

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

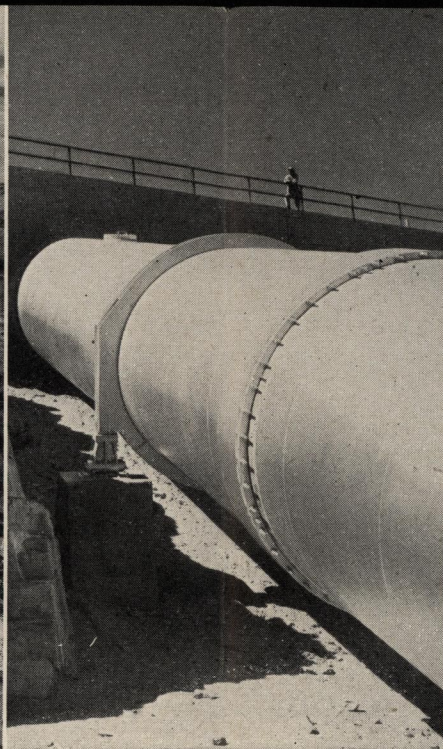
Magic Water

FOR THE COLUMBIA BASIN PROJECT

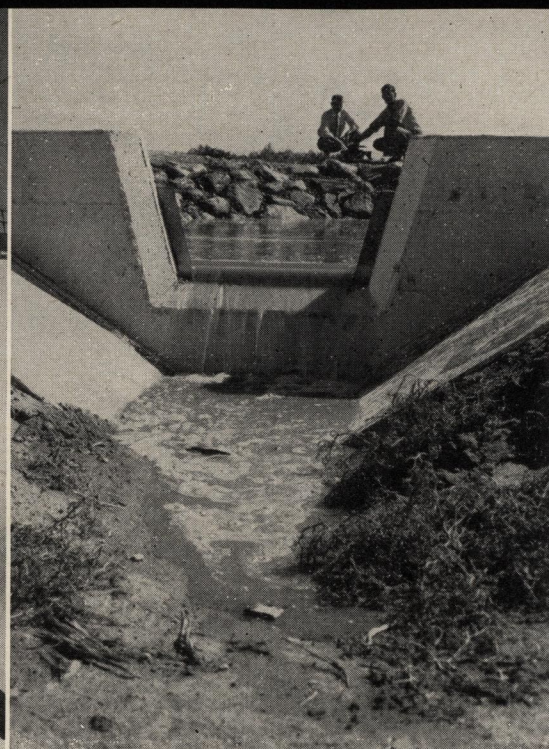




Grand Coulee Dam and reservoirs.



One of 12 steel discharge pipes.



Arrival during testing of water.



Home Creating

THE COLUMBIA RIVER BASIN

The Columbia River drains an area equal in size to the Atlantic seaboard States from the northern coast of Maine to the southern boundary of Virginia. This 259,000-square-mile basin is in the Pacific Northwest of the United States and the southern part of British Columbia in Canada. The Columbia Basin project, located in central Washington in the heart of this basin, is one of the largest single Reclamation developments in the United States.

THE PROJECT

Watered from the 151-mile-long reservoir called Franklin D. Roosevelt Lake, the irrigated acreage on the Columbia Basin project in central Washington will be three-fourths the size of Delaware and will create 13,000 new farms. Eventual population of the rural and urban areas will total about 150,000.

Key structure of the project is Grand Coulee Dam, four-fifths of a mile long and containing nearly twice as much concrete as its nearest rival. The spillway is more than twice the height of Niagara Falls. Below this gigantic structure is the world's largest power plant, with a rated capacity of almost 2,000,000 kilowatts.

Some of this power will be used to pump water upward 280 feet at the rate of approximately 144,000 gallons per second into the Grand Coulee, a canyon formed during the ice age. The resulting 27-mile-long reservoir will feed the 4,500 miles of tunnels, siphons and canals built to serve the 1,000,000-acre project.

Until 1952 no more than 10,000 acres of federally reclaimed land was put under irrigation in the Columbia Basin in any one year. With 66,000 acres getting water in 1952 and about 70,000 coming in each year thereafter, the Columbia Basin development will be several times greater than anything ever before contemplated in this region. The development of the first 500,000 acres of the project is expected to be completed by the end of 1958, provided the necessary appropriations are made each year by the Congress.

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DISTRIBUTION SYSTEM

The main features of the water-distributing system for irrigating Columbia Basin lands are:

1. The pumping plant at Grand Coulee Dam which lifts water 280 feet from Lake Roosevelt into a 13¼-mile-long canal.
2. The 27-mile-long equalizing reservoir in the Upper Grand Coulee into which this water empties.
3. Four earth-and-rock dams, two of which form the equalizing reservoir.
4. Siphons, tunnels, supplemental pumping plants, and more than 4,500 miles of canals and laterals.

The equalizing reservoir not only takes the place of a costly 27-mile-long, concrete-lined canal, but has a storage capacity of about 1,000,000 acre-feet of water.

Near the center of the irrigable area O'Sullivan Dam, a 3½-mile-long, earthfill structure, forms the 30,000-acre Potholes Reservoir. It impounds the runoff from irrigated areas to the north, to be reused on irrigable lands to the south. This reservoir has a capacity equal to almost one-half that of the equalizing reservoir, and the runoff waters caught there may be supplemented, when needed, with water from the East Low and West Canals.

INFORMATION FOR SETTLERS

Only a small part of the total project area is federally owned land. These lands, which may comprise 20 percent of the ultimate 1,000,000-acre development, are sold on a basis of first priority for veterans of World War II.

Additional information on these and other lands, and on the types of help provided to settlers by the Bureau of Reclamation, may be obtained by writing to the Chief, Project Development Division, Columbia Basin Project, Ephrata, Wash.

Considerable help is given to new settlers in getting started on the project.

Typical scene before irrigation.



A new home created by irrigation.



Wealth Producing

ECONOMIC FACTS

On the basis of what has happened in the nearest Federal developments, those on the Yakima River, the gross farm income will be about \$122,000,000 per year when the project is fully developed. This figure is based on 1949 prices.

Add the income of townspeople living on the project and the wealth created is of tremendous national importance. Income taxes of these two groups will pay back Uncle Sam the cost of development several times over long before construction costs have been amortized in the usual way.

Buying power of these people will be felt in every section of the country and even beyond the borders. Clocks from Connecticut, cotton from Mississippi, steel from Pittsburgh, autos from Detroit, and thousands of other items will be bought by prosperous basin people.

An inkling of the dollar yield to be expected comes from the 5,000 acres near Pasco which have been served by a pumping unit since 1948. The 1951 average gross income on these farms was over \$137.45 per acre.

Meanwhile, the Basin will send to all corners of the country products of many kinds, both agricultural and manufactured. By providing power, the project makes possible the establishment of industries whose workers will be fed by, and provide a market for, the project's farms. The balanced and integrated economic development created will add the productive equivalent of a new State to the Nation.

Outstanding though it is, the project is but one of more than 80 Reclamation projects which irrigate over 6,000,000 acres and, in 1951, produced \$821,000,000 worth of crops, immense quantities of hydroelectric power, recreational benefits valued at more than \$35,000,000, and many other benefits for the people of America.

HELP TO SETTLERS

Early Federal Reclamation projects provided little or no help to the settler. He was merely handed a piece of land and more or less told, "From now on, you're on your own." It was soon discovered that this was not enough.

Among the means of assistance to the new settlers on the Columbia Basin project are four development farms, established on various parts of the project in advance of the large-scale settlement.

On these farms, under varying conditions and with varying means of irrigation, crops are tested. These have resulted in a large available store of information for the would-be settler. This program was accomplished with the help of Washington State College and agencies of the United States Department of Agriculture, cooperating with the Bureau of Reclamation, the sponsoring agency.

In addition, help is provided the settler for staking out his farm and providing information about locating his farmstead and a vast store of other information.

CLIMATE

Temperatures in the Columbia Basin range from an average minimum of about 20 degrees above zero in January to an average maximum of about 90 in July. The average annual temperature is 50.4 degrees. The average temperature during the irrigation season, April to October, is 62.2.

The frost-free period varies locally, ranging from 127 to 195 days in the northern, and from 143 to 206 days in the southern part of the area. Altitudes above sea level range from about 1,500 feet in the northeast to less than 400 in the southern part of the project.

The average annual rainfall varies from less than 6 inches in the southwestern part of the area to 10 inches in the northeastern uplands. Most of the rain falls in late autumn and this, along with winter snows, makes up the great share of the total. Very little rainfall occurs during the growing season.

The failure of several attempts to dry-farm a part of the plateau on which the Columbia Basin project is located is attributed to this shortage of rainfall. Two great waves of homesteaders came through the area, one in the 1880's and the other in the early 1900's. Both times, the settlers were forced to abandon their farms because of drought. The purpose of the irrigation phases of the Columbia Basin project is to assure a permanent, steady supply of water to the rich land.



Water offers promise for the future.

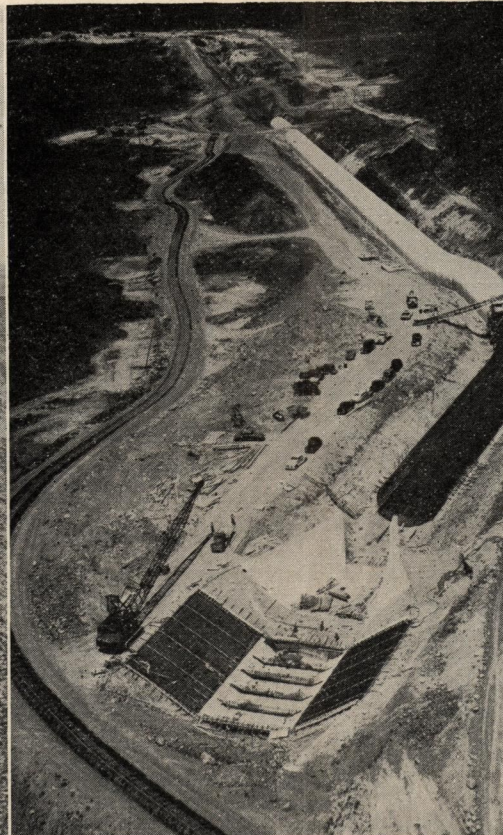


Onions are another successful crop.

Two crops—a veteran's family and his bean field, near Pasco.



Soap Lake Siphon, now buried, is two and one-half miles long.



Ladino clover seed returns a rich yield on the project lands.



Self-Sustaining

CONSTRUCTION COSTS

Early western irrigated lands were developed without Federal assistance. Such land developments involved the easier, cheaper, and smaller projects. The job of the Reclamation Bureau is to carry out, with repayable, interest-free Government funds, the development of projects too large and too complicated for private enterprise.

The average per-acre cost of Columbia Basin project irrigation works will exceed the settlers' ability to repay. Not only will Coulee Dam power be needed to lift water 280 feet into the giant equalizing reservoir, but revenues from the sale of power will repay the greater part of construction costs on the project. Average construction costs to be levied against the land will be \$85 per acre, payable over a period of 40 years. Payment of these charges will not start until after a 10-year development period, which allows settlers to get on their feet before starting to repay construction costs.

COMMUNITY FACILITIES

Project schools are largely supported by Washington State funds. Federal funds are also available to project schools because school districts are affected by Reclamation activities and Federal legislation provides for financial help in such cases.

All principal church denominations are represented throughout the basin. The National Council of Churches has surveyed the basin with a view to establishing additional churches as needs arise.

Social, fraternal, veteran, service, club, and farm organizations have many branches on the project, and are continually establishing new groups.

Shopping, banking, and other service facilities are expanding as fast as needs require. This expansion will take on new impetus as the number of settlers increases. Branches of metropolitan stores and banks are already established in the basin, with many more in the planning stage. Land has also been set aside for the establishment of rural service centers.

TRANSPORTATION

The Columbia Basin is crossed by the main lines of the Chicago, Milwaukee, St. Paul and Pacific Railroad and the Great Northern Railway. The main line of the Northern Pacific encircles the lower half of the basin, with a major division point and shops at Pasco. Two other lines touch the lower border.

U. S. Highway 10, main artery between Spokane and Seattle, cuts through the heart of the basin, while U. S. 395 knives into the southeast sector and U. S. 2 crosses the Grand Coulee a few miles north of the uppermost areas to be irrigated, about 27 miles south of the Grand Coulee Dam. Several State highways, including 7, 11, and 18, and many miles of other paved roads bisect the basin. More of these will come as the project develops.

Two commercial airports are located on the project, and several others are within a few minutes' drive. Landing fields near other basin towns are already constructed. Three airlines have expressed interest in making scheduled stops in these areas as soon as business warrants. The bordering Columbia and Snake Rivers are navigable. Oil tankers and wheat barges now ply these waterways, and eventually a large volume of Columbia Basin produce will move to market through these channels.

Auto freight and passenger bus lines serve the project; an oil pipe line enters it; and possibilities for gas lines are being investigated.

RECREATION

Recreational facilities in and around the Columbia Basin are many and varied. The State Game Commission has established an office on the project and will keep the lakes stocked with fish and the upland bird population at a high level. Both National and State parks organizations will have lands within the project.

Fishing in the rivers and lakes bordering the basin is excellent. Upland birds, waterfowl, deer, elk, and bear abound in the nearby areas.

Boating, swimming, golf, tennis, horseback riding—these and many more activities take up the spare time of the sports-minded.



Recreation is a growing life in the basin.



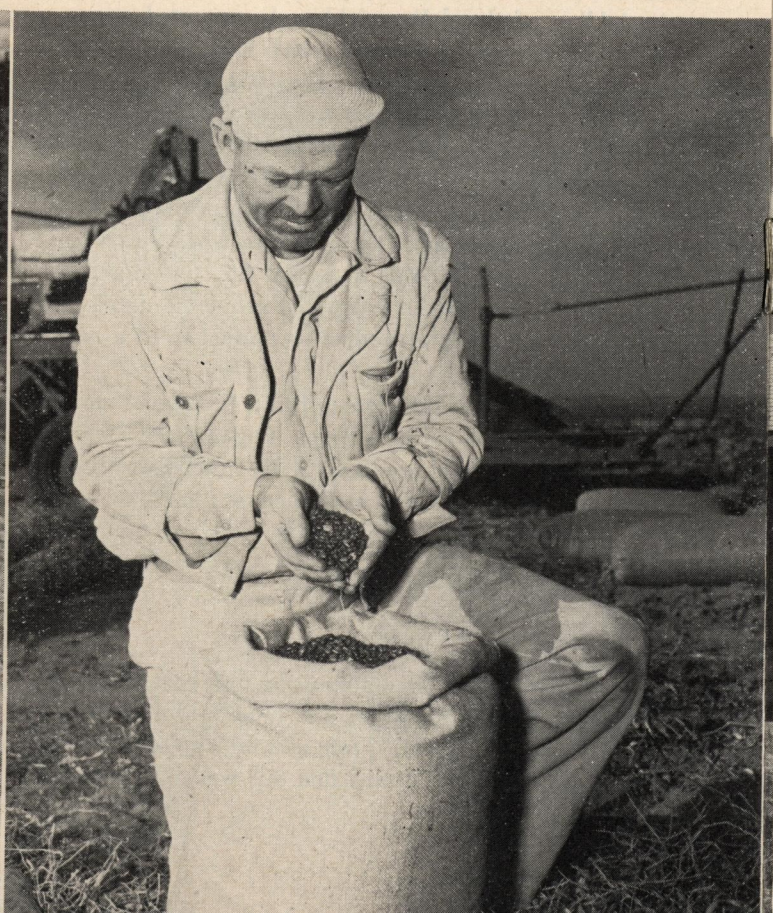
Sorghum field at Burke development farm.



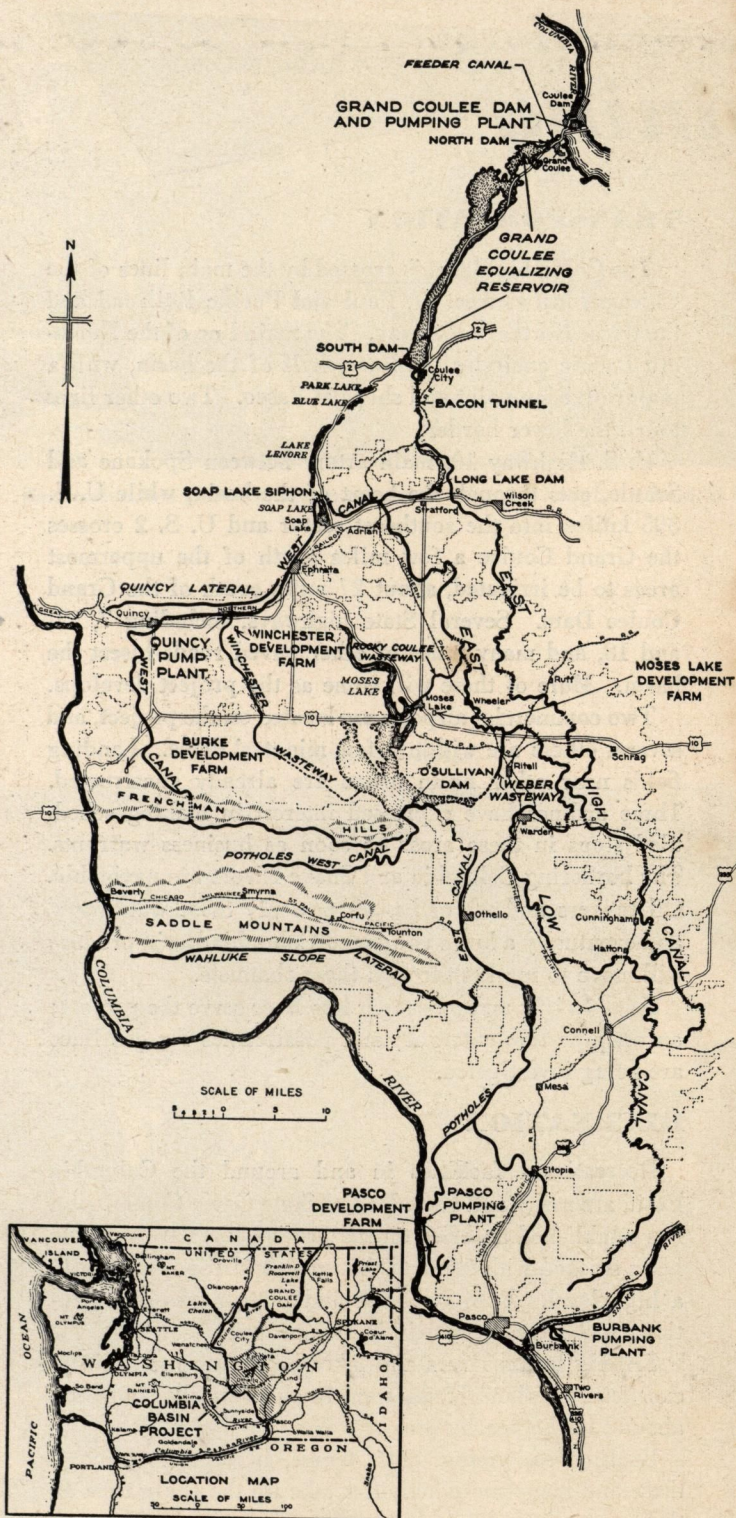
Headquarters of the Bureau at Ephrata.



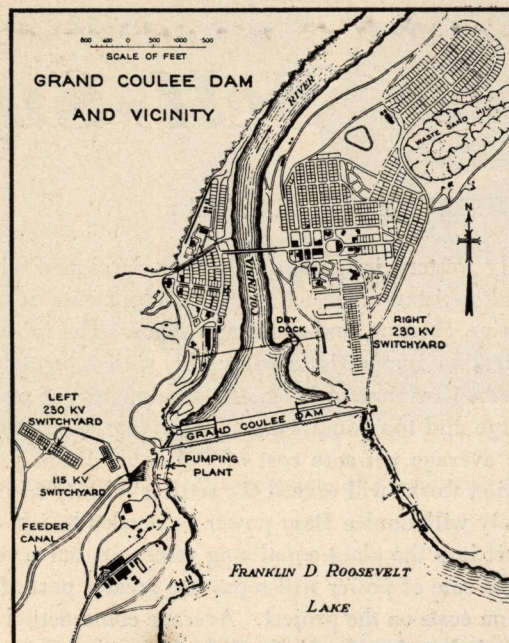
Abundant beans.



Plentiful peas.



The Columbia Basin project.



COLUMBIA RIVER BASIN

Area	259,000 square miles
Area above Coulee Dam	74,100 square miles
Area in Canada	39,700 square miles
Mean annual runoff above the dam	77,200,000 acre-feet
Mean annual flow at the dam	104,150 second-feet
Maximum recorded flow at dam, 1948	637,800 second-feet
Potential water power within U. S.	30,000,000 kilowatts

THE PROJECT

Number of irrigable acres	1,029,000
Number of miles of canals, laterals	4,500
Potential number of irrigated farms	13,000
Potential urban and rural population	150,000

THE DAM

Length of crest	4,173 feet
Height above lowest bedrock	550 feet
Spillway width	1,650 feet
Concrete content	10,230,776 cubic yards
Cement carloads	48,000 carloads

POWERPLANT

Generators	18 of 108,000 kilowatts each 3 of 10,000 kilowatts each
Turbines	18 of 165,000 horsepower each 3 of 14,000 horsepower each

FRANKLIN D. ROOSEVELT LAKE

Area	85,000 acres
Length	151 miles
Length of shore line	600 miles
Volume	9,700,000 acre-feet
Normal surface elevation above sea level	1,288-1,290 feet
Maximum draw-down	80 feet