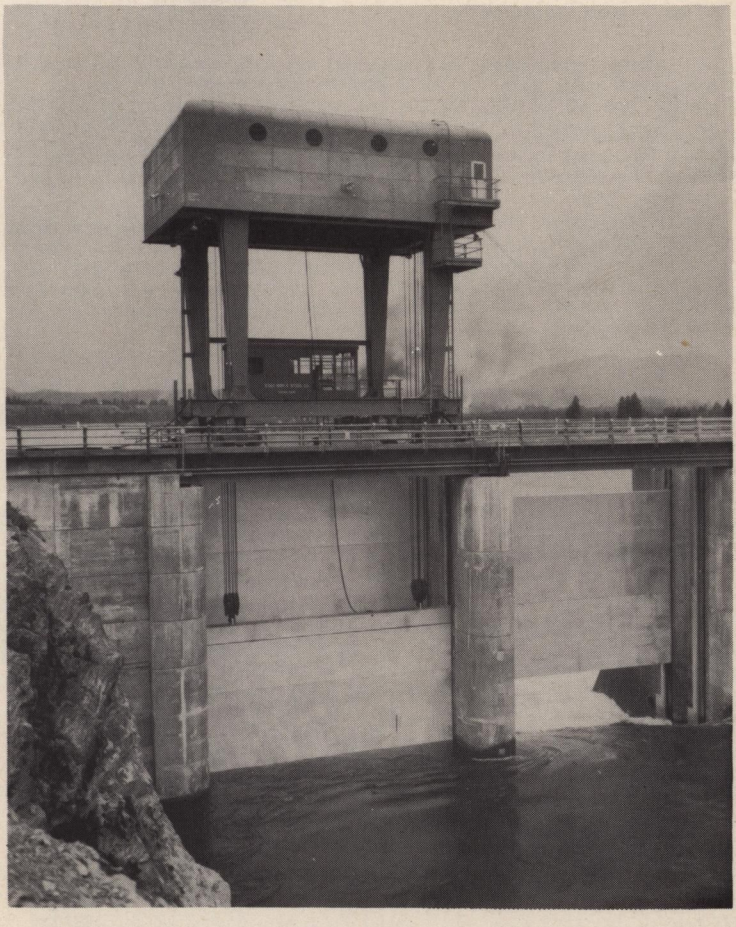
PRINCIPAL PROJECTS

WATER RESOURCES DEVELOPMENT

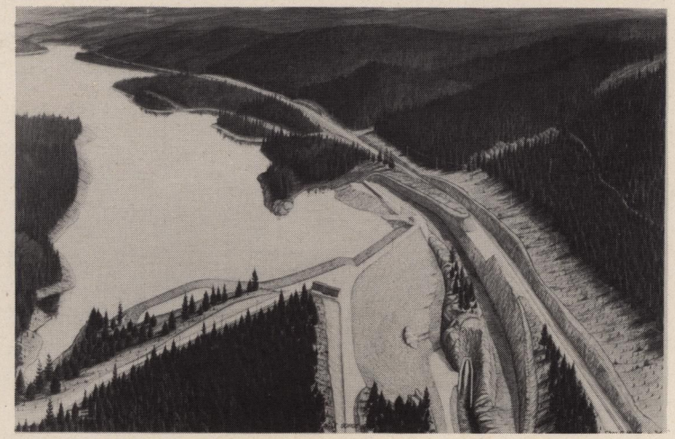
SEATTLE DISTRICT
CORPS OF ENGINEERS
U. S. ARMY

DECEMBER 1954



SPILLWAY CRANE SETS GATES, ALBENI FALLS DAM

EAGLE GORGE DAM



Eagle Gorge Dam, to be located on the Green River about 35 miles southeast of Seattle, was authorized by Congress in the Flood-Control Act of 1950 to control or eliminate the damaging winter floods in the lower Green River valley. This valley contains 17,600 acres of fertile, level land extending from Auburn to Renton and Seattle, much of it used for pasture and dairy purposes as well as for truck and field crops. The lower reach of the Green River is the Duwamish Waterway, which has been improved for navigation by joint projects of the Federal Government and the local community. A majority of Seattle's heavy industries are situated along the Duwamish Waterway.

The primary purpose of Eagle Gorge reservoir is to prevent or control recurring floods of the Green River. This will permit conversion of the land to production of higher-value crops and expansion of Seattle's southern heavy-industry district. Until such flood protection is provided, further industrial expansion in the Seattle area will remain sharply limited. Secondary benefits from Eagle Gorge reservoir will include conservation of fish life through increased minimum stream flow, and water storage for pollution abatement and other seasonal requirements.

Eagle Gorge Dam is estimated to require a total of $22,500,000, of which $20,500,000 is the total Federal allotment. The State of Washington has authorized an appropriation of $1,500,000 and King County $500,000 to comply with requirements for local participation in the project. The dam is designed as a rock-fill structure 230 feet in height above bedrock and about 500 feet long at the crest exclusive of the spillway on the left bank. Flood-control storage provided by the reservoir will amount to 106,000 acre-feet.

In 1952, Eagle Gorge Dam was classified by Congress as essential to the defense effort. Since then, $500,000 has been made available to the Corps of Engineers for engineering design work. Much of this work has been completed on Eagle Gorge Dam. When construction funds for the project are appropriated by Congress, the Corps of Engineers will be ready to start work immediately.

MUD MOUNTAIN DAM

A project with a homely name but with attractive engineering features and economic attributes is Mud Mountain Dam on the White River, seven miles southeast of Enumclaw, Washington, on the western edge of the Cascades. The Dam was constructed by the Seattle District, Corps of Engineers, to curtail floods in the fertile Puyallup River Valley below the confluence of the White River, and together with channel improvements and a system of levees along the lower Puyallup River, to furnish flood protection for the city of Tacoma's industrial section.

Mud Mountain Dam is the highest combination earth-core rock-fill dam in the world. It has a central water-tight core covered with transition sections of stone graded from fine to coarse and supported by slopes of quarry sand, gravel, and glacial till closely compacted to prevent leakage. The heavy rock slopes hold the core firmly in place and resist the water pressure against the dam. This is a structure 700 feet long at the crest 425 feet above the lowest bedrock in the White River. The Dam site is a narrow, deep box canyon. Normal flow and flood waters are discharged through two tunnels, 9 and 23 feet in diameter, each 2,000 feet long. A gateless overflow or spillway is provided.

Mud Mountain Dam's primary benefit was demonstrated late in 1946 when it provided flood prevention valued at $2½ million. Another benefit is the increased value of the land resulting from the change of use to higher quality production. Between 1942 and 1949 land-use values increased an average of $67,000 per year. Such values continue to increase as the region becomes more fully developed.

CORPS HAS NOTABLE RECORD

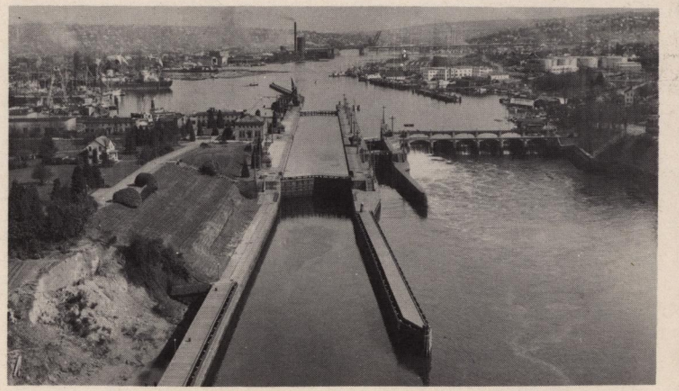
Success in the field of public works--for both using and preserving the Nation's natural resources --is at once a commercial and a military necessity, according to Maj. Gen. Samuel D. Sturgis, Jr., Chief of Engineers. Such success requires complete coordination between the local people, engineers, architects, contractors, construction and building equipment industries, under a leadership that has an intimate experience with the waterways of our country. On that foundation stands the notable record of achievements of the Corps of Engineers, U.S. Army.

"In fact, it is important for all the citizens we serve to realize that the successful accomplishments of the enormous engineering tasks required for both world wars and the Korean conflict have been the direct result of more than 100 years of civil works and military experience by the Army Engineers," General Sturgis declared. By virtue of the Corps' nature as an organization-in-being, "no other Government unit or combination of units can approach this record of successfully coordinating the complexities of civil works management in time of peace and fulfilling the formidable demands of the military forces in times of emergency.

"The soundest and most economical investment in our Government today is the always-active Corps of Engineers instantaneously ready for total war or total peace."

In civil works, the Corps of Engineers functions under the direction and control of the Secretary of the Army in the execution of flood-control and other water-resources development projects as directed by the United States Congress.

LAKE WASHINGTON SHIP CANAL



The Lake Washington Ship Canal in Seattle is approximately eight miles long, from Lake Washington to Shilshole Bay on Puget Sound. This project, including the famous "Government Locks", adjacent dam, and accessory works such as fish ladders, was constructed and is maintained and operated by the Seattle District, Corps of Engineers, U.S. Army.

The large lock is 80 feet wide and has a usable chamber length of 760 feet. The depth permits passage of deep-draft ocean-going ships. The small lock is 30 feet wide with a usable chamber length of 123 feet. No charge is made for use of the facilities and service any time of the day or night.

If it were not for men of vision, Seattle likely would not have had the benefit of this canal and locks for many years. But it also is likely that those men of vision did not see a great flotilla of pleasure craft approaching just around the bend! Total vessel traffic through the L.W.S.C. locks in 1953 amounted to 57,787, of which 27,607 were pleasure craft, 13,716 were fishing vessels, and 13,082 listed as commercial. Add to that 1,095 log rafts. U.S. Government ships totaled 3,074, and 308 foreign vessels used the facilities. Passenger count through the locks in 1953 was 156,522.

The number of commercial vessels moving through the locks has increased some and declined some while fishing vessel traffic has doubled and pleasure craft use of the locks has zoomed up more than four times over in the past 34 years. Labor Day of 1953 was the busiest single day of record with 864 vessels passing through the locks. As for the cargo tonnage through the L.W.S.C. locks in 1953, the figure was 1,851,352 tons by vessel, an amount somewhat under the record high of 2,004,884 tons in 1952. The 1953 rafted tonnage was 984,046; the 1944 record of 1,669,000 rafted tonnage still is tops. Net tonnage of vessels using the locks in 1953 was just 5 tons less than 4,074,000.

Some other locks in the Nation handle more cargo tonnage in a year, but few if any pass as large volume of vessel traffic. Also, the L.W.S.C. locks are Seattle's greatest tourist attraction, visitors totaling between 300,000 and 400,000 each year.

Construction of the canal and locks was started by the Corps of Engineers in 1911 and completed in 1917. The locks were completed and opened in 1916. Project's total construction cost was $5,000,000.

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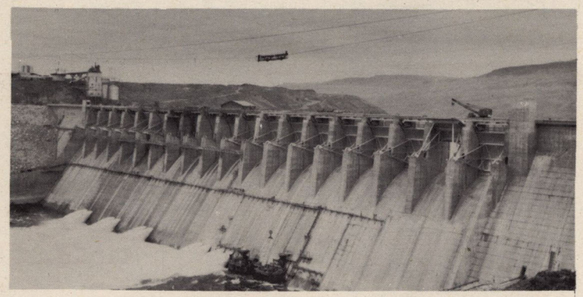
CHIEF JOSEPH DAM



One of the world's largest hydro-electric projects is being constructed under the supervision of Seattle District, Corps of Engineers, on the Columbia River near Bridgeport in north-central Washington, just 38 highway miles north and west of Grand Coulee Dam, the world's greatest. Chief Joseph will not be notable for size of the dam, but the powerhouse ultimately will be one of the longest single electric plants in the world and will be among the greatest in rated power capacity.

Final concrete was placed on the bridge, or roadway, atop the dam in November 1954, leaving only a few of the original 24 large sluices to be plugged in the lower portion of the spillway. The main dam then would be completed early in 1955 and several months ahead of the contract-scheduled completion date.

Filling of the 50-mile long reservoir, Lake Rufus Woods, behind Chief Joseph Dam, was begun in November 1954. By construction of a temporary dike across the intake channel, first Columbia River water was spilled over the dam's crest shortly after the middle of December 1954.

Construction of the 2,040-foot-long intake structure, which is a unit of the entire Chief Joseph barrier on the powerful and turbulent Columbia, has been completed. Installation of the first 16 of the ultimate battery of 27 giant penstocks was finished in November 1954, leaving only the concrete work to be done on some of the penstock elbow encasements to bring that unit of the project to completion. It was scheduled to be ready to receive water for the first time by March 1955.

Powerhouse sub-structure and super-structure were to be completed by the end of 1954. Installation of the first three power-generating units is well under way. The first one is to be ready for testing in July 1955, and all three are scheduled to begin placing power on the line by 1 September 1955. The remaining 13 of the first 16 generating units are planned to be added one each three months until all are producing power by the end of 1958. Each will have a capacity rating of 64,000 kilowatts, a total of 1,024,000 kilowatts for the 16. Plans call for an eventual installation of 27.

Estimated investment for the project with the first 16 power units in production is $169,000,000, which is calculated to be returned to the Federal Treasury in less than 50 years.

VISITORS ALWAYS WELCOME

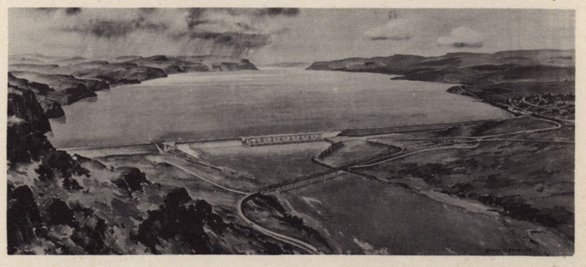
These projects belong to the United States government. Therefore you, as a citizen, always are welcome to visit them. However, for safety reasons while construction is in progress, visitors are not admitted to the work areas unless you are in a tour conducted by an official of the project...It is the desire of the Corps of Engineers to maintain a visitors' tour service at Chief Joseph Dam beginning Memorial Day, May 30, and continuing daily through Labor Day, each year...You will want to take pictures; bring your camera along...For additional information about these or any other projects of the U.S. Corps of Engineers, please address us at 4735 East Marginal Way, Seattle 4, Washington.

PRIEST RAPIDS DAM

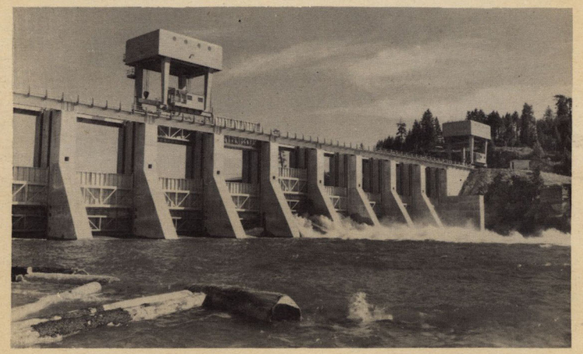
The multi-purpose Priest Rapids Dam water resource development, on the Columbia River in central Washington, about 30 air-miles northeast of Yakima, was first authorized by Congress in the Flood-Control Act of 1950, and the Corps of Engineers was designated to build the project at such time as funds would be appropriated. Benefits provided for would be hydro-electric power, flood control, navigation, and related water uses.

Plans for Priest Rapids Dam at the time the project was authorized called for an estimated Federal investment of $326,124,000. The dam would be approximately 13,500 feet long, with a concrete gravity-type central section of spillway and powerhouse, and with wing sections of rolled earth. Height of the dam would be more than 200 feet. Rated capacity of each of the power units would be 53,000 kilowatts. The initial installation of 23 power units would provide a total rated capacity of 1,219,000 kilowatts; an ultimate installation of 30 units would increase the total capacity to 1,590,000 kilowatts. Storage features of the reservoir also would provide benefits for flood control, navigation, and irrigation.

Congress modified the original authorization on 27 July 1954 to permit development of the site by a local agency. In line with this action, on 20 October 1954, the Federal Power Commission issued a preliminary study permit for development of the site to Public Utility District No. 2 of Grant County. The P.U.D. and the Corps of Engineers currently are working together on plans for the full development of the Priest Rapids project site.



ALBENI FALLS DAM



Albeni Falls Dam, a new multi-purpose project in a beautiful setting on the Pend Oreille River between Priest River, Idaho, and Newport, Washington, distinguished itself by returning to the Nation's economy about $2,000,000 in the Dam's first season of operation, just two years after authorization by Congress. The barrier, with spillway section 90 feet high and 700 feet long, was completed and started controlling the reservoir in June 1952. This storage "pool" includes a 26-mile stretch of the Pend Oreille River and all of Lake Pend Oreille in northern Idaho, one of the largest lakes of the West.

By storing and releasing 1,153,000 acre-feet of essential power water for use at large downstream dams in the Columbia River resource system, the Albeni Falls project is making possible the addition of millions of kilowatt hours of energy each year to the Northwest Power Pool. This very clearly demonstrates the value of and necessity for projects providing upstream storage in the economic development of the great Pacific Northwest.

The Albeni Falls powerhouse construction was completed in August 1954. Installation of the three 14,200-kilowatt generating units is in progress, with the first one scheduled to start producing power on the line by 1 April 1955. The other two generating units are expected to follow at three-month intervals, giving the plant a total rating of 42,600 kilowatts by the end of September 1955.

Congress authorized the Albeni Falls project in May 1950, for construction by the Corps of Engineers, U.S. Army, and in September that year made the first appropriation for the work. Construction was started in January 1951. The full project is scheduled for completion before the end of 1955. It has an outstanding construction safety record.

The Albeni Falls project is important in the planned development of the Columbia River and its tributaries because it helps regulate stream flow for increased power production and navigation on the Columbia, and provides for power generation at Albeni Falls. This project is noteworthy in that it will produce greater benefits in ratio to its $31,000,000 investment than any other major project in the Columbia River system.

LIBBY DAM

Libby Dam, authorized by the 1950 Flood-Control Act of Congress, is a multi-purpose key project in the comprehensive plan for development of the water resources of the entire Columbia River drainage basin. Libby Dam will be located about 15 miles east of Libby, in northwestern Montana, on the Kootenai River which flows south from Canada and back into Canada to the Columbia River. The 95-mile-long reservoir to be formed back of the dam will extend 42 miles into British Columbia.

Benefits from Libby Dam project will include power, flood control, recreation, and navigation. The reservoir back of the dam will provide 5,000,000 acre-feet of usable storage capacity, required to withhold the crests of flood run-off for protection downstream and for later release to maintain regulated stream flow for generation of power at downstream plants in Canada and the United States and improvement of navigation on the lower Columbia River during periods of low water. There will be incidental local navigation and recreation benefits.

This Libby "pool" storage will afford almost complete control of the frequent costly Kootenai River floods, especially in the developed Kootenai Flats between Bonners Ferry, Idaho, and Kootenay Lake, British Columbia. This storage also will substantially reduce flood stages along the lower Columbia River, since the Kootenai provides 1/4 the water that passes Grand Coulee Dam.

Libby Dam, when operated with the existing and authorized U.S. Federal hydro-electric plants, will add 248,000 kilowatts of prime power at the Libby Dam site and an additional 557,000 kilowatts of prime power at downstream plants. Further power benefit will be available at the five existing Canadian plants and at Rock Island Dam on the Columbia near Wenatchee.

Initial construction investment for Libby Dam is estimated at $268,000,000 based on July 1954 prices. The main structure will be a concrete gravity dam, about 400 feet high and 2,700 feet long across the crest. Each of the six initial main generators in the powerhouse will have 100,000 kilowatts rated capacity. An ultimate eight units will give 800,000 kilowatts rated capacity.

Preliminary design and engineering studies by the Corps of Engineers are well advanced, but development of the Libby project is awaiting approval by the International Joint Commission because the "pool" will involve flowage rights in Canada.