

Colorado River Storage Project

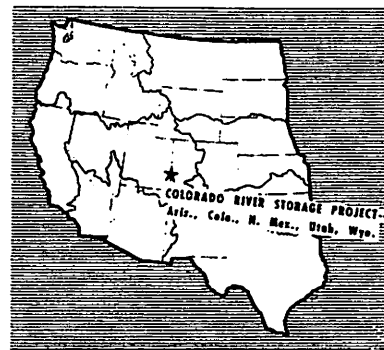
[Under Construction]

WYOMING, UTAH, COLORADO, ARIZONA,
and NEW MEXICO

REGION 4, Bureau of Reclamation

PROJECT HEADQUARTERS, Salt Lake City,
Utah

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The Colorado River Storage project initiates the comprehensive development of the Upper Colorado River Basin. It is planned to provide the long-time regulatory storage needed to permit States in the upper division of the basin to meet their flow obligation at Lee Ferry, as defined in the Colorado River Compact of 1922, and still utilize their apportioned water. The project will provide some storage water for direct use in the upper basin. In addition, the project will control sediment, abate floods, facilitate recreational development, and aid in fish and wildlife conservation. It also will permit production of a substantial amount of electrical energy needed in the upper basin and adjacent areas. As authorized at present, the project includes four storage units as follows: Glen Canyon on the Colorado River in Arizona near the Utah border, Flaming Gorge on the Green River in Utah near the Wyoming border, Navajo on the San Juan River in New Mexico near the Colorado border, and Curecanti on the Gunnison River in west-central Colorado. Authorized with and linked to the Colorado River Storage project, but not part of it, are a number of participating projects which will share in the power revenues of the larger project to help pay for irrigation construction costs. Participating projects are listed under "Authorization" and each one is described separately in this book.

PLAN

The reservoirs formed by the four units now authorized will have a total capacity of over 34 million acre-feet. During periods of low streamflow, the stored water in the upper basin will be released to meet the Lee Ferry obligation, and in exchange, upstream flow will be diverted for use in the upper basin. Powerplants and other pertinent facilities will be provided at each dam, with the exception of Navajo, and necessary transmission lines will be built.

Glen Canyon Dam, Lake Powell, and Glen Canyon Powerplant

Glen Canyon Dam is the highest dam and the one creating more initial storage capacity than all the

others combined. This dam, 17 miles upstream from Lees Ferry, will be a key structure, controlling water releases to the lower basin and impounding the heavy silt accumulations which enter the river in the southern part of the Upper Colorado Basin. It is designed as a concrete arch structure, rising 573 feet above the river and 700 feet above the bedrock foundation. The dam will contain more than 4,830,000 cubic yards of concrete. The estimated active capacity for Lake Powell is 21.5 million acre-feet, and, when filled, it will extend about 186 river-miles up the Colorado River—nearly to the mouth of the Green River—and 71 miles up the San Juan River. About 6,535,000 acre-feet of the reservoir capacity will be inactive and will be useful for sediment accumulation, fish protection, and providing power head at the dam. The river flow will be diverted around the damsite through a tunnel in each abutment during the construction period. Two identical spillways, one in each abutment, will have a total capacity of 276,000 cubic feet per second. Each spillway will discharge into an inclined tunnel leading to a diversion tunnel. Control of each spillway will be by two 40- by 52.5-foot radial gates. The planned outlet works capacity is 15,000 cubic feet per second. The Glen Canyon Powerplant, near the toe of the dam, will contain eight generating units with a total capacity of 900,000 kilowatts, operating under a mean head of about 480 feet. An access road and a bridge across the canyon at the damsite are built to Federal highway standards. Measures will be taken to protect the Rainbow Bridge National Monument at one of the side bays of Lake Powell.

Flaming Gorge Dam, Reservoir, and Powerplant

The Flaming Gorge Damsite is on the Green River in northeastern Utah about 32 miles downstream from the Utah-Wyoming border. The dam is designed as a concrete arch structure, rising 445 feet above the river and 490 feet above its bedrock foundation, with a crest length of 1,180 feet. The estimated capacity of the reservoir formed by the dam is 3,789,000 acre-feet. About 233,000 acre-feet of the reservoir capacity will be inactive and dead storage. During the construction period the river flow will be diverted around the dam-

from Reclamation Project Data, USBR, 1961.

Blue Mesa Dam will be located on the Gunnison River about 30 miles below Gunnison, Colo., and 1½ miles below Sapinero, Colo. This earthfill structure will rise 350 feet above streambed and will be about 1,200 feet long at the crest. The Blue Mesa Reservoir will have a total capacity of 915,000 acre-feet and will extend upstream from the dam a distance of 24 miles. Blue Mesa Powerplant, at the toe of the dam, will have an installed capacity of 60,000 kilowatts.

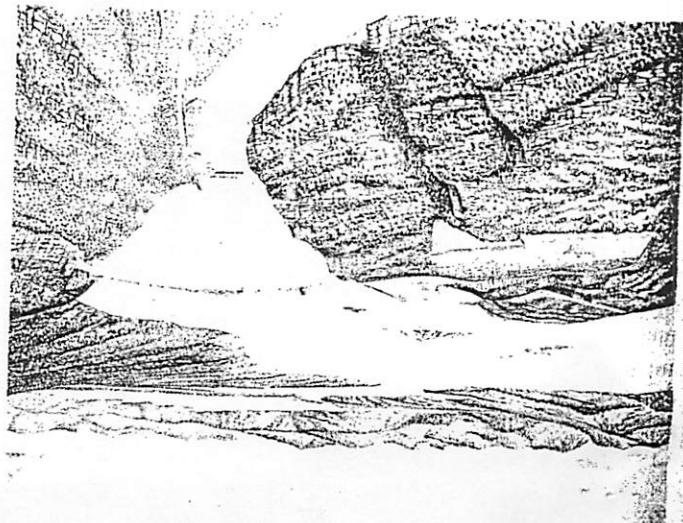
Morrow Point Dam will be a concrete arch structure 400 feet high above streambed. The damsite is 12 miles below the Blue Mesa damsite and about a quarter of a mile above the mouth of Cimarron Creek. Morrow Point Reservoir will have a total capacity of 117,000 acre-feet. The reservoir will extend upstream to near the toe of Blue Mesa Dam. The Morrow Point Powerplant will have an installed capacity of 40,000 kilowatts if the two-dam plan should be finally adopted. However, if the Crystal site proves feasible and the three-dam plan is adopted, the power installation at Morrow Point would be about 80,000 kilowatts.

The Crystal Dam site is about 6 miles below the Morrow site. Investigations and detailed feasibility studies are continuing for the Crystal feature.

DEVELOPMENT

Early History

Settlement of the upper drainage basin began in 1854 when the early pioneers established Fort Supply in Wyoming on the Emigrant Trail and diverted water from Blacks Fork to the adjacent lands. Breckenridge, Colo., on the basin's eastern rim, was settled in 1859 by miners and prospectors pushing over the mountains from older mining districts on the eastern slope of the continental divide. Within the next decade, other mining camps were established nearby. Unsuccessful miners turned to farming and supplied agricultural products to the mining communities. Settlements grew downward from the mountains to the valleys, the advance being slowed somewhat by conflicts with the Indians who occupied the territory. Grand Junction,



Artist's conception—Fleming Gorge Dam.

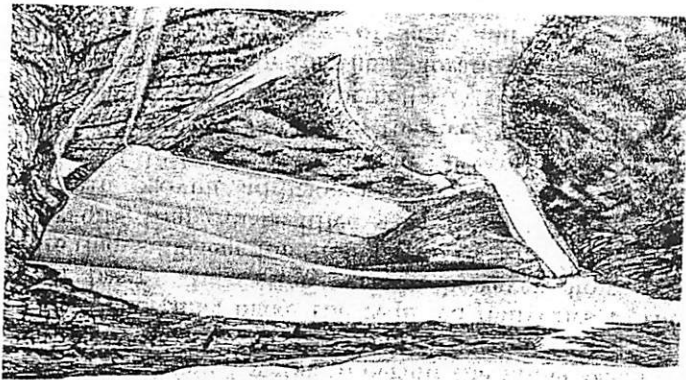
site through a tunnel in the right abutment. The spillway, with a capacity of 28,750 cubic feet per second will discharge into an inclined tunnel leading to the diversion tunnel. Outlet works of 4,000-cubic-foot-per-second capacity will be provided through the dam. A powerplant containing two units with a total installed capacity of 108,000 kilowatts, operating under a maximum head of 438 feet, is being constructed at the toe of the dam.

Navajo Dam and Reservoir

The Navajo Dam is on the San Juan River in northwestern New Mexico about 34 miles east of Farmington. The dam is a rolled earthfill embankment rising 388 feet above streambed, and 408 feet above bedrock with a crest length of 3,800 feet. The dam will contain about 26 million cubic yards of embankment materials. The estimated capacity of the Navajo Reservoir is 1,709,000 acre-feet; 605,000 acre-feet is inactive and another 68,000 acre-feet is dead storage. The spillway, with a capacity of 34,000 cubic feet per second, is at the right abutment. The spillway is an uncontrolled overflow weir chute with a crest length of 100 feet. The outlet works, with a capacity of 4,280 cubic feet per second, is in the diversion tunnel in the right abutment.

Curecanti Unit

The object of the Curecanti unit is primarily to develop the water storage and hydroelectric power generating potentialities along a 40-mile section of the Gunnison River in Colorado. Other purposes of the unit are irrigation, recreation, and flood control. Complete development of the resources in this area can be accomplished by the construction of three dams, at the Blue Mesa, Morrow Point, and Crystal sites. However, the less-accessible Crystal site is being investigated in detail. Should the studies show that the Crystal site is not justified, the plan would be confined to the two up-permost dams, Blue Mesa and Morrow Point.



Artist's conception—Navajo Dam.