be found on schedules 5 and 11 of the financial statements. The figures above and on schedule 5 include interest and depreciation of $1,257,744 and $538,343, respectively, for Bonneville Dam, Detroit-Big Cliff, Lookout Point-Dexter, McNary Dam, and Albeni Falls Projects.

BENEFITS FROM OPERATION OF NAVIGATION FACILITES

The benefits from operations of basin navigation projects have not been calculated in terms of dollars for fiscal year 1956 or calendar year 1955. Several of the projects involved are considered by the Corps of Engineers to be in the unquestionably justified category. For example there is no question on projects which are necessary to the maintenance of Portland, Oregon, as a west coast seaport.

OTHER OPERATIONS IN FISCAL YEAR 1956

The construction of projects for the basic purposes of power, irrigation, flood control, and navigation occasions a number of necessary but incidental activities such as camp operations and guide service. The Corps of Engineers distributes the net expenses of these incidental activities to the primary project purposes. The Bureau of Reclamation, in contrast, has accumulated these revenues and expenses as separate activities for several of its projects. Accordingly, "Other Net Revenues," with one exception subsequently noted, represent the incidental and separately accounted for activities of reclamation projects.

Operation of the town of Coulee Dam (Columbia Basin Project) is the largest incidental operation given separate accounting treatment by the Bureau. Results for fiscal year 1956 were:

Revenues	$283,126
Expenses	250,861
Net revenues	$ 32,265

Revenues offsetting Bureau operating expenses are chiefly derived from housing rents and charges for utility services such as electricity, water, and garbage disposal.

Guide service at Coulee Dam and at Hungry Horse Dam was operated on a reimbursable basis during fiscal year 1956 with the following financial results:

	Total	Hungry Horse Dam	Coulee Dam
Revenues	$41,559	$7,552	$34,007
Expenses	48,559	6,513	42,046
Net revenues (-expenses)	$-7,000	$1,039	$-8,039

Guide service revenues are obtained from nominal fees charged project visitors.

The only expenses included in the "Other Net Revenues" category which do not represent incidental activities at Bureau projects are identified with water supply operations at the Detroit-Big Cliff and Lookout Point-Dexter Projects of the Corps of Engineers. The accumulating irrigation and municipal water supply expenses for these projects, although representing a primary purpose of the projects, are of doubtful collectibility because there are no current beneficiaries. Pending some determination of the matter, the accumulated expenses have been included in this general category. Expenses for fiscal year 1956 were:

	Total	Detroit-Big Cliff	Lookout Point-Dexter
Expenses	$332,913	$147,354	$185,559

No revenues were collected by the projects.

The balance of the "Other Net Revenues" were recorded by the Columbia Basin, Boise, Minidoka, Umatilla, Okanogan, Deschutes, and Owyhee Projects of the Bureau. During fiscal year 1956 they summarized to:

Revenues	$51,276
Expenses	3,378
Net revenues	$47,898

These revenues and expenses were associated with rentals of grazing and farming lands, minor water-supply activities, and other miscellanea.

"Other net revenues accruing to the United States" are summarized on schedule 6 of the financial statements.

CONSTRUCTION WORK IN PROGRESS

Construction work in progress on authorized projects and facilities of the Corps of Engineers, Bureau of Reclamation, and Bonneville Power Administration amounted to $408,203,010 at June 30, 1956. Of this figure, $405,440,287 represents projects and facilities under physical construction. The remainder, $2,762,723, is associated with feature design, firm estimates of cost, and other work on authorized projects preliminary to physical construction. The latter work is financed with advance planning funds, a subdivision of the over-all construction appropriation.

In keeping with the emphasis on large, multiple-purpose projects, over 94 percent of the construction work in progress at the end of the fiscal year is identified with such projects or with related transmission facilities of the Bonneville Power Administration.

COSTS AND ESTIMATED ADDITIONAL COSTS

The following schedule itemizes the construction work in progress costs and lists the estimated costs necessary for completion, where applicable:

	Actual June 30, 1956	Estimated Additional
Under physical construction		
Multiple-purpose projects:		
Chief Joseph	$ 93,615,098	$ 26,704,643
The Dalles Dam	157,507,586	108,245,870
McNary Dam	9,566,856	4,546,914
Columbia Basin	20,950,537	269,318,828
Palisades	52,416,899	10,083,101
Yakima	12,364,067	4,729,818
Cougar	641,319	39,292,844
Hills Creek	1,006,876	33,538,332
Ice Harbor	2,358,109	132,641,891
Other	1,206,043	10,716,737
Bonneville Power Administration	30,887,660	68,930,347
Single-purpose projects:		
Flood control (including actual costs of $18,026,331 for Lucky Peak)	20,638,322	11,989,615
Navigation	1,142,647	15,776,736
Irrigation	1,138,268	6,905,828
Total	405,440,287	743,421,504
In advance planning status (note a)		
Multiple-purpose projects:		
Libby	510,124	-
Priest Rapids	160,895	-
Lower Monumental	180,000	-
Little Goose	140,000	-
Lower Granite	135,000	-
John Day	590,319	-
Green Peter	230,342	-
Single-purpose projects:		
Flood control	816,043	-
Total	2,762,723	-
Total	$408,203,010	$743,421,504

[a]Estimated additional costs are not shown for projects in advance planning status as there is no assurance that any additional Federal costs will be incurred.

All multiple-purpose projects listed in the above schedule feature power as a function, although the construction work at Columbia Basin Project and at the Minidoka and Boise Projects (classified as "other") related almost entirely to irrigation.

POWER FACILITIES UNDER CONSTRUCTION

Physical construction underway at June 30, 1956, will provide an additional 2,477,250 kilowatts of Federal generating capacity in the Columbia Basin. The additions by project will be:

	Kilowatts
Chief Joseph	768,000
The Dalles Dam	1,119,000
McNary Dam	140,000
Palisades	114,000
Yakima	11,250
Cougar	25,000
Hills Creek	30,000
Ice Harbor	270,000
All projects	2,477,250

Construction of Libby Dam Project, on which advanced planning work has been initiated, would provide 516,000 kw of generating capacity. Construction, however, has been delayed pending completion of negotiations with Canada. Authorization of the Priest Rapids Project was suspended by the Eighty-third Congress to permit a public agency in the State of Washington to apply for a license. The license has been issued to the Grant County P.U.D. which has secured financing and entered into a construction contract. The remaining multiple-purpose projects in the advanced planning category--John Day, Lower Monumental, Little Goose, Lower Granite, and Green Peter--would have installed capacities of 1,200,000 kw, 270,000 kw, 270,000 kw, 225,000 kw, and 81,000 kw, respectively.

IRRIGATION FACILITIES UNDER CONSTRUCTION

Virtually all construction in progress at the Columbia Basin Project related to irrigation development. As of June 30, 1956, lateral distribution systems to serve 301,000 acres had been completed. Capacity to service considerably more acreage was already in place at the Grand Coulee Pumping Plant and in the principal canals and irrigation reservoirs. During fiscal year 1957, laterals for an additional 47,000 acres will be completed, while construction of other laterals will be underway to permit adding another large acreage increment in fiscal year 1958.

The North Side Pumping Division of the Minidoka Project, when completed, will furnish a full water supply to 80,750 acres of land. Construction began in 1952 and by June 30, 1956, was approximately 54 percent complete. During the 1955 irrigation season, water was available to about 16,200 acres.

The Palisades Project, in addition to its 114,000 kw of generating capacity, will provide a supplemental water supply to some 650,000 acres of land and a primary supply to 48,000 acres of new land. Initial storage of water began in October 1956.

Construction work on the Foster Creek Division of the Chief Joseph Project was begun during fiscal year 1956 with the award of a contract covering the pumping plant and distribution system in the Bar area of the Bridgeport Bar Unit. Ultimate division acreage is expected to reach 3,961 acres.

With the exception of rehabilitation and betterment work at the Boise Project, the remaining irrigation construction of significance related to distribution facilities at the new Michaud Flats Project, reconstruction of the Crescent Lake Dam (privately constructed), and construction of the Haystack Reservoir at the Deschutes Project.

FLOOD CONTROL FACILITIES UNDER CONSTRUCTION

Three multiple-purpose projects and one single-purpose project in construction status at June 30, 1956, will be, or were, furnishing flood control storage. Palisades and Lucky Peak, a multiple-purpose and a single-purpose project, respectively, are parts of the main control plan for Columbia Basin flood protection and together will provide additional flood storage of 1,480,000 acre-feet on the Snake River and tributaries.

Hills Creek and Cougar Dam Projects, which are multiple-purpose units of the comprehensive plan for flood protection along the Willamette River and tributaries, will on completion join the five reservoirs now in service in furnishing subbasin flood control storage.

The remaining flood control construction work in progress consisted of single-purpose undertakings, chiefly the Amazon Creek Project and Bank Protection in the Willamette Basin.

NAVIGATION FACILITIES UNDER CONSTRUCTION

The major navigation project under construction at the end of the fiscal year was The Dalles Dam on the Columbia River. The normal pool behind the dam will extend upstream about 31 miles to the John Day Dam site, flooding out The Dalles Rapids and Celilo Falls as well as the previous project for overcoming these natural obstacles, The Dalles-Celilo Canal. With The Dalles Dam navigation lock in service, the superseded Dalles-Celilo Canal and its 8' by 45' by 265' lock dimensions will no longer be a handicap to navigation on the middle Columbia. The Dalles Dam Project is 59 percent completed, and the navigation facilities are scheduled to be in service during fiscal year 1957.

Another major navigation project under construction was the Ice Harbor Project on the Snake River, 10 miles upstream from the Columbia. Located at the head of the McNary Dam pool, the project will have, in addition to the power plant, a navigation lock with dimensions of 86 by 675 feet. The normal pool will create a reservoir extending upstream about 35 miles, providing slack water to the Lower Monumental lock and dam site. Construction of this project had just begun in fiscal year 1956.

Important single-purpose navigation improvement was in progress at the mouth of the Columbia River where the project depth is being increased from 40 to 48 feet.

SCOPE OF AUDIT

Our audit in the offices of the Corps of Engineers, Bureau of Reclamation, and Bonneville Power Administration having responsibility for water resources development projects in the Columbia River basin included reviews of activities and selected examinations of financial transactions in the following manner:

1. We reviewed the basic laws authorizing the activities, and the pertinent legislative history, to ascertain the purposes of the activities and their intended scope.

2. We ascertained the policies adopted by the Corps, the Bureau, and the Administration and reviewed the policies for conformance with basic legislation.

3. We reviewed the procedures followed by employees of the Corps, the Bureau, and the Administration to determine the effectiveness of the procedures.

4. We did not make a detailed audit, but we examined certain selected transactions to the extent we deemed appropriate for the purposes of this report. Our examination was made with due regard for the nature and volume of transactions and the effectiveness of internal control.

OPINION OF THE FINANCIAL STATEMENTS

The accompanying statement of assets and liabilities (schedule 1) and the statements of power operations and nonpower operations (schedule 2 through 6) are based on the accounting records of the Corps of Engineers, Bureau of Reclamation, and Bonneville Power Administration. These financial statements present on a combined basis all the assets and liabilities and the results from operations of the Corps, Bureau, and Administration in the Columbia River basin.

In our opinion the accompanying financial statements do not present fairly the financial position at June 30, 1956, and the financial results of operations for the fiscal year then ended. The conditions which in aggregate preclude even a qualified opinion are discussed in notes 2, 3, 4, and 6 of schedule 12. The more important of these conditions are:

1. Allocations of construction costs to power and nonpower purposes have not been finally resolved for a majority of the multiple-purpose projects in operation. Until firm allocations are made by the agency responsible, or are agreed upon by the interested agencies where no specific agency has been designated, it will not be possible to make a precise assignment of plant-in-service costs and provisions for depreciation to the several purposes. Neither will it be possible to accurately accrue interest on the interest-bearing investment.

2. A uniform policy is not followed by the Corps of Engineers and the Bureau of Reclamation in allocating the operation and maintenance expense associated with multiple-purpose facilities.

3. A uniform policy is not followed by the Corps of Engineers, Bureau of Reclamation, and Bonneville Power Administration in computing interest on the Federal investment.

4. A uniform policy is not followed by the Corps of Engineers, Bureau of Reclamation, and Bonneville Power Administration in recording depreciation of plant, property, and equipment in service. Provisions for depreciation have not been recorded on projects of the Bureau of Reclamation and single-purpose flood control and navigation projects of the Corps of Engineers.

5. Potential reimbursements, if any, for benefits in fiscal year 1956 and prior years accruing to downstream non-Federal power plants from storage at Columbia Basin, Hungry Horse, and Albeni Falls Projects have not been included in the accompanying financial statements. It is the responsibility of the Federal Power Commission to determine the amounts payable by beneficiaries; however, a decision on this matter has not been rendered by the Commission.

FINANCIAL STATEMENTS

COLUMBIA RIVER BASIN

WATER RESOURCES DEVELOPMENT PROGRAM OF THE CORPS OF ENGINEERS, BUREAU OF RECLAMATION, AND BONNEVILLE POWER ADMINISTRATION (note 1)

SCHEDULE 1

STATEMENT OF ASSETS AND LIABILITIES

JUNE 30, 1956

ASSETS

	Combined	Corps of Engineers	Bureau of Reclamation	Bonneville Power Administration
FIXED ASSETS:				
Plant in service, multiple-purpose projects and related transmission facilities (schedule 7) (notes 2 and 3):				
Commercial power	$1,132,857,842	$482,770,881	$283,480,089	$366,606,872
Irrigation	394,466,459	8,549,138	385,917,321	-
Flood control	101,805,528	67,528,063	34,277,465	-
Navigation	55,137,697	54,137,697	1,000,000	-
Other	1,929,648	415,451	1,514,197	-
	1,686,197,174	613,401,230	706,189,072	366,606,872
Less accumulated depreciation:				
Commercial power	74,573,809	16,776,474	-	57,797,335
Irrigation	161,714	161,714	-	-
Flood control	1,201,128	1,201,128	-	-
Navigation	3,079,302	3,079,302	-	-
Other	1,408,151	10,953	1,397,198	-
	80,424,104	21,229,571	1,397,198	57,797,335
Multiple-purpose, net	1,605,773,070	592,171,659	704,791,874	308,809,537
Plant in service, single-purpose projects (note 2):				
Irrigation (schedule 8)	47,893,879	-	47,893,879	-
Flood control (schedule 9)	39,723,251	39,723,251	-	-
Navigation (schedule 10)	34,439,315	34,439,315	-	-
Single-purpose	122,056,445	74,162,566	47,893,879	-
Total plant in service, net	1,727,829,515	666,334,225	752,685,753	308,809,537
Design and construction work in progress	408,203,010	286,681,111	90,634,239	30,887,660
Construction facilities, net	3,031,081	605,784	2,425,297	-
Total fixed assets	2,139,063,606	953,621,120	845,745,289	339,697,197
OTHER ASSETS AND DEFERRED CHARGES:				
Unexpended funds in U.S. Treasury	56,738,593	21,159,086	10,189,339	25,390,168
Special deposits	3,634,749	-	3,054,969	579,780
Accounts receivable	11,119,186	370,613	521,066	10,227,507
Materials and supplies	6,807,184	193,474	1,034,084	5,579,626
Deferred and unmatured receivables	8,778,416	-	8,778,416	-
Miscellaneous debits	8,842,000	626,651	6,767,453	1,447,896
Total	95,920,128	22,349,824	30,345,327	43,224,977
	$2,234,983,734	$975,970,944	$876,090,616	$382,922,174

*Deduction

LIABILITIES

	Combined	Corps of Engineers	Bureau of Reclamation	Bonneville Power Administration
INVESTMENT OF U.S. GOVERNMENT AND ACCUMULATED NET REVENUES (note 7):				
Congressional appropriations	$2,438,667,342	$1,031,722,272	$918,078,101	$488,866,969
Cost of materials and services transferred, net	30,623,955	442,916	14,754,880	15,426,159
Interest on the Federal investment	195,491,442	102,495,746	43,029,569	49,966,127
	2,664,782,739	1,134,660,934	976,462,550	553,659,255
Less:				
Funds returned to U.S. Treasury	546,964,945	91,405,723	235,791,167	219,768,055
Accumulated nonreimbursable expenses:				
Flood control operations (schedule 4)	23,390,600	22,921,024	469,576	-
Navigation operations (schedule 5)	85,719,392	85,682,678	36,714	-
Other	269,109	-	269,109	-
Costs of irrigation charged off by acts of Congress (note 8)	4,248,495	-	4,248,495	-
	660,592,541	200,009,425	240,815,061	219,768,055
Net investment of U.S. Government	2,004,190,198	934,651,509	735,647,489	333,891,200
Accumulated net revenues since inception:				
Commercial power operations including $9,475,503 for the year ended June 30, 1956 (schedule 2). The Bureau of Reclamation has reserved $11,774,689 for future replacements.	137,677,890	24,630,757	73,337,573	39,709,560
Other net revenues, including net expense of $259,750 accruing to the United States for the year ended June 30, 1956 (schedule 6)	3,297,313	567,592*	3,864,905	-
	140,975,203	24,063,165	77,202,478	39,709,560
Total	2,145,165,401	958,714,674	812,849,967	373,600,760
NON-FEDERAL INVESTMENT AND RESERVE FOR REPAYMENT REDUCTIONS:				
Contributions in aid of project development and construction	3,305,704	1,673,739	1,631,965	-
Matured installments of fixed obligations for use of facilities (note 5)	46,524,717	-	46,524,717	-
Repayments realized from other sources	2,402,811	-	2,402,811	-
Reserve for repayment reductions authorized (note 8)	3,836,833	-	3,836,833	-
Total	56,070,065	1,673,739	54,396,326	-
OTHER LIABILITIES AND DEFERRED CREDITS:				
Current and accrued liabilities	29,380,383	15,581,269	7,443,602	6,355,512
Employees' accrued leave	1,924,422	-	-	1,924,422
Deferred credits	2,443,463	1,262	1,400,721	1,041,480
Total	33,748,268	15,582,531	8,844,323	9,321,414
	$2,234,983,734	$ 975,970,944	$876,090,616	$382,922,174

The accompanying notes (schedule 12) are an integral part of this statement.

COLUMBIA RIVER BASIN

WATER RESOURCES DEVELOPMENT PROGRAM OF THE CORPS OF ENGINEERS, BUREAU OF RECLAMATION, AND BONNEVILLE POWER ADMINISTRATION (note 1)

STATEMENT OF COMBINED COMMERCIAL POWER OPERATIONS

FOR THE FISCAL YEAR ENDED JUNE 30, 1956

	Total	Columbia River Power System	Other basin projects
OPERATING REVENUES (note 6):			
Sales of electric energy:			
Publicly owned utilities	$19,976,560	$19,505,231	$471,329
Privately owned utilities	12,242,536	11,999,475	243,061
Federal agencies	4,382,829	4,382,829	-
Aluminum industry	20,098,110	20,098,110	-
Other industry	3,804,309	3,804,045	264
Sales at wholesale	60,504,344	59,789,690	714,654
Other operating revenues:			
Project energy--irrigation pumping	358,949	255,650	103,299
Project energy--other use at site	153,242	149,157	4,085
Rental of electric property	1,122,382	1,059,108	63,274
	1,634,573	1,463,915	170,658
Total operating revenues	62,138,917	61,253,605	885,312
OPERATING EXPENSES (schedule 11) (notes 2 and 4):			
Production	5,338,051	5,206,883	131,168
Transmission	6,551,056	6,401,605	149,451
Administrative, general and other	3,616,297	3,554,311	61,986
Depreciation	15,508,174	15,508,174	-
Total operating expenses	31,013,578	30,670,973	342,605
Net operating revenues	31,125,339	30,582,632	542,707
INTEREST AND OTHER DEDUCTIONS (schedule 11):			
Interest on Federal investment charged to operations (note 2)	21,677,759	21,582,101	95,658
Miscellaneous income deductions (net)	27,923*	27,923*	-
Total interest and other deductions	21,649,836	21,554,178	95,658
Net commercial power revenues (to schedule 1)	$ 9,475,503	$ 9,028,454	$447,049

*Deduction

The accompanying notes (schedule 12) are an integral part of this statement.

C O L U M B I A R I V E R B A S I N

WATER RESOURCES DEVELOPMENT PROGRAM OF THE CORPS OF ENGINEERS, BUREAU OF RECLAMATION, AND BONNEVILLE POWER ADMINISTRATION (note 1)

STATEMENT OF IRRIGATION OPERATING EXPENSES CHARGED AGAINST ADVANCES BY IRRIGATORS FOR THE FISCAL YEAR ENDED JUNE 30, 1956

	Agency	Fiscal year 1956 Total	Storage	Distribution
MULTIPLE-PURPOSE PROJECTS (schedule 11) (note 4):				
Columbia Basin	Reclamation	$1,334,746	$ -	$1,334,746
Yakima	Reclamation	481,093	73,163	407,930
Boise	Reclamation	49,542	35,540	14,002
Minidoka	Reclamation	280,398	82,083	198,315
Total, multiple-purpose projects		2,145,779	190,786	1,954,993
SINGLE-PURPOSE PROJECTS:				
Rathdrum Prairie	Reclamation	3,144	-	3,144
Umatilla	Reclamation	8,366	8,366	-
Total, single-purpose projects		11,510	8,366	3,144
Total, irrigation expense charged against advances by irrigators		$2,157,289	$199,152	$1,958,137

The accompanying notes (schedule 12) are an integral part of this statement.

COLUMBIA RIVER BASIN

WATER RESOURCES DEVELOPMENT PROGRAM OF THE CORPS OF ENGINEERS, BUREAU OF RECLAMATION, AND BONNEVILLE POWER ADMINISTRATION (note 1)

STATEMENT OF FLOOD CONTROL EXPENSE FOR FISCAL YEAR 1956 AND CUMULATIVE TO JUNE 30, 1956

	Agency	Fiscal year 1956	Cumulative to June 30, 1956
MULTIPLE-PURPOSE PROJECTS (schedule 11) (notes 2 and 4):			
Storage:			
Hungry Horse	Reclamation	$ 27,617	$ 87,102
Albeni Falls	Corps	5,717	22,696
Detroit-Big Cliff	Corps	773,216	2,208,361
Lookout Point-Dexter	Corps	1,696,767	2,423,691
Boise	Reclamation	6,334	36,203
Total, multiple-purpose projects		2,509,651	4,778,053
SINGLE-PURPOSE PROJECTS AND ACTIVITIES (note 2):			
Storage:			
Lucky Peak	Corps	55,477	65,145
Dorena	Corps	19,792	223,669
Fern Ridge	Corps	50,741	515,824
Cottage Grove	Corps	25,783	338,131
Mill Creek	Corps	20,457	434,162
Bank protection:			
Willamette River and tributaries	Corps	143,779	1,152,375
Columbia River and minor tributaries	Corps	-	29,342
Yakima River	Corps	1,664	1,664
Snake River and tributaries	Corps	135,608	388,949
Emergency flood control activity:			
Columbia River basin	Corps	1,236,958	13,757,358
Other activities:			
Inspection of completed works	Corps	6,924	31,694
Rehabilitation of miscellaneous irrigation works	Corps	-	346,271
Retired and abandoned projects, including capital costs written off	Corps	-	1,327,963
Total, single-purpose projects and activities		1,697,183	18,612,547
Total, flood control expense		$4,206,834	$23,390,600

The accompanying notes (schedule 12) are an integral part of this statement.

COLUMBIA RIVER BASIN

WATER RESOURCES DEVELOPMENT PROGRAM OF THE CORPS OF ENGINEERS, BUREAU OF RECLAMATION, AND BONNEVILLE POWER ADMINISTRATION (note 1)

STATEMENT OF NAVIGATION EXPENSE FOR FISCAL YEAR 1956 AND CUMULATIVE TO JUNE 30, 1956

	Agency	Fiscal year 1956	Cumulative to June 30, 1956
MULTIPLE-PURPOSE PROJECTS (schedule 11) (notes 2 and 4):			
Storage:			
Albeni Falls	Corps	$ 4,430	$ 17,610
Columbia Basin	Reclamation	4,698	36,714
Detroit-Big Cliff	Corps	5,045	10,453
Lookout Point-Dexter	Corps	31,206	44,283
Combination storage and locks:			
Bonneville Dam	Corps	1,101,361	18,459,935
McNary Dam	Corps	1,027,466	2,646,451
Total multiple-purpose projects		2,174,206	21,215,446
SINGLE-PURPOSE PROJECTS (note 2):			
Canal and locks:			
The Dalles-Celilo Canal	Corps	113,943	2,820,959
Willamette River at Willamette Falls	Corps	136,995	2,841,575
Channel dredging and clearance:			
Columbia River at the mouth	Corps	234,280	12,723,937
Columbia and Lower Willamette Rivers below Vancouver and Portland	Corps	1,988,278	29,089,712
Columbia River between Vancouver and The Dalles	Corps	110,548	802,176
Columbia River, Celilo Falls to Kennewick	Corps	1,203	927,893
Willamette River above Portland and Yamhill River	Corps	447,526	7,813,300
Cowlitz River	Corps	25,249	421,306
Skipanon Channel	Corps	-	278,004
Columbia River at Baker Bay	Corps	21,619	304,449
Snake River, Idaho and Wyoming	Corps	-	214,553
Removal of sunken vessels	Corps	-	236,985
Miscellaneous minor projects	Corps	12,098	213,349
Retired and abandoned projects, including capital costs written off	Corps	-	5,815,748
Total single-purpose projects		3,091,739	64,503,946
Total navigation expense		$5,265,945	$85,719,392

The accompanying notes (schedule 12) are an integral part of this statement.

COLUMBIA RIVER BASIN

WATER RESOURCES DEVELOPMENT PROGRAM OF THE CORPS OF ENGINEERS, BUREAU OF RECLAMATION, AND BONNEVILLE POWER ADMINISTRATION (note 1)

STATEMENT OF OTHER NET REVENUES ACCRUING TO THE UNITED STATES FOR THE FISCAL YEAR ENDED JUNE 30, 1956

	Revenues	Expenses	Net revenues
BUREAU OF RECLAMATION PROJECTS:			
Town operations:			
Columbia Basin	$283,126	$250,861	$ 32,265
Guide service:			
Columbia Basin	34,007	42,046	8,039*
Hungry Horse	7,553	6,514	1,039
Water supply:			
Columbia Basin	2,605	580	2,025
Boise	7,380	-	7,380
Rental of grazing lands:			
Columbia Basin	475	-	475
Umatilla	482	-	482
Okanogan	20	-	20
Construction charges forfeited:			
Columbia Basin	10*	-	10*
Interest and penalties:			
Columbia Basin	17	-	17
Boise	7	-	7
Minidoke	373	-	373
Umatilla	760	-	760
Owyhee	10	-	10
Miscellaneous:			
Columbia Basin	33,398	684	32,714
Boise	5,660	2,114	3,546
Umatilla	25	-	25
Deschutes	74	-	74
Total	$375,962	$302,799	73,163
CORPS OF ENGINEERS PROJECTS:			
Water supply:			
Detroit-Big Cliff	$ -	$147,354	147,354*
Lookout Point-Dexter	-	185,559	185,559*
Total	$ -	$332,913	332,913*
Other net revenues (to schedule 1)			$259,750*

*Deduction

The accompanying notes (schedule 12) are an integral part of this statement.

C O L U M B I A R I V E R B A S I N

WATER RESOURCES DEVELOPMENT PROGRAM OF THE CORPS OF ENGINEERS,

BUREAU OF RECLAMATION, AND BONNEVILLE POWER ADMINISTRATION (note 1)

PLANT IN SERVICE

MULTIPLE-PURPOSE PROJECTS AND RELATED POWER TRANSMISSION FACILITIES

JUNE 30, 1956

	Plant in service (note 2)	Allocated to purpose (note 3)									
		Commercial power			Irrigation				Flood control	Navigation	Other
		Total	Production	Transmission	Total	Storage	Power	Distribution	Storage	Storage and locks	
CORPS OF ENGINEERS PROJECTS:											
Bonneville Dam:											
Specific costs	$ 45,007,742	$ 38,656,618	$ 38,656,618	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,351,124	$ -
Joint costs	41,938,976	20,969,488	20,969,488	-	-	-	-	-	-	20,969,488	-
	86,946,718	59,626,106	59,626,106	-	-	-	-	-	-	27,320,612	-
Albeni Falls:											
Specific costs	19,591,100	19,591,100	19,591,100	-	-	-	-	-	-	-	-
Joint costs	11,356,846	11,058,161	11,058,161	-	-	-	-	-	168,081	130,604	-
	30,947,946	30,649,261	30,649,261	-	-	-	-	-	168,081	130,604	-
McNary Dam:											
Specific costs	146,250,376	124,092,604	124,092,604	-	-	-	-	-	-	22,157,772	-
Joint costs	145,719,970	142,184,657	142,184,657	-	-	-	-	-	-	3,535,313	-
	291,970,346	266,277,261	266,277,261	-	-	-	-	-	-	25,693,085	-
Detroit-Big Cliff:											
Specific costs	22,308,469	22,308,469	22,308,469	-	-	-	-	-	-	-	-
Joint costs	44,196,902	19,565,969	19,565,969	-	3,434,099	3,434,099	-	-	20,648,793	132,590	415,451
	66,505,371	41,874,438	41,874,438	-	3,434,099	3,434,099	-	-	20,648,793	132,590	415,451
Lookout Point-Dexter:											
Specific costs	23,600,233	23,600,233	23,600,233	-	-	-	-	-	-	-	-
Joint costs	71,141,013	18,453,979	18,453,979	-	5,115,039	5,115,039	-	-	46,711,189	860,806	-
	94,741,246	42,054,212	42,054,212	-	5,115,039	5,115,039	-	-	46,711,189	860,806	-
Chief Joseph:											
Specific costs	22,933,402	22,933,402	22,933,402	-	-	-	-	-	-	-	-
Joint costs	19,356,201	19,356,201	19,356,201	-	-	-	-	-	-	-	-
	42,289,603	42,289,603	42,289,603	-	-	-	-	-	-	-	-
Total, Corps	613,401,230	482,770,881	482,770,881	-	8,549,138	8,549,138	-	-	67,528,063	54,137,697	415,451

The accompanying notes (schedule 12) are an integral part of this statement.

COLUMBIA RIVER BASIN

WATER RESOURCES DEVELOPMENT PROGRAM OF THE CORPS OF ENGINEERS,

BUREAU OF RECLAMATION, AND BONNEVILLE POWER ADMINISTRATION (note 1)

PLANT IN SERVICE

MULTIPLE-PURPOSE PROJECTS AND RELATED POWER TRANSMISSION FACILITIES (continued)

JUNE 30, 1956

	Plant in service (note 2)	Allocated to purpose (note 3)									
		Commercial power			Irrigation				Flood control	Navigation	Other
		Total	Production	Transmission	Total	Storage	Power	Distribution	Storage	Storage and locks	
BUREAU OF RECLAMATION PROJECTS:											
Columbia Basin:											
Specific costs	$ 307,873,646	$ 107,432,051	$ 86,863,846	$ 20,568,205	$200,441,595	$ -	$ 2,770,989	$197,670,606	$ -	$ -	$ -
Joint costs	157,911,989	87,870,714	87,870,714	-	69,041,275	69,041,275	-	-	-	1,000,000	-
	465,785,635	195,302,765	174,734,560	20,568,205	269,482,870	69,041,275	2,770,989	197,670,606	-	1,000,000	-
Hungry Horse:											
Specific costs	25,778,843	25,778,843	23,633,611	2,145,232	-	-	-	-	-	-	-
Joint costs	75,754,241	56,300,552	56,300,552	-	-	-	-	-	19,453,689	-	-
	101,533,084	82,079,395	79,934,163	2,145,232	-	-	-	-	19,453,689	-	-
Yakima:											
Specific costs	40,366,495	67,285	-	67,285	40,299,210	11,134,045	1,319,983	27,845,182	-	-	-
Joint costs	4,448,274	200,000	200,000	-	4,248,274	-	800,000	3,448,274	-	-	-
	44,814,769	267,285	200,000	67,285	44,547,484	11,134,045	2,119,983	31,293,456	-	-	-
Boise:											
Specific costs	31,610,183	3,473,560	2,741,989	731,571	27,994,856	10,925,982	1,693,890	15,374,984	-	-	141,767
Joint costs	32,475,849	1,475,040	1,475,040	-	16,177,033	15,457,726	719,307	-	14,823,776	-	-
	64,086,032	4,948,600	4,217,029	731,571	44,171,889	26,383,708	2,413,197	15,374,984	14,823,776	-	141,767
Minidoka:											
Specific costs	26,701,581	882,044	639,159	242,885	25,492,823	13,275,568	1,831,143	10,386,112	-	-	326,714
Joint costs	783,574	-	-	-	783,574	321,554	231,010	231,010	-	-	-
	27,485,155	882,044	639,159	242,885	26,276,397	13,597,122	2,062,153	10,617,122	-	-	326,714
Lewiston Orchards:											
Specific costs	2,057,398	-	-	-	1,037,302	-	-	1,037,302	-	-	1,020,096
Joint costs	426,999	-	-	-	401,379	-	-	401,379	-	-	25,620
	2,484,397	-	-	-	1,438,681	-	-	1,438,681	-	-	1,045,716
Total, Bureau	706,189,072	283,480,089	259,724,911	23,755,178	385,917,321	120,156,150	9,366,322	256,394,849	34,277,465	1,000,000	1,514,197
BONNEVILLE POWER ADMINISTRATION:											
Electric facilities:											
Specific costs	366,606,872	366,606,872	-	366,606,872	-	-	-	-	-	-	-
Joint costs	-	-	-	-	-	-	-	-	-	-	-
Total, BPA	366,606,872	366,606,872	-	366,606,872	-	-	-	-	-	-	-
Total, Columbia River basin (to schedule 1)	$1,686,197,174	$1,132,857,842	$742,495,792	$390,362,050	$394,466,459	$128,705,288	$ 9,366,322	$256,394,849	$101,805,528	$55,137,697	$1,929,648

The accompanying notes (schedule 12) are an integral part of this statement.

C O L U M B I A R I V E R B A S I N

WATER RESOURCES DEVELOPMENT PROGRAM OF THE CORPS OF ENGINEERS, BUREAU OF RECLAMATION, AND BONNEVILLE POWER ADMINISTRATION (note 1)

PLANT IN SERVICE

SINGLE-PURPOSE IRRIGATION PROJECTS

JUNE 30, 1956

	Plant in service (note 2)			
	Total	Storage	Distribution	General
BUREAU OF RECLAMATION:				
Avondale	$ 238,490	$ -	$ 238,490	$ -
Baker	281,589	281,589	-	-
Bitter Root	1,000,212	982,996	17,216	-
Burnt River	601,026	601,026	-	-
Dalton Gardens	258,660	-	258,660	-
Deschutes	12,043,927	3,813,068	8,144,637	86,222
Frenchtown	290,797	-	290,797	-
King Hill	1,877,732	-	1,877,732	-
Missoula Valley	278,320	-	278,320	-
Okanogan	1,484,324	953,062	524,391	6,871
Owyhee	18,878,465	6,766,230	12,018,196	94,039
Rathdrum Prairie	482,360	109,841	372,519	-
Umatilla	5,311,153	3,037,435	2,234,919	38,799
Vale	4,866,824	1,778,276	3,074,518	14,030
Total, single-purpose irrigation projects (to schedule 1)	$47,893,879	$18,323,523	$29,330,395	$239,961

The accompanying notes (schedule 12) are an integral part of this statement.

COLUMBIA RIVER BASIN

WATER RESOURCES DEVELOPMENT PROGRAM OF THE CORPS OF ENGINEERS, BUREAU OF RECLAMATION, AND BONNEVILLE POWER ADMINISTRATION (note 1)

PLANT IN SERVICE

SINGLE-PURPOSE FLOOD CONTROL PROJECTS

JUNE 30, 1956

	Plant in service (note 2)			
	Total	Storage	Levees, bank protection, and channel improvements	Clearing and snagging
CORPS OF ENGINEERS:				
Columbia River and minor tributaries below Bonneville:				
Lower Columbia River basin levees	$ 7,188,152	$ -	$ 7,188,152	$ -
Columbia Drainage District #1	25,460	-	25,460	-
Port of Kalama--Columbia River	99,844	-	99,844	-
Lewis River basin	172,521	-	172,521	-
Cowlitz River basin	192,725	-	192,725	-
Castle Rock, Cowlitz River	3,500	-	3,500	-
Cowlitz River	73,733	-	-	73,733
	7,755,935	-	7,682,202	73,733
Willamette River and tributaries:				
Cottage Grove Reservoir	2,379,046	2,379,046	-	-
Dorena Reservoir	13,576,366	13,576,366	-	-
Fern Ridge Reservoir	4,502,789	4,502,789	-	-
Willamette River basin bank protection	3,935,861	-	3,935,861	-
Left bank of Willamette at Camp Adair	20,000	-	20,000	-
Santiam River, Miller and Banick Location	108,258	-	108,258	-
South Santiam River, Lebanon City	30,472	-	30,472	-
North Santiam River, Stayton Bridge	42,149	-	42,149	-
Amazon Creek	407,853	-	407,853	-
Mollala River, Ressel Location	38,461	-	38,461	-
Clackamas River near Dixon Farm	60,798	-	46,674	14,124
Middle Fork, Willamette River	17,348	-	-	17,348
Coast Fork, Willamette River	36,896	-	-	36,896
Willamette River, Corvallis-Albany Area	47,584	-	-	47,584
Lambert Slough, Willamette River	22,294	-	-	22,294
North Santiam River near Kington	9,968	-	-	9,968
Calapooya River near Brownsville	28,000	-	-	28,000
	25,264,143	20,458,201	4,629,728	176,214
Other Columbia River tributaries:				
Mill Creek	2,242,155	2,242,155	-	-
Yakima River	8,047	-	8,047	-
Yakima River levee	381,961	-	381,961	-
Yakima River near Teanaway	48,272	-	48,272	-
Spokane River	2,945	-	2,945	-
Kootenai River	42,325	-	42,325	-
Coeur d' Alene River	25,452	-	25,452	-
Coeur d' Alene	152,872	-	152,872	-
St. Maries and St. Joe	357,698	-	357,698	-
Flathead River bridge	33,347	-	33,347	-
Methow River	55,237	-	55,237	-
Twisp Carleton Highway	39,986	-	39,986	-
Clark Fork vicinity of Plains	27,947	-	27,947	-
Bradley Channel	26,265	-	26,265	-
Pendleton, Umatilla River	143,263	-	143,263	-
Heise Bridge Location, Snake River	8,501	-	8,501	-
Heise-Roberts Area, Snake River	1,570,660	-	1,570,660	-
Walter Feuz Location, Buffalo Fork	4,025	-	4,025	-
Orofino Creek and Clearwater River	23,050	-	23,050	-
Gooding Shoshone, Big-Little Wood Rivers	59,593	-	59,593	-
Tomanovich-Salmon City Location	99,405	-	99,405	-
Broadway Bridge, Boise River	9,725	-	9,725	-
Graves Creek Road, Idaho	75,469	-	75,469	-
Milton-Freewater, Walla Walla River	893,256	-	893,256	-
Okanogan River	60,087	-	-	60,087
Umatilla River near Pendleton	19,817	-	-	19,817
Snake River Jackson Hole	104,392	-	-	104,392
Price Location, Snake River	6,507	-	-	6,507
Lower Swan Valley Location, Snake River	15,091	-	-	15,091
Touchet River near Waitsburg	46,544	-	-	46,544
Phil Ford Location, Weiser River	10,400	-	-	10,400
Salubria Cove Location, Weiser River	22,981	-	-	22,981
Owyhee River	47,807	-	-	47,807
Walla Walla River near Milton	11,712	-	-	11,712
Other minor projects	26,379	-	-	26,379
	6,703,173	2,242,155	4,089,301	371,717
Total, single-purpose flood control projects (to schedule 1)	$39,723,251	$22,700,356	$16,401,231	$621,664

The accompanying notes (schedule 12) are an integral part of this statement.

COLUMBIA RIVER BASIN

WATER RESOURCES DEVELOPMENT PROGRAM OF THE CORPS OF ENGINEERS, BUREAU OF RECLAMATION, AND BONNEVILLE POWER ADMINISTRATION (note 1)

PLANT IN SERVICE

SINGLE-PURPOSE NAVIGATION PROJECTS

JUNE 30, 1956

	Plant in service (note 2)			
	Total	Canals and locks	Channel and harbor improvements	Other
CORPS OF ENGINEERS:				
Columbia River and tributaries below the Snake River:				
Columbia River at the mouth	$13,973,402	$ -	$13,973,402	$ -
Columbia and Lower Willamette Rivers below Vancouver and Portland	7,137,116	-	7,137,116	-
Columbia River between Vancouver and The Dalles	3,069,925	-	3,069,925	-
The Dalles-Celilo Canal	4,699,573	4,699,573	-	-
Columbia River and tributaries, Celilo Falls to Kennewick	1,223,084	-	1,223,084	-
Willamette River above Portland and Yamhill River	1,347,817	-	1,347,817	-
Willamette River at Willamette Falls	759,715	759,715	-	-
Columbia River at Baker Bay, Washington	418,732	-	418,732	-
Columbia River between Chinook, Washington, and head of Sand Island	40,000	-	40,000	-
Deep River, Washington	15,384	-	15,384	-
Grays River, Washington	2,500	-	2,500	-
Skipanon Channel, Oregon	130,119	-	130,119	-
Youngs Bay and Youngs River, Oregon	9,348	-	9,348	-
Skamokawa Creek, Oregon	2,400	-	2,400	-
Elokomin Slough, Washington	18,641	-	18,641	-
Westport Slough, Oregon	16,276	-	16,276	-
Clatskanie River, Washington	19,241	-	19,241	-
Cowlitz River, Washington	37,907	-	37,907	-
Lewis River, Washington	58,132	-	58,132	-
Lake River, Washington	2,700	-	2,700	-
Multnomah Channel, Oregon	18,112	-	18,112	-
Oregon Slough, Oregon	34,438	-	34,438	-
Bridges across the Columbia at Cascade Locks and Hood River, Oregon	1,081,806	-	-	1,081,806
Battleship Oregon Moorings	25,000	-	-	25,000
	34,141,368	5,459,288	27,575,274	1,106,806
Columbia River and tributaries above the Snake River:				
Columbia River, Wenatchee to Kettle Falls, Washington	274,390	-	274,390	-
Flathead River, Montana	9,811	-	9,811	-
Kootenai River, Idaho and Montana	9,255	-	9,255	-
Polson Bay, Flathead Lake, Montana	4,491	-	4,491	-
	297,947	-	297,947	-
Total, single-purpose navigation projects (to schedule 1)	$34,439,315	$5,459,288	$27,873,221	$1,106,806

The accompanying notes (schedule 12) are an integral part of this statement.

COLUMBIA RIVER BASIN

WATER RESOURCES DEVELOPMENT PROGRAM OF THE CORPS OF ENGINEERS, BUREAU OF RECLAMATION, AND BONNEVILLE POWER ADMINISTRATION (note 1)

EXPENSES

MULTIPLE-PURPOSE PROJECTS AND BONNEVILLE POWER ADMINISTRATION

FOR THE FISCAL YEAR ENDED JUNE 30, 1956

COLUMBIA RIVER POWER SYSTEM PROJECTS AND BONNEVILLE POWER ADMINISTRATION:	Total expense (note 2)	ACCRUING TO THE UNITED STATES										ACCRUING TO WATER USERS			UNDISTRIBUTED
		Commercial power							Flood control	Navigation	Other	Irrigation			
		Total	Production	Transmission	Adm., general, and other	Depreciation	Interest	Misc. income ded.	Storage	Storage and locks		Total	Storage	Distribution	
Bonneville Dam:															
Operation and maintenance:															
Specific	$ 611,645	$ 539,995	$ 539,995	$ -	$ -	$ -	$ -	$ -	$ -	$ 71,650	$ -	$ -	$ -	$ -	$ -
Joint (note 4)	427,358	213,679	213,679	-	-	-	-	-	-	213,679	-	-	-	-	-
Administrative, general, and other	102,266	72,088	-	-	72,088	-	-	-	-	30,178	-	-	-	-	-
Depreciation	910,622	730,271	-	-	-	730,271	-	-	-	180,351	-	-	-	-	-
Interest	1,557,260	927,013	-	-	-	-	927,013	-	-	630,247	-	-	-	-	-
Miscellaneous income deductions	48,830*	24,086*	-	-	-	-	-	24,086*	-	24,744*	-	-	-	-	-
	3,560,321	2,458,960	753,674	-	72,088	730,271	927,013	24,086*	-	1,101,361	-	-	-	-	-
Albeni Falls:															
Operation and maintenance:															
Specific	105,084	105,084	105,084	-	-	-	-	-	-	-	-	-	-	-	-
Joint (note 4)	50,037	49,168	49,168	-	-	-	-	-	492	377	-	-	-	-	-
Administrative, general, and other	49,250	48,265	-	-	48,265	-	-	-	557	428	-	-	-	-	-
Depreciation	422,804	421,075	-	-	-	421,075	-	-	971	758	-	-	-	-	-
Interest	715,648	709,082	-	-	-	-	709,082	-	3,698	2,868	-	-	-	-	-
Miscellaneous income deductions	62*	60*	-	-	-	-	-	60*	1*	1*	-	-	-	-	-
	1,342,761	1,332,614	154,252	-	48,265	421,075	709,082	60*	5,717	4,430	-	-	-	-	-
McNary Dam:															
Operation and maintenance:															
Specific	537,062	476,083	476,083	-	-	-	-	-	-	60,979	-	-	-	-	-
Joint (note 4)	455,242	441,766	441,766	-	-	-	-	-	-	13,476	-	-	-	-	-
Administrative, general, and other	191,573	186,784	-	-	186,784	-	-	-	-	4,789	-	-	-	-	-
Depreciation	2,909,536	2,561,862	-	-	-	2,561,862	-	-	-	347,674	-	-	-	-	-
Interest	5,529,696	4,929,148	-	-	-	-	4,929,148	-	-	600,548	-	-	-	-	-
Miscellaneous income deductions	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9,623,109	8,595,643	917,849	-	186,784	2,561,862	4,929,148	-	-	1,027,466	-	-	-	-	-
Detroit-Big Cliff:															
Operation and maintenance:															
Specific	148,607	148,607	148,607	-	-	-	-	-	-	-	-	-	-	-	-
Joint (note 4)	161,230	91,755	91,755	-	-	-	-	-	56,592	403	12,480	-	-	-	-
Administrative, general, and other	50,054	36,973	-	-	36,973	-	-	-	10,724	74	2,283	-	-	-	-
Depreciation	834,742	595,225	-	-	-	595,225	-	-	200,794	1,290	37,433	-	-	-	-
Interest	1,618,497	1,013,455	-	-	-	-	1,013,455	-	506,329	3,286	95,427	-	-	-	-
Miscellaneous income deductions	3,483*	1,983*	-	-	-	-	-	1,983*	1,223*	8*	269*	-	-	-	-
	2,809,647	1,884,032	240,362	-	36,973	595,225	1,013,455	1,983*	773,216	5,045	147,354	-	-	-	-

*Deduction

The accompanying notes (schedule 12) are an integral part of this statement.

COLUMBIA RIVER BASIN

WATER RESOURCES DEVELOPMENT PROGRAM OF THE CORPS OF ENGINEERS,

BUREAU OF RECLAMATION, AND BONNEVILLE POWER ADMINISTRATION (note 1)

EXPENSES

MULTIPLE-PURPOSE PROJECTS AND BONNEVILLE POWER ADMINISTRATION (continued)

FOR THE FISCAL YEAR ENDED JUNE 30, 1956

	Total expense (note 2)	ACCRUING TO THE UNITED STATES										ACCRUING TO WATER USERS			UNDISTRIBUTED
		Commercial power							Flood control	Navigation	Other	Irrigation			
		Total	Production	Transmission	Adm., general, and other	Depreciation	Interest	Misc. income ded.	Storage	Storage and locks		Total	Storage	Distribution	
Lookout Point-Dexter:															
Operation and maintenance:															
Specific	$ 124,444	$ 124,444	$ 124,444	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Joint (note 4)	189,507	72,487	72,487	-	-	-	-	-	104,020	1,857	11,143	-	-	-	-
Administrative, general, and other	48,137	30,195	-	-	30,195	-	-	-	15,949	285	1,708	-	-	-	-
Depreciation	1,110,690	604,466	-	-	-	604,466	-	-	448,808	8,270	49,146	-	-	-	-
Interest	2,299,434	1,027,054	-	-	-	-	1,027,054	-	1,128,020	20,795	123,565	-	-	-	-
Miscellaneous income deductions	55*	21*	-	-	-	-	-	21*	30*	1*	3*	-	-	-	-
	3,772,157	1,858,625	196,931	-	30,195	604,466	1,027,054	21*	1,696,767	31,206	185,559	-	-	-	-
Chief Joseph:															
Operation and maintenance:															
Specific	210,477	210,477	210,477	-	-	-	-	-	-	-	-	-	-	-	-
Joint (note 4)	88,697	88,697	88,697	-	-	-	-	-	-	-	-	-	-	-	-
Administrative, general, and other	128,039	128,039	-	-	128,039	-	-	-	-	-	-	-	-	-	-
Depreciation	588,103	588,103	-	-	-	588,103	-	-	-	-	-	-	-	-	-
Interest	817,737	817,737	-	-	-	-	817,737	-	-	-	-	-	-	-	-
Miscellaneous income deductions	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1,833,053	1,833,053	299,174	-	128,039	588,103	817,737	-	-	-	-	-	-	-	-
Columbia Basin:															
Operation and maintenance:															
Specific	2,272,247	1,034,609	754,155	280,454	-	-	-	-	-	-	270,915	966,723	-	966,723	-
Joint (note 4)	593,683	588,985	588,985	-	-	-	-	-	-	4,698	-	-	-	-	-
Administrative, general, and other	988,003	593,001	-	-	593,001	-	-	-	-	-	26,979	368,023	-	368,023	-
Depreciation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Interest	3,391,543	3,391,543	-	-	-	-	3,391,543	-	-	-	-	-	-	-	-
Miscellaneous income deductions	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7,245,476	5,608,138	1,343,140	280,454	593,001	-	3,391,543	-	-	4,698	297,894	1,334,746	-	1,334,746	-
Hungry Horse:															
Operation and maintenance:															
Specific	204,950	198,436	175,335	23,101	-	-	-	-	-	-	6,514	-	-	-	-
Joint (note 4)	68,121	48,694	48,694	-	-	-	-	-	19,427	-	-	-	-	-	-
Administrative, general, and other	113,969	105,779	-	-	105,779	-	-	-	8,190	-	-	-	-	-	-
Depreciation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Interest	2,353,922	2,353,922	-	-	-	-	2,353,922	-	-	-	-	-	-	-	-
Miscellaneous income deductions	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2,740,962	2,706,831	224,029	23,101	105,779	-	2,353,922	-	27,617	-	6,514	-	-	-	-
Yakima:															
Operation and maintenance:															
Specific	405,091	11,877	11,877	-	-	-	-	-	-	-	-	393,214	59,981	333,233	-
Joint (note 4)	4,335	4,335	4,335	-	-	-	-	-	-	-	-	-	-	-	-
Administrative, general, and other	92,235	4,356	-	-	4,356	-	-	-	-	-	-	87,879	13,182	74,697	-
Depreciation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Interest	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Miscellaneous income deductions	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	501,661	20,568	16,212	-	4,356	-	-	-	-	-	-	481,093	73,163	407,930	-

*Deduction

The accompanying notes (schedule 12) are an integral part of this statement.

COLUMBIA RIVER BASIN

WATER RESOURCES DEVELOPMENT PROGRAM OF THE CORPS OF ENGINEERS,

BUREAU OF RECLAMATION, AND BONNEVILLE POWER ADMINISTRATION (note 1)

EXPENSES

MULTIPLE-PURPOSE PROJECTS AND BONNEVILLE POWER ADMINISTRATION (continued)

FOR THE FISCAL YEAR ENDED JUNE 30, 1956

	Total expense (note 2)	ACCRUING TO THE UNITED STATES										ACCRUING TO WATER USERS			UNDISTRIBUTED
		Commercial power							Flood control	Navigation	Other	Irrigation			
		Total	Production	Transmission	Adm., general, and other	Depreciation	Interest	Misc. income ded.	Storage	Storage and locks		Total	Storage	Distribution	
Bonneville Power Administration:															
Operation and maintenance:															
Specific	$ 7,159,310	$ 7,159,310	$1,061,260	$6,098,050	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Joint (note 4)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Administrative, general, and other	2,348,831	2,348,831	-	-	2,348,831	-	-	-	-	-	-	-	-	-	-
Depreciation	10,007,172	10,007,172	-	-	-	10,007,172	-	-	-	-	-	-	-	-	-
Interest	6,413,147	6,413,147	-	-	-	-	6,413,147	-	-	-	-	-	-	-	-
Miscellaneous income deductions	1,773*	1,773*	-	-	-	-	-	1,773*	-	-	-	-	-	-	-
	25,926,687	25,926,687	1,061,260	6,098,050	2,348,831	10,007,172	6,413,147	1,773*	-	-	-	-	-	-	-
Total, Columbia River Power System	59,355,834	52,225,151	5,206,883	6,401,605	3,554,311	15,508,174	21,582,101	27,923*	2,503,317	2,174,206	637,321	1,815,839	73,163	1,742,676	-
OTHER BASIN PROJECTS:															
Boise:															
Operation and maintenance:															
Specific	264,173	244,750	111,714	133,036	-	-	-	-	-	-	2,114	17,242	10,790	6,452	67
Joint (note 4)	36,397	6,980	6,980	-	-	-	-	-	5,173	-	-	24,244	18,950	5,294	-
Administrative, general, and other	65,426	56,209	-	-	56,209	-	-	-	1,161	-	-	8,056	5,800	2,256	-
Depreciation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Interest	81,871	81,871	-	-	-	-	81,871	-	-	-	-	-	-	-	-
Miscellaneous income deductions	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	447,867	389,810	118,694	133,036	56,209	-	81,871	-	6,334	-	2,114	49,542	35,540	14,002	67
Minidoka:															
Operation and maintenance:															
Specific	782,978	28,889	12,474	16,415	-	-	-	-	-	-	3,323	230,678	58,792	171,886	520,088
Joint (note 4)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Administrative, general, and other	99,393	5,777	-	-	5,777	-	-	-	-	-	-	49,720	23,291	26,429	43,896
Depreciation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Interest	13,787	13,787	-	-	-	-	13,787	-	-	-	-	-	-	-	-
Miscellaneous income deductions	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	896,158	48,453	12,474	16,415	5,777	-	13,787	-	-	-	3,323	280,398	82,083	198,315	563,984
Total, other basin projects	1,344,025	438,263	131,168	149,451	61,986	-	95,658	-	6,334	-	5,437	329,940	117,623	212,317	564,051
Total, Columbia River basin	$60,699,859	$52,663,414	$5,338,051	$6,551,056	$3,616,297	$15,508,174	$21,677,759	$27,923*	$2,509,651	$2,174,206	$642,758	$2,145,779	$190,786	$1,954,993	$564,051

*Deduction

The accompanying notes (schedule 12) are an integral part of this statement.

COLUMBIA RIVER BASIN

WATER RESOURCES DEVELOPMENT PROGRAM OF THE CORPS OF ENGINEERS, BUREAU OF RECLAMATION, AND BONNEVILLE POWER ADMINISTRATION

NOTES TO THE FINANCIAL STATEMENTS ON SCHEDULES 1 TO 11, INCLUSIVE

1. Basis for preparation

The financial statements have been drawn from the official accounts and records of the Corps of Engineers, Department of the Army, and the Bonneville Power Administration and Bureau of Reclamation, Department of the Interior. Information presented by the financial statements is confined to projects, facilities, and activities devoted to controlling and using water of the Columbia River watershed and financed all or in part by construction and operation and maintenance appropriations of the Congress.

2. Accounting policies

Accounting policies of the Corps of Engineers, Bureau of Reclamation, and Bonneville Power Administration are inconsistent in several important respects. Policies that are consistent among the agencies have not been reached on depreciation of plant in service, interest on the Federal investment, costs incurred by other agencies, and investigations cost.

Depreciation. Depreciation has been uniformly provided on depreciable property of all purposes at multiple-purpose projects of the Corps of Engineers. No depreciation has been recorded on depreciable property of the single-purpose navigation and flood control projects of the Corps. The Bureau of Reclamation as a matter of general policy does not record depreciation on depreciable property of either multiple-purpose projects or single-purpose irrigation projects. The Bureau does record depreciation on a very minor amount of general property, some of which is classified simply as movable equipment and some of which is allocated to project purposes. The Bonneville Power Administration records depreciation on all depreciable property.

The straight-line method has been used to compute property depreciation for the Bonneville Power Administration and for all multiple-purpose projects of the Corps, excepting the Bonneville Dam Project. The compound-interest method, employing an interest factor of 2.5 percent, has been used in computing depreciation on most of the property of the Bonneville Dam Project.

Estimated service lives of the various classes of property being depreciated have been determined by engineering studies. No item of property has been assigned a service life in excess of 100 years.

Interest on the Federal investment. For Corps of Engineers multiple-purpose projects, interest has been included at a rate of 2.5 percent on the net Federal investment allocated to all purposes with appropriate charges to expense and to property costs (interest during construction). No interest has been recorded on investment in single-purpose navigation and flood control projects of the Corps. The Bureau of Reclamation records interest at a rate of 3 percent on the net investment in commercial power facilities during the operating period but does not record interest on investment during the construction period (interest capitalized). No interest is recorded on multiple-purpose investment allocated to nonpower purposes or on the investment in single-purpose irrigation projects. The Bonneville Power Administration includes interest at a rate of 2.5 percent on net Federal investment, all of which is allocable to power purpose.

Costs incurred by other agencies. Bonneville Power Administration has recorded in its accounts actual or estimated costs for rentals, materials, and other services furnished without charge by the General Services Administration and other Federal agencies, death and disability claims on account of the Administration employees paid by the Bureau of Employees' Compensation, Department of Labor, and amounts applicable to the Administration's operations of the cost of Civil Service Retirement System. For the fiscal year 1956, the Administration recorded in its accounts $1,600,000 of such costs, of which $600,000 was included in operating expenses. It is not the practice of the Corps of Engineers or the Bureau of Reclamation to include in their accounts amounts incurred by other Federal agencies and not assignable to the projects pursuant to law or administrative policy.

Investigations cost. Expenditures for preliminary surveys and investigations are included as a part of construction costs, where appropriate, by the Administration and the Bureau of Reclamation, but not by the Corps of Engineers.

Plant-in-service balances. The Bureau of Reclamation carries abandoned plant under the general heading of Plant, Property, and Equipment. As a result, the fixed asset classification of the statement of assets and liabilities includes the following amounts which represent facilities no longer qualifying as assets:

Multiple-purpose plant abandoned	$ 439,088
Irrigation plant abandoned	2,053,439
Electric plant abandoned	179,111
Total	$2,671,638

The plant-in-service amounts do not represent all facilities in operation at June 30, 1956. The Chandler Hydroelectric Plant of the Bureau's Yakima Project was producing electric energy, but the costs of the hydro plant and related facilities were classified

as construction work in progress. Specific power costs of the Chandler plant were about $2,300,000, and the costs of related joint facilities were about $4,100,000. The Lucky Peak Project of the Corps was actively serving the purpose of flood control in fiscal year 1956, but the costs of about $18,000,000 were classified as construction work in progress.

3. Allocations of construction cost

Bonneville Dam Project. The costs of property, plant, and equipment determined to be jointly useful for power generation and for navigation, consisting principally of the dam, reservoir, and fishways, have been allocated 50 percent to power and 50 percent to navigation by the Federal Power Commission under the provisions of the Bonneville Project Act.

Columbia Basin Project. The costs of property, plant, and equipment determined to be jointly useful for power generation and for other purposes, consisting principally of the dam, reservoir, and general service facilities, have been allocated 56 percent to commercial power (including future downstream river regulation) and 44 percent to irrigation after assigning $1,000,000 to navigation. Specific power facilities (principally powerhouses and generating equipment), exclusive of the cost of the 3 generating units and related electrical facilities installed in addition to the original 15 units, have been allocated to commercial power and to irrigation pumping power in proportion to the relative value of power delivered for each purpose. The cost of the 3 additional generating units and related electrical facilities has been assigned to commercial power. These allocations have been made by the Secretary of the Interior under the provisions of the Reclamation Project Act of 1939 (43 U.S.C. 485h).

Hungry Horse Project. An allocation of the construction costs of Hungry Horse Project has not been made by the Secretary of the Interior. A tentative allocation of the costs of property, plant, and equipment determined to be jointly useful for power generation and flood control purposes has been made by the Bureau of Reclamation. The allocation percentages used were 74.32 percent to commercial power and 25.68 percent to flood control.

Albeni Falls, Detroit-Big Cliff, Lookout Point-Dexter, and Chief Joseph Projects. Under the provisions of section 5 of the Flood Control Act of 1944 (16 U.S.C. 825s), the Secretary of the Interior became the marketing agent for energy generated by projects constructed and operated by the Corps of Engineers that is excess to project needs. The Bonneville Power Administration has been designated the marketing agent for these projects in the Columbia River basin. The act, however, does not specify who shall make an allocation of the construction costs. Tentative allocations of the joint construction costs have been made by the Corps of Engineers as follows:

	Percent			
	Albeni Falls	Detroit-Big Cliff	Lookout Point-Dexter	Chief Joseph
Commercial power	97.37	44.27	25.94	100.00
Flood control	1.48	46.72	65.66	-
Navigation	1.15	.30	1.21	-
Irrigation	-	7.77	7.19	-
Municipal water supply	-	.94	-	-
Total	100.00	100.00	100.00	100.00

For purposes of this report, the joint property costs have been allocated in accordance with the above percentages.

At the present time the Corps considers the entire construction costs of the joint facilities at the Chief Joseph Project applicable to commercial power, but, because of related irrigation development by the Bureau of Reclamation, some amount may be assigned to irrigation at a later date.

McNary Dam Project. The River and Harbor Act of 1945 (59 Stat. 22) authorized this project and provided that the Department of the Interior market the electric energy in accordance with the terms of the Bonneville Project Act. Under the provisions of the Bonneville Project Act (16 U.S.C. 832f), the Federal Power Commission is authorized to allocate the construction costs of joint facilities to power and nonpower purposes. In an interim report, the Commission allocated 97.5 percent of the joint facilities construction costs to commercial power and 2.5 percent to navigation. For the purposes of this report, the costs of joint facilities have been allocated in accordance with these percentages.

Yakima Project. An allocation of the costs of the Yakima Project has not been made by the Secretary of the Interior. The Bureau of Reclamation, however, has made a tentative allocation of the costs of joint facilities (Roza Division). One million dollars of the costs of multiple-purpose facilities, consisting mostly of the main canal and diversion dam, was assigned to power. This amount was further allocated between irrigation (pumping power) and commercial power on an 80:20 ratio, based on the proportion of peak demands of irrigation pumping to total name-plate capacity of the Roza generating plant. Certain specific power facilities, including Roza Substation, were allocated between irrigation (pumping power) and commercial power on the same 80:20 ratio.

The cost of the 34.5-kv transmission line of the Roza Division, a specific power facility, was allocated between irrigation (pumping power) and commercial power on a 93:07 ratio, based on the proportion of REA loads to total load on a section of the line.

Minidoka Project. The Minidoka Project was authorized under reclamation laws, and the allocation of construction costs has been made by the Secretary of the Interior. The costs of Minidoka Dam and generating units 1-6 are recoverable through repayment contracts with the water users, and in turn all net revenues from units 1-6 accrue to them. When unit 7 was installed as a commercial power unit with revenues accruing to the United States, one fourth of the joint facility costs allocated to hydroelectric power was suballocated to unit 7.

To avoid disruption of existing repayment arrangements relative to the dam and other joint facilities, it was arranged that unit 7 should pay an annual rental to the water users, equal over 40 years to the joint costs allocable to the unit. Because of this rental arrangement, which in effect substitutes for an allocation of joint construction costs, all costs of joint facilities are identified with irrigation.

Lewiston Orchards Project. The Lewiston Orchards Project was authorized under reclamation law, and the allocation of cost has been made by the Secretary of the Interior. It was determined that use of water for domestic purposes would constitute less than 6 percent of the total water usage. Accordingly, 6 percent of the joint costs were allocated to domestic water and the remainder to irrigation.

Boise Project. A final allocation of the costs of the Boise Project has not been made by the Secretary of the Interior. A tentative allocation of the costs of property, plant, and equipment determined to be jointly useful for irrigation, flood control, and power purposes has been made by the Bureau of Reclamation. The allocation percentages arrived at were:

	Percent	
	Arrowrock and Anderson Ranch	Black Canyon
Irrigation	47.5	50.0
Flood Control	47.5	-
Power	5.0	50.0
Total	100.0	100.0

For purposes of this report, the costs of joint facilities have been allocated in accordance with these percentages.

4. Allocation of operation and maintenance expense for facilities jointly serving two or more purposes

The percentages used in allocating the fiscal year 1956 expense of operating and maintaining facilities jointly serving two or more purposes were:

	Percent					
	Power	Flood control	Navi-gation	Irri-gation	Other	Total
Corps of Engineers:						
Bonneville Dam	50.00	-	50.00	-	-	100.00
Detroit-Big Cliff	56.91	35.10	.25	-	7.74	100.00
Lookout Point-Dexter	38.25	54.89	.98	-	5.88	100.00
Chief Joseph	100.00	-	-	-	-	100.00
Albeni Falls	98.00	1.13	.87	-	-	100.00
McNary Dam	97.50	-	2.50	-	-	100.00
Bureau of Reclamation:						
Columbia Basin	99.21	-	.79	-	-	100.00
Hungry Horse	71.48	28.52	-	-	-	100.00
Yakima	100.00	-	-	-	-	100.00
Minidoka	-	-	-	100.00	-	100.00
Boise	19.18	14.21	-	66.61	-	100.00

The allocation of joint operation and maintenance expense for projects of the Corps of Engineers is consistent with the allocations of construction cost. On Bonneville Dam, McNary Dam, and Chief Joseph Projects, the above percentages are the same as those used in joint construction cost allocations. On Detroit-Big Cliff, Lookout Point-Dexter, and Albeni Falls Projects the method used in allocating total project costs does not produce the same percentages for joint construction cost and joint operation and maintenance expenses, although both are derived from one over-all determination.

The expense of operating and maintaining joint facilities of the Bureau's Columbia Basin Project (power and irrigation purposes, with a nominal allocation to navigation) is charged to commercial power, except for a 0.79 percent allocation to navigation. Charges to water users for irrigation pumping power, computed at a rate of .5 mills per kilowatt-hour, are credited to commercial power operations as an interdepartmental sale.

Allocation percentages for joint operation and maintenance costs at the Hungry Horse Project have been determined through direction of effort studies by the project superintendent. Joint facilities at the Yakima Project served only power during fiscal year 1956, and accordingly all operation and maintenance expense associated with the facilities was charged to power. All expense of operating and maintaining joint facilities at the Minidoka Project was charged to specific irrigation.

For the Boise Project, operation and maintenance of joint facilities at Anderson Ranch and Arrowrock Dams was allocated between flood control and reimbursable purposes in accordance with the construction cost allocation. The remaining expense was allocated between power and irrigation based on experience of the

Bureau in maintaining large storage dams where there were no power plants. Operation and maintenance of the joint facilities at Black Canyon Dam of the Boise Project was allocated on the same basis as construction costs.

5. Matured installments of fixed obligations for use of facilities

The irrigation construction costs repayable by water users (including rehabilitation and betterment work) are covered in most instances by long-term contracts providing for semiannual payments to the United States. The status of these contracts at June 30, 1956, was:

Face value of contracts	$242,830,605
Value of unmatured installments	196,305,888
Matured installments	$ 46,524,717

Repayments under contract by the water users are accounted for by the Bureau of Reclamation as an investment of the water users in the fixed assets.

6. Revenues from downstream non-Federal plants

The Federal Power Act (16 U.S.C. 803f) provides that a licensed project receiving benefits from the upstream improvements of another licensed project or of the Federal Government shall make payments on account of such benefits. It is the responsibility of the Federal Power Commission to determine the amount that non-Federal power installations on the Columbia River and its tributaries will have to pay for downstream benefits received or to be received from the Federal storage projects, namely, Hungry Horse, Albeni Falls, and Columbia Basin Projects (Grand Coulee Dam). During fiscal year 1956 and prior years, benefits were received by the non-Federal projects, but no revenues have been accrued in the accounts of the Federal projects for such benefits because the Federal Power Commission had not rendered a decision as to the amounts payable, if any, by June 30, 1956.

7. Investment of United States Government

Funds expended for property, plant, equipment, or other assets, and for operation and maintenance and other activities, are obtained by congressional appropriation, with two minor exceptions:

a. The Bonneville Power Administration has been authorized by the Bonneville Project Act, as amended (16 U.S.C. 832j), use of a continuing fund to be derived of receipts from the sale of electric energy. To June 30, 1956, receipts transferred to the continuing fund totaled $1,456,707, of which $956,707 had been expended and $500,000 remained unexpended.

b. The Bureau of Reclamation finances Federal operation of some irrigation facilities directly from funds advanced by water users. During fiscal year 1956, the Bureau obtained $562,054 from water users for such purposes. These funds are not included in the investment section of the statement of assets and liabilities.

With these exceptions, receipts from the sales of power, irrigation contract maturities, advances for irrigation operation and maintenance, and miscellaneous activities are not available for expenditure and are deposited into the United States Treasury.

Interest, included as a part of the Federal investment, does not represent congressional appropriation of funds. In the case of Bonneville Power Administration and Corps of Engineers projects, it is a recorded estimate of the Treasury borrowing costs applicable, arrived at by applying a 2.5 percent interest factor to the net Federal investment in power and other purposes of multiple-purpose projects. The 3 percent interest recorded on net Federal investment in commercial power for Bureau of Reclamation projects finds its origin in provisions of the Reclamation Project Act of 1939.

The net cost of materials and services transferred from other Federal agencies, included in the Federal investment, represents the recording of actual or estimated costs of the materials and services obtained without expenditure of funds appropriated to the project.

8. Costs of irrigation charged off by acts of the Congress and reserve for repayment reductions authorized

The Congress has provided on a number of reclamation projects that certain irrigation costs should be nonreimbursable. The Bureau of Reclamation has recorded an amount of $4,248,495 attributable to such provisions at June 30, 1956. This amount, which includes both construction and operation and maintenance costs, is identified with the following projects:

	Total	Construction	O&M
Bitter Root	$ 2,310	$ 2,310	$ -
Boise	82,394	82,394	-
Frenchtown	1,050	1,050	-
King Hill	1,987,854	1,877,731	110,123
Minidoka	2,288	2,288	-
Okanogan	1,185,171	978,504	206,667
Umatilla	979,424	888,341	91,083
Yakima	8,004	4,215	3,789
Total recorded	$4,248,495	$3,836,833	$411,662

Under Bureau accounting, the entire amounts of recorded charge-offs are shown as a reduction of the investment of the United States and a reserve is set up for the amount applicable to construction costs of plant in service ($3,836,833).

There were other, unrecorded charge-offs of irrigation cost at the end of the fiscal year which should be taken into consideration:

	Total	Construction	O&M
Recorded, as above	$4,248,495	$3,836,833	$411,662
Unrecorded charge-off of costs on Umatilla Project per act of June 18, 1954 (68 Stat. 254)	1,420,470	1,420,470	-
Unrecorded nonreimbursable costs of the Missoula Valley and Rathdrum Prairie (Post Falls Unit) Water Conservation and Utilization Projects	407,271	407,271	-
Total recorded and unrecorded	$6,076,236	$5,664,574	$411,662