Measure for Environmental Preservation

The following facilities have been installed in the reservoir to conserve the water quality of the reservoir and discharged water:

1. Selective Intake Works
   - In order to prevent discharging cold and/or turbid water, water is always taken from the most appropriate depth through these facilities, taking into account the distribution of water temperature and turbidity in the reservoir. These measures reduce the impact on agricultural and domestic water taken downstream and aquatic organisms.

2. Submersible combined aerator
   - Hypolimnion aerator causes excess air with its operation. About 90% air is emitted into the atmosphere through discharger on the water surface. "Submersible combined aerator" is aiming at the efficient use of this excess air. Development of automatic discharger allowed for stable emission of the excess air and realized combined aerator in deep/shallow water.

Access to Hiyoshi Dam

- **By Train**
  - 30-minute walk from Hiyoshi Station along JR San'in Line. A public bus is available from the station.

- **By Car**
  - 7-km drive from Sonobe I.C. of Kyoto Jukan Highway.
  - 9-km drive toward Nantan-Hiyoshi from Sonobe-Kawaramachi intersection in Nantan City along Route 9.

Hiyoshi Dam O&M Office

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Feb. 2019
Facilities, and intake works

Purpose (1): Flood Control

By temporarily storing water in the dam reservoir during floods and by discharging water at a safe rate for the downstream areas, Hiyoshi Dam can reduce the damage caused by floods.

Hiyoshi Dam was constructed under a plan to control the 100-year floods. However, since river improvements in the lower reaches of the Katsura River are still in progress, flood-control operation with discharges of up to 150 m³/s has been provisionally carried out for controlling the 20-year floods. This operation is designed to maximize the effectiveness of flood control by the dam.

Purpose (2): Maintenance of Normal Function of River

Hiyoshi Dam can discharge supplemental water for the vested water rights along the Katsura River and environmental preservation to maintain the normal functions of the river water. This supply has greatly reduced downstream water shortages. However, the capacity of the dam is limited. If the dam were to continue discharging supplemental water for a long time without rainfall, the water level of the reservoir would decrease and the desirable flow rate downstream could not be secured. Therefore, the amount of supply is coordinated among the related members.

Purpose (3): Development of Water Use

Hiyoshi Dam has created additional water use of 3.7 m³/s (sufficient for approx. 1 million people). It can supply domestic water to Kyoto Prefecture (Otoku District: Muku City, Nagaokakyo City, and Oyamazaki Town), Osaka Prefecture (Osaka Water Supply Authority), and Hyogo Prefecture (Itami City; Hanshin Water Supply Authority: Amagasaki City, Nishinomiya City, Ashiya City, and Kobe City). *Osaka Water Supply Authority supplies domestic water to the whole of Osaka Prefecture except Osaka City.

Power Generation for Dam Operation

The Hiyoshi Dam Hydropower Plant can generate electric power of up to 850 kW by using water taken through selective intake works (up to 3.0 m³/s) and turning a watermill. This clean electric power is effectively used for operation of the dam facilities, and the excess is sold to electric utility companies. This reduces the cost of dam operation.

Water Use Outlets

These facilities are used to discharge water taken from the selective intake works. The right photo shows the outlets into the stilling basin.

- Branch Pipe (right, 0-5 m³/s): used for supplying water to downstream areas and during small floods
- Main Pipe (left, 0-50 m³/s): used for discharging more than 5 m³/s and while the valve of the branch pipe is being checked

Outlet Works for Flood Control

These conduit gates can be used during normal floods. One gate can discharge up to 250 m³/s and two gates can discharge up to 500 m³/s. The left photo shows water of 100 m³/s through the two gates.

Before discharging from these gates, speaker broadcasts and siren warnings are made at 15 warning stations (as shown in the photo below) which are installed at the O&M Office and in downstream areas, and downstream areas are also patrolled by car to confirm safety.

Emergency Spillways

These crest gates could be used in conjunction with the conduit gates in case of bigger floods than the 100-year floods in the operating plan for this dam. One gate can discharge up to 775 m³/s and four gates can discharge up to 3,100 m³/s. The left photo shows some water discharged on a trial basis.

Recycling of Driftwood

Driftwood and driftage that have flowed into the reservoir during floods are removed and treated. Withdrawn driftwood is effectively used by processing it into usable materials such as chips and compost.