

24. Tamagawajosui Aqueduct and Shinbori Aqueduct

24.1 The Tama River water supply to Edo

After the Tokugawa family established the shogunate, Edo became the political center of Japan in 1603 (Keicho 8) and Edo's population rapidly increased. During the third Shogun Iemitsu's reign, the *Sankin-Kotai* system decreed that all daimyo (local lords) reside in Edo periodically. The system further demanded that the daimyo's legal wife and their legitimate son reside in Edo. More than two hundred daimyos from all over Japan had to construct residences in Edo and their many servants had to live nearby. In addition, almost all shogunate vassals resided in Edo, many classes of warriors also concentrated in Edo, then many merchants arrived to supply the needs of those warriors, too. Edo's population of the 18th century approached or surpassed one million, making it the world's largest city.

The drinking water supply from the Kanda River and its reservoir network could not meet the needs of the rapidly increasing population. Therefore the construction of new aqueducts became an urgent issue. In 1652 (Jo'o 1) the shogunate proposed a aqueduct project that additional drinking water would be supplied from the Tama River. The *Kogi Nikki* (shogunate record) has remained the aqueduct planned by brothers Shoemon and Seiemon, merchants of Kojimachi Shibaguchi. The shogunate approved the plan providing 7,500 ryo in funding, and ordering the construction to begin on a contract basis. Although the brothers are recorded as Edo residents, their detailed knowledge of the Tama River and of Musashino's geography indicates they might be the Tama basin inhabitants.

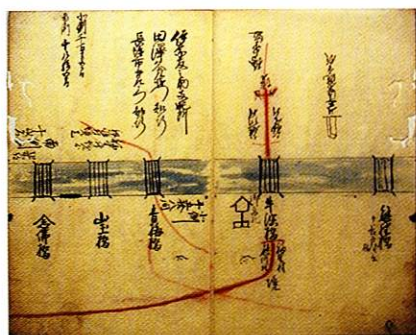


Fig.149 "Tamagawa Gojosuiro Hikae" (The Uchide family). Bridges, secondary canals and notice board posting locations are described between the Hamura Sluice Gate and the Yotsuya Okido. Copied in Tenpo 13 (1842) is indicated on the page top. The whereabouts of the original book is unknown.

One theory holds that *machi-bugyo* (town magistrate) of the time KAMIO Bizennokami, roughed out a plan and drew up a contract with the brothers for the aqueduct project. Another theory has YASUMATSU Kin'emon planning sluice gate installation in Hamura and excavating the canal to Yotsuya Okido. He was the vassal to MATSUDAIRA Izunokami Nobutsuna, lord of Kawagoe *Han* (domain), also maintaining position of *Roju* (shogun's council member). This theory is supported by Nobutsuna's later rise to Tamagawajosui Aqueduct *sobugyo* (commissioner of administration) and Kin'emon's detailed geographical and water supply knowledge.

According to the Kogi Nikki, brothers Shoemon and Seiemon began excavation by Kin'emon's design in 1653 (Jo'o 2) and completed the 43 kilometer Tamagawajosui Aqueduct between Hamura and Yotsuya Okido by the following June. Potable water now ran from the Hamura Sluice Gate to Yotsuya Okido. They continued excavation through the Edo City to Toranomon, completing the canal.

Notes on Tamagawa brothers, Shoemon and Seiemon, from the "Josuiki" (a historical aqueduct record owned by the Aqueduct Bureau, Tokyo Metropolitan Government) record that construction cost 6,000 ryo, 1,500 ryo less than officially recorded. Records state that the 6,000 ryo of government funding was spent when construction reached the Takaido area and the brothers supplied the remaining canal construction funds, 3,000 ryo.



Fig.150 Grave of YASUMATSU Kin'emon in 1935(Showa10). (Heirinji Temple, Niiza City, Saitama Prefecture). In Showa 10, Kin'emon's grave stone was moved to Heirinji Temple from the Yasumatsu family's Taisoji Temple, Shinjuku. YASUMATSU Kin'emon Yoshizane was born in Harima and was employed by MATSUDAIRA Izunokami Nobutsuna of Kawagoe Domain 1644 (Shoho 1).

24.2 Place named "Mizukuraido"

In 1932 (Showa 7) a scholar of Edo literature, MITAMURA Engyo (1870 (Meiji 3)-1952 (Showa 27)) found the "Josuikigen" written by KOJIMA Bunpei, a member of *Hachioji Sennin Doshin*. In 1803 (Kyowa 3), 149 years after the aqueduct completion, MATSUDAIRA Izunokami Nobuaki had asked SAHASHI Nagatonokami Noriyoshi, then commissioner of aqueduct, to publish a history, "Josuikigen", on the Tamagawajosui aqueduct. SAHASHI passed this order down to KOJIMA Bunpei, member of Sennin Doshin. KOJIMA's ancestor, Zenbee, had overseen the work as village head and supplier of workers, so KOJIMA was able to record his family's history and other local verbal traditions. A wealth of material emerged regarding the Tamagawajosui Aqueduct construction. The Fussa related part of that record is known as the *Mizukuraido*.

According to "Jousuikigen", the brothers Shoemon and Seiemon began excavation from Aoyagi Village (Kunitachi City) near the *Hino-no-watashi* (ferry port). However, when they reached a point near Fuchuhachiman, they ran into trouble due to poor level estimation or similar reason. This first try failed so they changed the excavation route and started again in Fussa Village. When aqueduct was completed up to Yotsuya, the sluice gate was opened but the water soaked into the ground at a place in Kumagawa Village later called Mizukuraido. The second excavation was also a failure. Then MATSUDAIRA Nobutsuna, sobugyo (commissioner of administration) of aqueduct construction ordered YASUMATSU Kin'emon to resurvey, set the sluice gate at Hamura and excavate a third new route. Because the brothers failed twice, construction costs consumed the agreed budget when construction neared Takaido.



Fig.151 Mizukuraido (excavated traces of Tamagawajosui Aqueduct construction).

The place name Mizukreedo (water absorbing ground) in Kumagawa Village was also known as *Horihee* (rerouted canal) by some elderly local villagers. The origin of these place names closely relates to the rerouting of the Tamagawajosui Aqueduct. On the Mizukuraido, two different writings are recorded in Hatamoto Nagashio's family's 1676 (Enpo 4) *Mizucho* (*Kenchicho*) of Kumagawa Village. These expressions are integrated to Mizukuraido in the Tazawa family's 1701 (Genroku 14) *Takatanbetsu-cho*.

The place name *Horikaichi* is recorded in the *Cho-no-utsushi* of Kumagawa Village four years after the Aqueduct's completion in 1658 (Manji 1). The local people might have known the place as *Horihee*, as the name Mizukuraido is not recorded. The Mizukuraido area in the Nagashio family's *Mizucho* and the Tazawa family's *Takatanbetsu-cho* are recorded as exceeding 6 *chobu*. The name Mizukuraido became embedded in local people's memories because of the hard work and suffering needed in the forced excavating, re-excavating and rerouting of over one kilometer's length of canal. So this name became embedded as a local place name covering the canal's construction area.

The old Aqueduct canal started from 100 meters downstream of Gocho Bridge, then, divided by JR Ome and Itsukaichi lines it runs along Tachikawa terrace, turns to the east upstream of Musashino *Rikkyo*

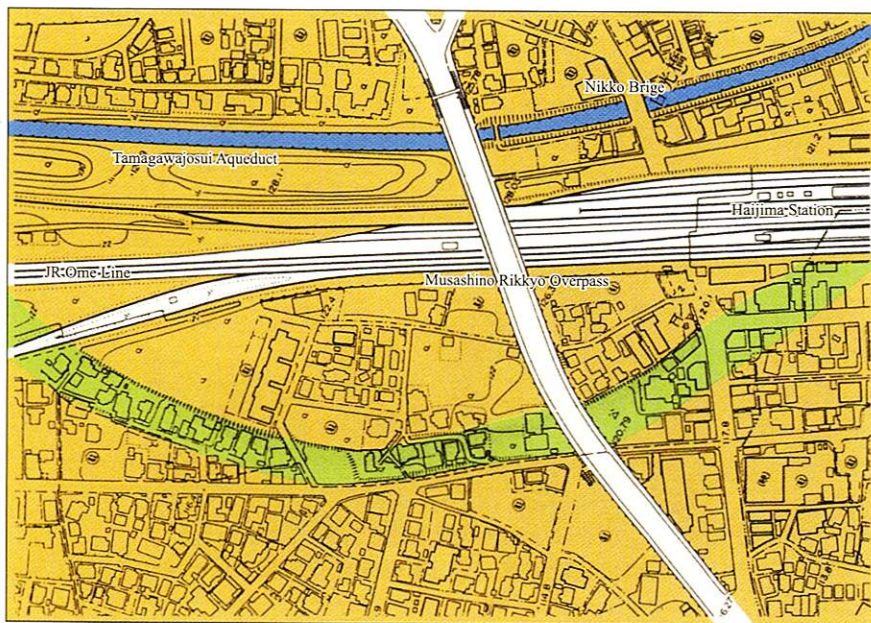


Fig. 152 Mizukuraido's trace map.

overpass of Route 16 and reached the side of Inarijinja Shrine which faces the old Nikko Highway. Then the canal crosses north of JR Haijima Station connecting to the present Haijima Divide Gate (under Heiwa Bridge). The 40 meters of canal in Mizukuraido Park and the 60 meters of canal ruins between the Ome and Itsukaichi lines remain in nearly original condition. A further 30 meters of canal depression have remained at the north corner of Haijima Station, however this part is being redeveloped as the East Square of Haijima Station.

The water absorption phenomena described in "Josuikigen" was caused by the canal traversing a highly permeable conglomerate layer. Because the canal inclination is very shallow (one in a thousand), almost all water was absorbed downstream of Haijima, and water flow diminished sharply. Because almost all the water supplied from the Tama River disappeared in this area, it seemed to be true that the name Mizukuraido became a fixed place name.

24.3 Aqueduct channel replacement in 1740

In 1740 (Genbun 5), 90 years after Tamagawajosui Aqueduct completion, a new aqueduct bypass channel (Shinbori Aqueduct) was excavated for rerouting through Fussa Village for flood damage avoidance. The bypass channel measures 600 meters, from 100 meters upstream of the present Miyamoto Bridge (a place of unnatural curvature) to 60 meters upstream of Shinbori Bridge.

The aqueduct enters present Fussa City 1 km from the Hamura City Sluice Gate and runs about 5 km through the city, exiting to present



Fig.153 Traces of Mizukuraido(the early Showa Period).MACHIDA Masayoshi took this picture on introducing AMANO Shigeru, a local historian living in Hachioji, to the Tamagawajosui Aqueduct.

Akishima City. The 1.3 km section from the Sluice Gate to Fussa Village via Kawasaki Village borders a 10 meter precipice and runs parallel to the Tama River. Therefore this section of the aqueduct always faced the danger of collapse since Aqueduct completion. The section targeted for rerouting in 1740 (Genbun 5) was a 300 meters length neighboring to the present Municipal Sports Ground, a concrete company and Kanisaka Park entrance. The canal differs from the main channel of the Tama River by 3.5 to 5.5 meters.

The new rerouted canal was excavated 36 meters nearer the precipice than the old canal at a cost of 4,000 ryo. Construction costs for the Fussa Village section were covered by the *Fushinkin*, the shogunate controlled area's engineering and construction budget. The shogunate loaned the cost of construction. After the aqueduct's completion, users living in Edo would repay the debt to the shogunate.

Local magistrate UESAKA Yasuzaemon took charge of this project and KAWASAKI Heiemon directed and supervised construction work. Heiemon, head of Oshidate Village, Tama County (Fuchu City) was a senior agriculture administrator with good understanding of engineering. Therefore, in the Kyoho era (1716 - 1735), he was put in charge of new paddy field development in Musashino. Later in 1754 (Horeki 4) he was appointed local magistrate of the 30 thousand goku shogunate fiefdom.

The new canal's excavation totaled 610 meters. It was divided into thirty blocks, each block independently contracted. The construction period for almost all blocks was 25 days. Partial construction payment was made on the same day based on 70 percent of the excavated soil volume. Construction workers had mostly acquired engineering skills from Musashino's new paddy field developments or were low status farmers.



Fig.154 Former Tamagawajosui Aqueduct Ruins.

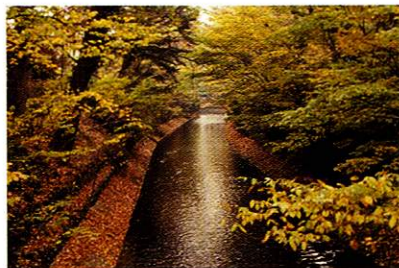


Fig.155 Tamagawajosui Aqueduct near Shinbori Bridge. One of the New Tokyo 100 scenes.

The total excavated soil volume far exceeded 50 thousand cubic meters. The construction cost fell far below budget at 4,000 ryo. According to the records of the following year, February 12, 1741 (Genbun 6), the remaining 923 ryo was deposited in a reserve fund in townpeople for the future engineering work.

The construction block spanned three small villages: Bakurodake, Kamiyashiki and Ueuchide. Most residents of these villages were forced to move to different areas due to the excavation. Some of them moved to the upper edge of the terrace, 300 to 400 meters from their former residences. Many of them moved only a little to avoid the excavation. Present settlement along the Okutama Highway corresponds to these relocations.

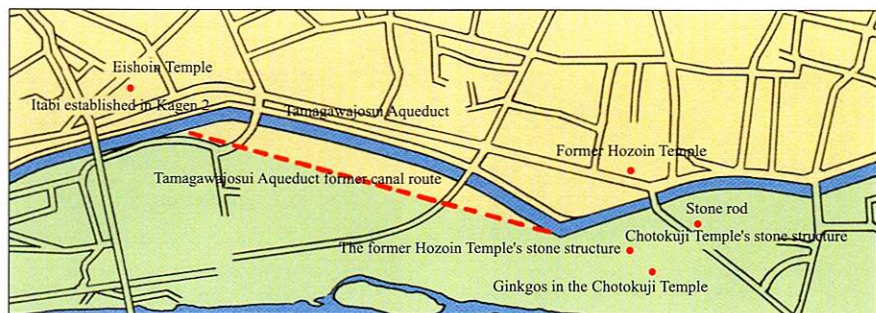


Fig.156 Former Tamagawajosui Aqueduct Ruins' trace map.