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Water Resources and Water Quality Conservation

- Working to secure stable quantity and quality of water -

Tap water source - Yodo River

The water supply of Osaka completely depends on the Yodo River, one of the largest rivers in Japan. The Katsura River, the Uji River, and the Kizu River merge into the Yodo River, which flows down to Osaka Bay through the Osaka Plain. The Katsura River, the Uji River, and the Kizu River are different from one another in flow characteristics, but they mutually compensate and contribute to the stability of the flow of the Yodo River. Lake Biwa, in particular, which is Japan's largest lake located upstream of the Uji River, plays a major role in adjusting the flow rate of the Yodo River.

Water Source Development

Since early on, the City of Osaka has endeavored to secure water sources in Lake Biwa and the Yodo River systems in response to an increasing demand for water. Osaka started its First-phase Project of Yodo River Water Control in 1943, and it completed the reconstruction of the Nagara Movable Weir (the present Great Yodo River Weir), the construction of the Takayama Dam, and the construction of the Shorenji Dam in 1963, 1969, and 1970, respectively. Osaka took part in the Shorenji Water Resource Project and the Lake Biwa Development Project as well, which were completed in 1971 and 1991, respectively. Osaka has thus secured a total flow rate of 30.976 m³/s (approximately 2,676,000 m³/day) to respond adequately to its future water demand.

Lake Biwa Comprehensive Development Project

The Lake Biwa Comprehensive Development Project consisted of two projects. That is, the Lake Biwa Development Project (fiscal 1968 to 1991), which was planned to maintain a flow rate of 40 m³/s in response to the Hanshin area's new demand for water and to ensure the flood control of Lake Biwa, and the Regional Development Project (fiscal 1972 to 1996), which was planned for the development and maintenance of Lake Biwa and its surroundings. The Lake Biwa Comprehensive Development Project started in compliance with the Act on Special Measures concerning Lake Biwa Comprehensive Development, which was enacted in 1972, and took 25 years for completion (from fiscal 1972 to 1996) at a total project cost of 1,907,400 million yen.

Development of water resources



Water resources development by Osaka City (Unit: m³/sec.)

	Before the first phase of river water control	The first phase of river water control	Nagara*	Takayama	Seirenji	Shorenji	Lake Biwa	Total
Domestic water	10.600	6.000	1.420	2.249	1.035	2.187	7.485	30.976
Industrial water		1.200	1.690			0.655		3.545

* Current Great Yodo River Weir

Further improvement of safe and tasty water

Further improvement of safe and tasty water

The Waterworks Bureau sets its own goal for the improvement of safety and palatability of tap water, toward which it promotes study on water treatment technology and works to raise the level of tap water safety and quality management.

Acquisition of ISO 22000 certification

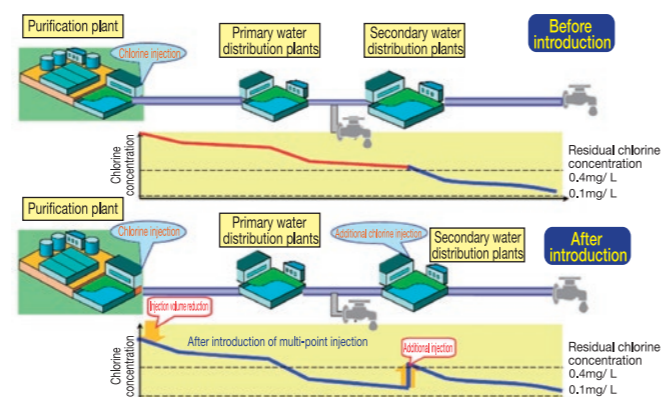
In pursuit of the stable supply of safer and higher-quality tap water, the Waterworks Bureau integrated its water safety planning and safety and quality management efforts based on ISO 9001 for water treatment, established its unique Water Safety Management System, and acquired ISO 22000 certification, an international standard for food safety management. (December 2008, for the first time in the world as a public water supply business entity)

Elimination of chlorine smell

The Waterworks Bureau works toward the homogenization and reduction of the residual chlorine concentration, which is one of the major factors of customers' dissatisfaction with tap water, while ensuring the safety.

Reduction and homogenization of residual chlorine

The Waterworks Bureau promotes a shift from the conventional chlorine injection system mainly applied to water purification plants to a distributed chlorine injection system centered in the major water distribution plants of Osaka City, thereby conducting well-balanced residual chlorine control and achieving the reduction of chlorine smell.

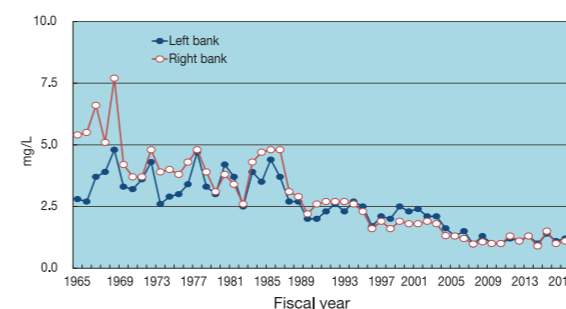


Changes in and Conservation of Water Quality

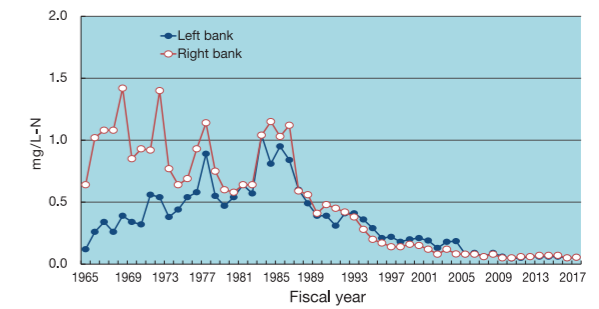
Originating from Lake Biwa, the largest lake in Japan, the Yodo River is blessed with a large amount of water at a stable flow rate. Cities of various sizes, including Kyoto, are located in the upper and middle reaches of the river, and urban wastewater of these cities flows into the Yodo River water system. It is therefore very important for water supply entities that take water downstream of the Yodo River to maintain the water quality of the Yodo River system. The Yodo River had a high biochemical oxygen demand (BOD) as an organic pollution index from the latter part of the 1950s through the latter part of the 1960s. With the development of sewers in the upper and middle reaches, however, there has been a considerable reduction in the value. In addition, the concentration of ammonia nitrogen (NH₃-N) increased from the latter part of the 1960s to the 1970s, but it has been declining in recent years. The Yodo River Water Quality Consultative Committee was founded in August 1965 in order to maintain the water source quality of the Yodo River, and it currently con-

sists of nine water utilities taking raw water from the Yodo River (Osaka, Moriguchi, Hirakata, Suita, Amagasaki, Itami, Nishinomiya, the Osaka Water Supply Authority, and the Hanshin Water Supply Authority). The Committee has been proactively conducting activities for the maintenance of water source quality, including the measurement and inspection of water source quality, and making requests addressed to organizations concerned with water quality maintenance. Furthermore, six prefectures and three ordinance-designated cities in the Kinki region located along the Yodo River system (Kyoto Prefecture, Osaka Prefecture, Mie Prefecture, Shiga Prefecture, Nara Prefecture, Hyogo Prefecture, Kyoto City, Osaka City, and Kobe City) established the Lake Biwa-Yodo River Water Quality Preservation Organization in September 1993. The Organization has been conducting a variety of projects for the purpose of research and development concerning water purification technology for the water in the Lake Biwa and Yodo River water systems.

Water quality (BOD) change at Hirakata-ohashi Bridge point



Water quality (ammonia nitrogen) change at Hirakata-ohashi Bridge point



* Prepared based on the results of surveys by the Yodo River Water Quality Consultative Committee