

ARROWROCK DAM, CISTERN
Boise River, 22 miles upstream east of Boise
Twin Springs vicinity
Boise County
Idaho

HAER ID-27-E
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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
PACIFIC WEST REGIONAL OFFICE
National Park Service
U.S. Department of the Interior
1111 Jackson Street, Suite 700
Oakland, CA 94607

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HAER No. ID-27-E

Location: Boise River, 22 miles upstream east of Boise
Twin Springs Vicinity
Boise County
Idaho

UTM: 11:586920:4827120
Quad: Arrowrock Dam, Idaho, 1:24,000

Dates of Construction: 1917

Builder: United States Reclamation Service (USRS)

Project Engineer: A.P. Davis

Present Owner: United States Bureau of Reclamation

Present Use: Cistern

Significance: Arrowrock Dam is a key component of the Boise Project, an irrigation project designed by the USRS to irrigate roughly 390,000 acres in the Boise and Payette Valleys in southwestern Idaho. This Project helped to make the Boise and Payette Valleys the most agriculturally productive region in Idaho. In large measure this was due to Arrowrock Dam on the Boise River, a dam that created a reservoir of more than 272,200 acre-feet of water for irrigation. Arrowrock Dam was the highest dam in the world when it was completed in 1915, measuring 350.5 feet high from bedrock. Experimental elements of its gravity-arch design would be applied to later dams that were even higher. It was only one of two Reclamation dams built with sand cement for the concrete. It was the first USRS dam built whose design required Ensign valves for its outlets to release water. Ensign valves were an important step in the rapid evolution of water regulating valves triggered by construction of ever higher dams at the beginning of the twentieth century. The reinforced-concrete dynamite powder house was used to store explosive materials. The explosives were likely necessary to break up obstructions in the river or to remove tree stumps on the site. Today it has been converted to a cistern to supply water for the dam tender and maintenance personnel residences.

Description: The cistern was constructed in 1917.¹ It is located directly above Building 106 on the ridge so water can drop via gravity to the residences below. The cistern is fed by a pipeline that stretches from another cistern located in the canyon above. The 5 foot by 5 to 15 foot cistern is embedded within the canyon wall. The facade is made of poured concrete in an upside down trapezoidal shape which goes from 5 feet in width at the top to 15 feet at the bottom. A small arched opening is centered in the facade. Inside this opening is a metal door pierced at the bottom by several small-diameter holes.²

History: Built for operation of the dam this structure is essential for drinking water of the dam tenders residence. It is part of a two cistern system designed to bring water from a spring to the dam via gravity.

Historian(s): A rough draft of the historical narrative was done by Denis Gardner of Hess, Roise and Company in Minneapolis, Minnesota in 2002. Kelsey J. Doncaster of Reclamation completed, revised, edited and finalized the document in 2013.

Project

Information: By the late 1990s, many of the Ensign valves at Arrowrock Dam were no longer functioning as reliably due to wear from long use. Reclamation decided to replace 10 of the original valves with new clam shell-type gates and retire the other 10 Ensign valves from service. Since Arrowrock Dam has been determined eligible for the National Register of Historic Places, this Historic American Engineering Record documentation was undertaken to mitigate the adverse effects of valve replacement and other alterations. Large format photography of this building was done by Clayton B. Fraser of Fraserdesign in Loveland, Colorado in June 1999 and Kirsten Strough of Reclamation on March 15, 2013.

¹ Cistern is identified on 1941 Reclamation map 4-102-495.

² Site visit on April 2013 found this door replaced by a solid metal plate that is caulked in place.