

About Yellowtail

Dam

Type..... Concrete arch
Height above foundation (feet)..... 525
Crest length (feet)..... 1,480
Crest width (feet)..... 22
Crest elevation (feet)..... 3,660
Base thickness at center (feet)..... about 145
Volume (cubic yards)..... 1,546,000
Spillway: A 32 foot diameter tunnel in the left abutment controlled by two radial gates 25 feet wide by 64.4 feet high. The spillway capacity in cubic feet per second (cfs) at elevation 3,660..... 92,000
River Outlet: Two 84 inch diameter conduits controlled by ring-follower gates with a capacity (in cfs) of..... 5,000
Power outlets: Four 12 foot diameter penstocks through the dam.

Reservoir (Bighorn Lake)

Capacity (acre-feet at elevation 3,657)..... 1,375,000
Area (acres at elevation 3,657)..... 17,300
Length (river miles at elevation 3,657)..... 71
Water surface elevations (in feet):
Joint-use storage..... 3,614 to 3,640
Flood control storage..... 3,640 to 3,657

Powerplant

Four vertical shaft generators connected to Francis type turbines.
Total nameplate capacity (kilowatts)..... 250,000
Capacity each generator (kilowatts)..... 62,500
Capacity each turbine (horsepower)..... 87,500

Afterbay Dam:

Type: Composite concrete gravity with embankment wings
Height above foundation (feet)..... about 40
Crest length (feet)..... 1,360
Crest width (in feet for embankment section)..... 28
Crest elevation (feet)..... 3,197
Outlet works: Five radial gates and three sluice gates control flows to the river with a total capacity (in cfs)..... 24,500
Two sluice gates control flow to the BIA canal with a capacity (cfs)..... 750

Recreation

Bighorn Lake is 71 miles long and is a deep blue-water fishery created by Yellowtail Dam. Over 190 miles of shoreline showcase colorful geology and an area rich in history and tradition. Much of the reservoir's length is within the Bighorn Canyon where wildlife is abundant and the scenery is spectacular.

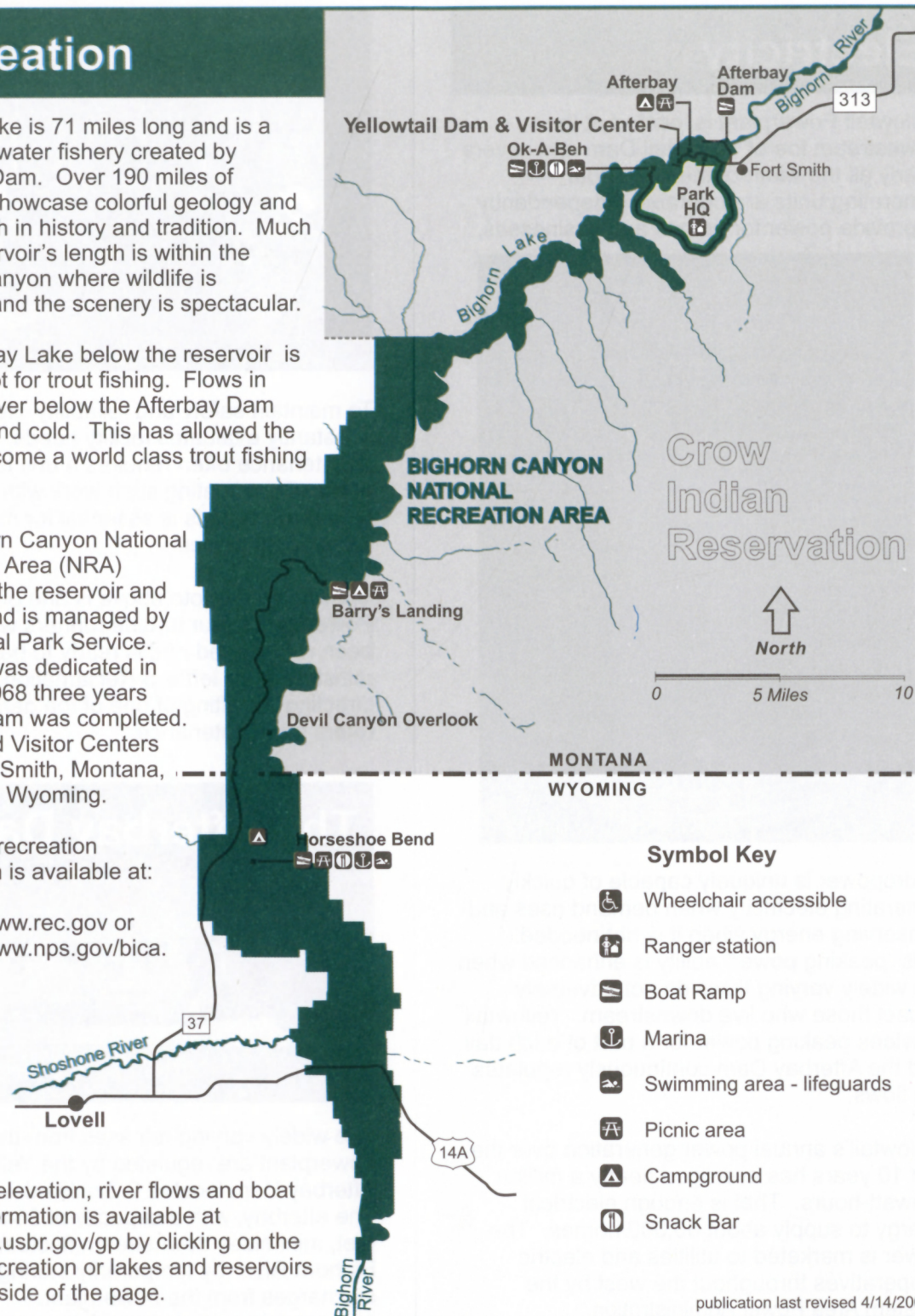
The Afterbay Lake below the reservoir is a good spot for trout fishing. Flows in Bighorn River below the Afterbay Dam are clear and cold. This has allowed the river to become a world class trout fishing area.

The Bighorn Canyon National Recreation Area (NRA) surrounds the reservoir and afterbay and is managed by the National Park Service. The NRA was dedicated in October 1968 three years after the dam was completed. Offices and Visitor Centers are in Fort Smith, Montana, and Lovell, Wyoming.

Additional recreation information is available at:

<http://www.rec.gov> or
<http://www.nps.gov/bica>.

Reservoir elevation, river flows and boat launch information is available at <http://www.usbr.gov/gp> by clicking on the links for recreation or lakes and reservoirs on the left side of the page.



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Yellowtail Dam and Reservoir



Yellowtail Dam is located on the Bighorn River at the mouth of Bighorn Canyon about 43 air miles from Billings, Montana. When full, the reservoir extends 71 miles south into Wyoming. The dam and reservoir provide multiple benefits to the American public including power generation, flood control, irrigation, municipal and industrial water, fish and wildlife benefits and recreation. The facility is operated by:

Bureau of Reclamation
Montana Area Office
P.O. Box 30137
Billings, MT 59107-0137
(406) 247-7295



The Yellowtail Unit of the Pick-Sloan Missouri Basin Program

Most of the water and power facilities in the Missouri River Basin were constructed under the Pick-Sloan Missouri Basin Program (Pick-Sloan), authorized by the Flood Control Act of 1944. Pick-Sloan is one of the most extensive plans ever developed for management of an entire river basin.

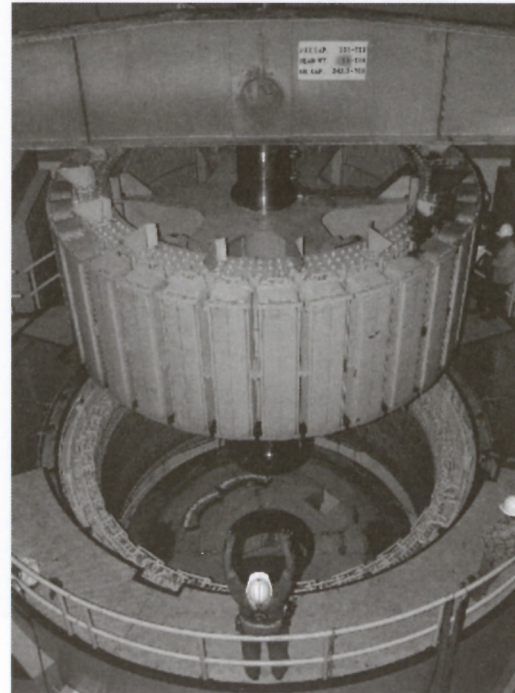
Pick-Sloan brought together a flood control and navigation plan developed by the Army Corps of Engineers and an irrigation and hydroelectric plan prepared by the Bureau of Reclamation. Together they became a comprehensive approach to multiple-purpose benefits in the basin. Today benefits include irrigation, hydroelectric power, flood control, navigation, recreation, sediment abatement, fish and wildlife enhancement and municipal and industrial water.



The prime contract for construction of the dam was awarded in April 1961, and the last bucket of concrete was placed in the dam during October 1965. The construction of the powerplant began with the dam and was completed in December 1967 when the last unit was placed in service. Yellowtail Afterbay Dam was started in April 1964 and was completed in November 1966.

Electricity

Yellowtail Powerplant is located at the downstream toe of Yellowtail Dam and covers nearly all the width of the river. Four generating units are operated independently to provide power for homes and businesses.



Hydropower is uniquely capable of quickly generating electricity when demand rises and conserving energy when it is not needed. This "peaking power" ability is enhanced when the widely varying flows do not adversely impact those who live downstream. Yellowtail provides peaking power for a part of each day and the Afterbay Dam continuously regulates the flows.

Yellowtail's annual power generation over the last 10 years has averaged nearly a million kilowatt-hours. That is enough electrical energy to supply about 80,000 homes. The power is marketed to utilities and electric cooperatives throughout the west by the Western Area Power Administration.



To maintain safety and reliability, Reclamation constantly evaluates facility needs. Scheduled maintenance often requires a unit to be taken apart. Coordinating such work with users and other powerplants is essential for meeting demand for power.

Shown in the photo above is one of Yellowtail Powerplant's four turbine runners which has been refurbished and is ready to be reinstalled. At left is a Reclamation employee directing the lifting of one of the generator rotors for maintenance.

The Afterbay Dam



The widely varying releases from the powerplant are regulated by the Yellowtail Afterbay Dam located 2.2 miles downstream. The afterbay, with a capacity of 3140 acre-feet, minimizes downstream fluctuations in the Bighorn River by temporarily storing peak discharges from the powerplant.

Water

Water has many uses at the Yellowtail Unit. Each use provides benefits to the American public and is consistent with state law, the terms and conditions of the Yellowstone River Compact and contemporary environmental law.

Hydropower is perhaps the most important use of water at Yellowtail. Low cost electricity is provided to the region and the water is available for other uses after it flows through the turbines and returns to the Bighorn River.

Flood control is another major benefit from the dam. Yellowtail is operated with other facilities in the Bighorn and greater Missouri River basins to reduce damage caused by flooding. Yellowtail is credited with over \$113 million in savings from 1965 through 2007.

Fish and wildlife have benefitted from the development of special management areas around the reservoir that preserve habitat for waterfowl, upland birds and other animals. The dam transformed the Bighorn River between Fort Smith and the Yellowstone River into an internationally recognized blue-ribbon trout fishery. The reservoir is home to brown and rainbow trout, walleye, sauger and other species. The Afterbay is also a trout fishery.

Recreation is one of the most visible uses of water for visitors to Yellowtail. The Bighorn Canyon National Recreation Area was created to provide recreation opportunities around the reservoir for the American public.

Municipal and Industrial water use is one of the authorized purposes of the Yellowtail Unit as with many Pick-Sloan facilities.

Irrigation water is released into the Bighorn Canal to satisfy senior water rights for the Crow Indian Irrigation Project and other irrigators.