

Case	Wide-Area Collaboration Efforts for Water Supply in Kitakyushu City		
Water utility	Kitakyushu City Water and Sewer Bureau		
General information of the utility (2019)			
Operation type	Public (wholesale + retail supply)	Service area (km <sup>2</sup> )	514.56
Population served	987,947	Distribution (m <sup>3</sup> /d)	306,882
Service coverage (%)	99.67	Pipe length (km)	4,648
NRW (%)	9.82	Number of staff	361
Number of water sources	Surface water (10), Groundwater (0), Others (0)		
Water rates (JPY)	Basic fees JPY680 + JPY10/m <sup>3</sup>	(in case of 10m <sup>3</sup> of water use per month for residential customers)	
Summary	<p>The Kitakyushu City Water and Sewer Bureau has been actively promoting various wide-area collaborations, such as "integration of water supply services ", "wholesale water supply" and “comprehensive contract for water supply operations” (Figure 1).</p> <p>In the "Kitakyushu City Water Supply and Sewer Service Medium-Term Management Plan (FY2016-2020)" formulated in 2016, the city positioned "wide-area cooperation in various forms" as one of its priorities. Also, in the "Vision for the Kitakyushu Urban Area," "consideration of wide-area cooperation” was included based on the collaboration agreement for the Kitakyushu Urban Area, which was signed in 2016 by the city and 16 neighboring municipalities. The city is actively promoting wide-area cooperation by utilizing the city’s economies of scale and technology and know-how that they have cultivated over many years as water supplier.</p>		

	<p><b>Current state of wide-area cooperation/collaboration (4 cities &amp; 6 towns)</b></p> <ol style="list-style-type: none"> <li>1. Service integration: Ashiya Town (2007.10), Mizumaki Town (2012.10)</li> <li>2. Wholesale water supply: Munakata District Administrative Association [Munakata City] and Shingu Town (2011.4), Okagaki Town (2015.4) Munakata District Administrative Association [Fukutsu City] and Koga Town (2016.4), Kawara Town (2017.4)</li> <li>3. Partial water supply: Kanda Town (2008.3)</li> <li>4. Comprehensive outsourcing contract: Munakata District Administrative Association [Munakata City &amp; Fukutsu City] (2016.4)</li> <li>5. Sharing of facilities: (=Emergency connecting main) Kawara Town (2005.5), Shimonoseki City (2006.3), Fukuoka urban area (2011.4)</li> <li>6. Technical cooperation agreement: Munakata District Administrative Association, Nakama City &amp; Okagaki Town, Yukuhashi City &amp; Kanda Town, Kawara Town, Kurate Town, Noogata City</li> </ol>
<p>Current Status &amp; Challenges</p>	<p>Water utilities in Japan are facing various issues and challenges including "aging water supply facilities," "delays in seismic reinforcement and retrofitting", "vulnerable financial foundations at many small water supplies" and "significant decline in the number of employees involved in water supply services". And these issues and challenges are making it increasingly difficult for individual utilities to keep providing their services in a sustainable and efficient way on their own.</p>
<p>Measures &amp; Solutions</p>	<p><b>1. Service Integration</b></p> <p>The city began to divert water to the neighboring town of Mizumaki in 1969, and has since reinforced their relation with the town through various initiatives such as "outsourcing of water quality tests" and "emergency assistance agreement".</p> <p>Under these circumstances, the city conducted various simulations to facilitate further wide-area cooperation with the town, including a sharing of systems, co-outsourcing, and service integration. At the time, Mizumaki Town considered lowering its water rates (approximately 1.8 times higher than the city's) to be the most important issue, and for its drastic solution, the town formally requested service integration with the city in August 2011, and the city integrated Mizumaki Town's water services in October 2012.</p> <p>During the examination of service integration with Mizumaki Town, it became clear that there was a disparity between the level of water facilities between the two municipalities. To secure the financial resources to eliminate this disparity, the</p>

city kept the water rates of Mizumaki Town unchanged for a certain period of time after the integration. This way, they were able to unify the water rates within one year of the integration (the town's water rates were lowered to be the same as the city's).

As a result of the service integration, Mizumaki Town was able to lower its water rates, and their service quality was greatly improved because they can now use the city's system that can allow the customers not only to pay their water bills at convenience stores but to call a call center and discuss a wide range of issues and inquiries. The city, in turn, was able to eliminate water diversions and secure a stable water revenue.

## **2. Wholesale water supply using emergency connecting main**

After the "Fukuoka Prefecture western offshore earthquakes" occurred in March 2005, the governor of Fukuoka Prefecture and the mayors of Fukuoka and Kitakyushu Cities had a top-level meeting and agreed on the early implementation of the "Northern Fukuoka Emergency Connecting Main Project". The purpose of the project is to connect the Kitakyushu City and the Fukuoka urban area so they can mutually accommodate up to 50,000 m<sup>3</sup>/d of water in case of emergencies such as an earthquake or water quality incident. To keep the emergency main readily available for emergencies, it is necessary to keep the water quality within the main in good shape by maintaining a constant water flow. On the other hand, water utilities located along the emergency connecting main (Munakata District Administrative Association, Koga City, and Shingu Town) had had a problem with their own water sources, and had been considering a switch to other sources.

In light of these circumstances, the city decided to establish the Kitakyushu City Wholesale Water Supply to provide 20,000 m<sup>3</sup>/d, which was to be discharged for maintenance purposes from the emergency connecting main, to the water utilities along the connecting main.

Both the emergency connecting main and the whole sale water supply were launched as a joint project in 2006, and were put into service in 2011. The 47-km emergency connecting main and the wholesale water supply service utilizing its water for maintenance purposes is a unique example in Japan.

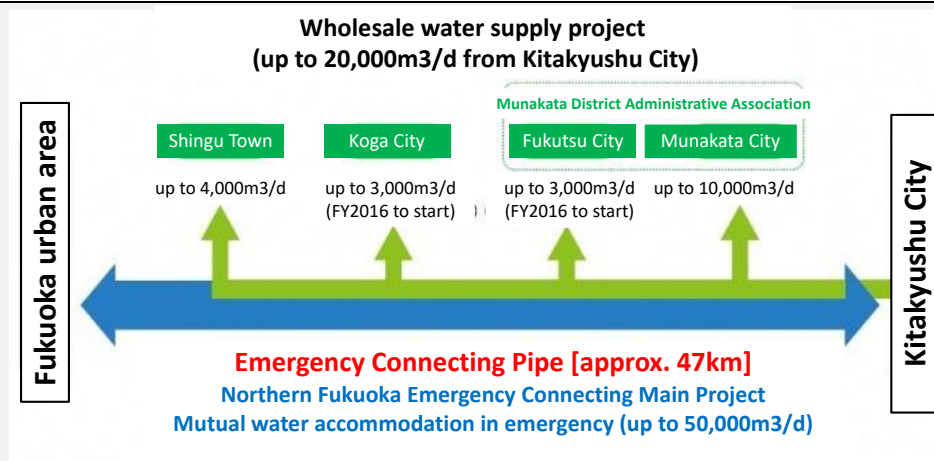


Figure 2 | Emergency connecting main and wholesale water supply project

### 3. Comprehensive Operations Contract

In 2011, the city began a wholesale water supply to the Munakata District Administrative Association, and in 2012 concluded a technical cooperation agreement with the Association, which covers "mutual support in case of emergency," "acceptance of staff for technical trainings" and "promotion of wide-area cooperation".

At the time, the Association was facing difficulties in passing on the technical expertise necessary to keep a stable water supply due to a retirement of experienced staff members. In February 2014, the city received a request from the Association to consider a comprehensive outsourcing contract of water services. Upon considering a way of outsourcing that would be beneficial to both parties, in November 2014, the city signed a basic agreement for the implementation of a comprehensive outsourcing contract. The contracted work started in April 2016. Part of the reason why the city took on the task was because it can help the city fulfill its duty as a major water supplier in the region.

The scope of work outsourced to the city by the Association includes: (1) technical work regarding water supply management, (2) work regarding water supply, (3) work regarding the collection of water bills and related fees, and (4) work regarding the construction and improvement of water facilities. On the other hand, the tasks that the Association will continue to perform on its own are the management and administrative tasks for water supply service and the ordering and contracting for construction and improvement work.

This comprehensive outsourcing contract helped the Association to continue their water supply and to reduce the number of employees involved in the service provision, while for the city, it helped with securing a certain amount of revenue, contributing to the local community, and passing on technical expertise on water supply management.

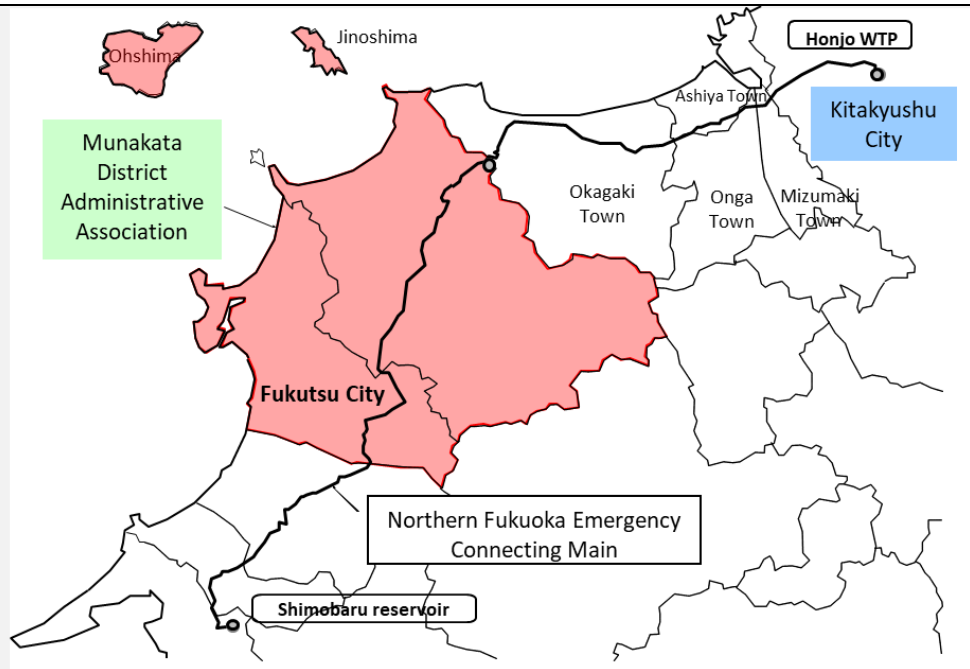


Figure 3 | Munakata District Administrative Association

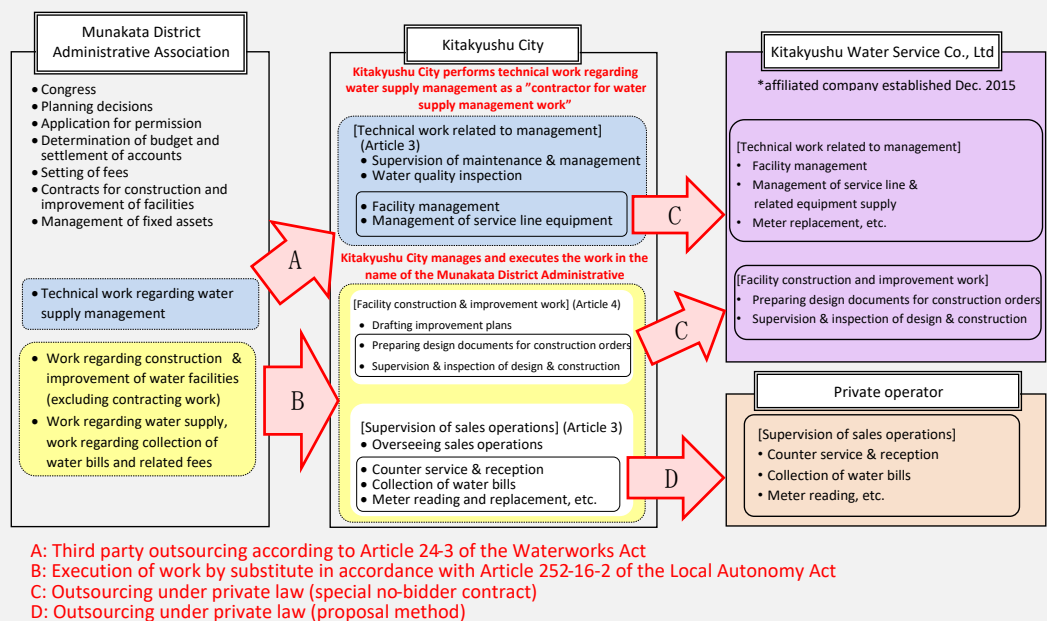



Figure 4 | Outsourcing Scheme from the Munakata District Administrative Association to Kitakyushu City

## Future plans

The revised Waterworks Act, which went into effect in October 2019, referred to be prefectures a driving force to facilitate wide-area collaboration, and a January 2022 ministerial notice jointly issued by the Ministry of Internal Affairs and Communications and the Ministry of Health, Labour and Welfare stated that prefectures should formulate a "Scheme for the Promotion of Wide-Area Water Supplies" by March 2023 to promote related efforts.

The city would like to continue its current programs including a seminar and study session on wide-area collaboration. Also, while working with the national

	<p>government and Fukuoka Prefecture, which is a facilitator of wide-area collaboration, the city will proceed with negotiations and consultations based on the needs of individual water utilities in the region to realize various types of wide-area collaboration. As the central city of the Kitakyushu urban area, the city will exercise its leadership and actively work towards the development of a wide-area network that could have a positive impact on the entire region.</p>  <p>Figure 5   Study session on wide-area collaboration</p>
References	<p>Citation (for information on the Northern Fukuoka Emergency Connecting Main Project):</p> <p>Kitakyushu City Water and Sewer Bureau. Wide-area Supply Division of General Affairs and Management Department.  <a href="http://www.city.kitakyushu.lg.jp/suidou/sui_kouikijigyolist.html">http://www.city.kitakyushu.lg.jp/suidou/sui_kouikijigyolist.html</a></p> <p>Kitakyushu City Water and Sewer Bureau. Planning Division of Water Supply Department.  <a href="http://www.city.kitakyushu.lg.jp/suidou/s00600009.html">http://www.city.kitakyushu.lg.jp/suidou/s00600009.html</a></p>