April 2024
3rd Regular Meeting of the 14th Taipei City Council

Administrative Report of the Taipei Water Department

Presenter: Huan-ying Fan, Commissioner

Table of Contents

Speaker, Vice-Speaker and esteemed members of the City Council:

It is a great honor to have the opportunity to report to you on the execution of the Taipei Water Department's state of operations at the 3rd Regular Meeting of the 14th Taipei City Council.

I. Preface

The Taipei Water Department shoulders the responsibility of supplying water for civilian use and the economic development of Greater Taipei. Faced with the impact and challenges of climate change and extreme droughts and floods on water resource supply, we are committed to promoting water supply network improvement and leak prevention, conducting facility maintenance, enhancing water supply resilience and response capabilities. We undertake a holistic approach to water quality management, bolster climate resilience and ensure the provision of superior water services to Taipei. Our efforts focus on elevating service quality and accessibility, advancing intelligent water management systems, and prioritizing customer satisfaction. Concurrently, we champion water

environmental education, advocate for conservation practices, and strive for net zero emissions to cultivate a city with sustainable water resources.

For the presentation today, I would like to report on key implementation matters of the Taipei Water Department, innovative initiatives and recognition, as well as future policy priorities. We appreciate your advice and support in various efforts and initiatives.

II. Business Overview

The Taipei Water Department’s water supply area is 434 square kilometers, covering all of Taipei City, four districts of Sanchong, Zhonghe, Yonghe and Xindian in New Taipei City and seven boroughs of the Xizhi District. Our pipelines are also connected to the Taiwan Water Corporation's pipelines to support the water supply of areas outside the Taipei Water Department’s jurisdiction in Sanchong, Zhonghe, Banqiao, Luzhou, Tamsui, Guandu and Xizhi districts of New Taipei City. In 2023, the Taipei Water Department supported areas outside its jurisdiction with 709,000 metric tons of water supplied daily.

By the end of 2023, there were 3.736 million water

users within the Taipei Water Department's jurisdiction (2.507 million in Taipei City and 1.229 million in New Taipei City), 1.618 million user accounts, and the water penetration rate was 99.69%.

In 2023, the total water sales amounted to 718.23 million m^3, with total revenues of NT$7.42939 billion and total expenses of NT$6.38204 billion, resulting in an earned surplus of NT$1.04735 billion.

III. State of Implementation

1. Rigorous end-to-end water process control for quality water in Taipei

The water treatment process employed by the Taipei Water Department follows a "multiple barrier" strategy, with strict internal control standards set in place. In 2023, the water quality from each water treatment plant met the drinking water quality standards. Among them, the indicative parameter "turbidity" averaged 0.02 NTU, far superior to the drinking water quality standard of 2 NTU. Furthermore, each major water treatment plant has implemented measures to ensure the quality and quantity of water for users in response to climate

change. The implemented improvement measures are as follows:

(I) Enhancing Water Treatment Efficiency

1. Ensuring Water Intake Quantity and Reducing Operational Risks

(1) The "Improvement Project for Mechanical and Electrical Equipment at Water Treatment Plant Dams" commenced in July 2023 and is expected to be completed by January 2025. This project involves the replacement of equipment such as intake rake machinery to ensure the intake water quantity.

(2) The "Qingtian Dam Gate Retrofitting Project" began in June 2023 and is anticipated to be completed by April 2025. It involves the comprehensive replacement and renewal of the gates at the Qingtian Dam to ensure operating safety.

2. Enhancing Efficiency, Stabilizing Unit Operations

(1) The "Procurement of Longxing Plant Sludge Scraper and Auxiliary Equipment" project began in February of 2023 and was

completed in the same year in October, enhancing the effective removal of sediment and sludge.

(2) The "Integration and Improvement Project for Mechanical and Electrical Equipment at Water Treatment Plants" commenced in July 2022 and was completed in November 2023. It involved the replacement of dosing equipment and internal water pumping machines, installation of electrically operated equipment for sedimentation tanks, and updates to gate valves for rapid filtration units, ensuring the stable operations of dosing, sedimentation and rapid filtration units at the water treatment plant.

3. Reducing Equipment Energy Consumption, Enhancing Information Security

(1) The "Mechanical and Electrical Equipment Project for the Gongguan Water Treatment Plant Booster Station" commenced in September 2023 and is scheduled to be completed by September 2025. Variable

frequency drives are being installed on pumping machines at booster stations to reduce equipment energy consumption. By allowing alternating operation between newly installed and existing pumping machine units at booster stations, they serve as backups for each other, ensuring flexible allocation of water supply.

(2) The "Procurement of Graphic Control System for the Shuangxi and Yangming Water Treatment Plants," in conjunction with the previously completed upgrades of the control systems and controllers for the Zhitan, Changxing and Gongguan Water Treatment Plants, continued in 2023. The project was completed in October of the same year for the Shuangxi and Yangming Water Treatment Plants, achieving the completion of upgrades for all water treatment plants and enhancing overall information security.

(II) Ensuring Water Security

1. Spearheading the "Water Safety Plan," which involves the establishment of a committee to comprehensively review potential hazards and causes from the water source to the consumer's tap. This includes identifying various risks and their origins, and devising control measures and monitoring methods. Through proactive water quality risk management, the Taipei Water Department aims to enhance the effectiveness of safeguarding water quality.
2. Comprehensive water quality management throughout the end-to-end process, ensuring transparency in water quality information:
   (1) In 2023, a total of 808 inspections of upstream water sources was conducted, including the Xindian River, Daking River and Shuangxi River.
   (2) Established 95 online water quality monitoring stations, continuously monitoring water quality 24/7.
   (3) The Taipei Water Department’s water quality

testing laboratory received certification from the Ministry of Environment and was awarded the Laboratory of Excellence by the U.S.-based ERA Waters. We conducted systematic and planned sampling and testing, covering a total of 141 parameters. In 2023, we completed a total of 132 blind tests for microbiological, inorganic, and organic parameters, all of which passed the standards. Water quality sampling and testing included 223 samples from raw water sources, 219 samples from treated water and 6,783 samples from the water distribution network, all of which met the mandated water quality standards.

(4) Real-time water quality information and testing data are available online for public access. The Taipei Water Department also offers free water quality testing for user-submitted samples and provides water quality consultation and on-site inspection services.

(III) Promoting Direct Drinking Water

1. We promoted direct drinking water supply systems. By the end of 2023, there were 675 direct drinking water fountains installed. Additionally, in 2023, we completed accessibility improvements for 31 outdoor drinking fountains in parks, ensuring friendly and convenient drinking water services in public spaces.
2. In coordination with major events organized by the Taipei City Government, we set up mobile direct drinking water fountains to encourage people to reduce the consumption of bottled water.

2. Enhancement of Water Utilization Efficiency

(I) Promote Pipeline Improvement Program

Since 2006, the Taipei Water Department has initiated the "Water Supply Pipeline Network Improvement and Management Plan," focusing on four main pillars: pipeline replacement, water pressure management, proactive leak control, and leak repair rate and quality. Through a comprehensive approach, we aim to strengthen the

water supply network system. The goal of the plan is to reduce the leakage rate from 26.99% in 2005 to 10% by 2025. As of the end of 2023, the leakage rate had already decreased to 10.71%, achieving the annual target. This reduction translates to a daily water distribution volume reduction of 570,000 metric tons compared to 2005. Below is a summary of the implementation:

1. Water pipeline replacement

   From 2006 to the end of 2023, the accumulated length of pipeline replacement reached 2,637 kilometers, exceeding the annual target each year. By the end of 2023, 123 kilometers of pipelines were replaced, achieving the annual target of 100 kilometers.

2. Water pressure management

   (1) By enhancing the efficiency of pumping units and implementing network pressure stabilization techniques, the Taipei Water Department has achieved significant cost savings on power consumption. The energy required for pressurizing water supply systems has seen a

notable decline, decreasing from 0.176 kWh per ton in 2005 to 0.107 kWh per ton in 2023. This reduction has led to a substantial decrease in electricity consumption, plummeting from 160.67 million kWh to 95.91 million kWh, marking a remarkable 40.3% reduction. In total, this translates to 64.76 million kWh saved, averaging approximately 177,400 kWh saved per day.

(2) By the end of 2023, the Taipei Water Department completed the replacement of three 200HP pumping units at the Zhitan Water Treatment Plant. Additionally, two 125HP and three 50HP pumping units were replaced with five 70HP pumping units. Furthermore, maintenance was carried out on two 600HP pumps at the Datong Booster Station, one 700HP pump at the Songshan Booster Station and one 600HP high-pressure pump at the Zhonghe Booster Station.

3. Proactive Leak Control

(1) DMA Metering: Since 2002, the Taipei Water

Department promoting district metered areas (DMAs), dividing the network into many independent water supply grids according to the street outline and prioritizing the improvement of network weaknesses through metering evaluation and analysis of network weaknesses. By the end of 2023, a total of 839 DMAs were integrated and planned, with improvements completed in 458 DMAs.

(2) Leak Detection and Repair: to enhance leak detection efficiency, we integrate leak detection with DMAs, focusing on areas where leaks are likely to occur to improve overall leak detection effectiveness. In 2023, we completed leak detection and repair in 63 DMAs, identifying and repairing 118 leaks, meeting the expected target.

4. Leak Repair Rate and Quality

(1) Reduction in leak repair cases: the number of leak repair cases decreased from 11,283 cases in 2005 to 2,141 cases in 2023, representing a reduction of 9,142 cases and a

marked decrease in road excavation frequency by 81%.

(2) Improved leak repair efficiency: the rate of same-day pipeline leak repairs has surged from 74.3% in 2005 to an impressive 97.8% in 2023. This enhancement has significantly minimized the duration of leaks, resulting in a substantial reduction in water resource wastage.

(II) Improve Water Supply to Higher Elevation Areas

1. To ensure the water rights of residents in remote areas, the "Regulations for Improving Water Supply in High-altitude Areas without Tap Water Supply in Taipei City" were revised. Starting from May 2, 2023, the improvement budget per household were increased from NT$600,000 to NT$900,000.
2. Improvement projects for areas without tap water supply in 2023: Including the installation of new distribution pipelines along Yangjin Highway at Xiaoyoukeng Bridge (Zhuzihu) in Hutian Bor-

ough, Beitou District, totaling 3,245 meters. Water supply pipe projects were also completed in Zhinan Borough and Zhengda Borough in Wenshan District, and Dahu Borough in Neihu District, providing water connections to a total of 78 households without tap water supply. Additionally, extension pipe projects were undertaken to improve access to tap water for simplified users in high-altitude areas. In Pingdeng Borough, pipes were installed along Pingjing Street near Lane 28, extending to near No.100, totaling 3,318 meters, providing tap water connections for 113 households.

3. Enhancing Water Supply Resilience

(I) Feitsui Raw Water Supply Tunnel

To ensure stable and secure water supply in the Greater Taipei area in response to the impacts of extreme weather conditions, a new intake was added downstream of the Feitsui Reservoir in the Beishi River. A raw water tunnel was constructed to pass through Zhitanshan, connecting the Chukengtou Waterway to the second raw water

conduit of the Zhitan Water Treatment Plant. The raw water tunnel is approximately 2.8 kilometers long, with a project budget of NT$2.499 billion. After deducting self-financing, the central government provided a subsidy of NT$800 million. Construction commenced on July 2019, and by May 2023, breakthrough of the tunnel was achieved. By the end of December 2023, 2,455 meters of tunnel lining and sand discharge channels with water diversion channels had been completed. The project completion rate reached 95.95%, meeting the expected targets.

(II) Water Treatment Backup Reserve

The Taipei Water Department has water treatment plants such as Zhitan, Changxing, Gongguan, Yangming and Shuangxi, with a daily water treatment capacity of 4.53 million metric tons. The average daily water output for 2023 was 67% the desired backup performance.

(III) Water Supply Backup Reserve

1. To enhance water pressure uniformity in the Sanchong water distribution zone, strengthen

regional backup capabilities, and increase support for neighboring areas such as Luzhou and Xinzhuang, a new Sanchong No. 2 water distribution reservoir and booster station was constructed. The project commenced in October 2022, with operating license expected to be obtained by 2028. By the end of 2023, the project completion rate reached 25.06%, meeting the expected targets.

2. In order to prolong the lifespan of the 1st and 2nd Clean Water Transmission Mains, stabilize water supply capacity and quality, and reduce water supply risks, while also enhancing stable water supply support to areas under the jurisdiction of Taiwan Water Corporation, such as Banqiao and Xinzhuang, the backup mainline of the 1st Clean Water Mains (Chenggong Road in Zhonghe and Yonghe) was promoted. The project commenced in December 2020, with an expected completion by 2025. By the end of 2023, 2,712 meters of shield tunneling had been completed.

(IV) Infrastructure Facilities Retrofitting

To ensure water supply security and enhance the efficiency and seismic resilience of facilities, systematic facility retrofitting has been carried out since 2020. This maintenance is divided into water mains retrofitting and site retrofitting.

1. Water Mains Retrofitting

For high-risk pipeline sections, cleaning, inspection, renewal, or replacement have been carried out. By the end of 2023, 26.16 kilometers of such maintenance had been completed, meeting the expected targets. This includes cleaning, inspection, and maintenance of the Xinyi branch line, Beitou Mains, Ankang branch line and 1st Clean Water Transmission Mains (from Zhitanshan to Siyuan Road), as well as internal lining solidification and retrofitting of the Φ600mm pipeline on Zhoushan Road. Additionally, by the end of the year 2023, a total of 29 locations with large-diameter hot tapping water supply projects had been completed. These include the installation of non-stop valves and butterfly valves to accommodate

the reconstruction of the Minquan Bridge, as well as seismic functionality improvements for four water pipeline bridges: those over the Keelung River at Yuanshan, Jiannan and the 2nd Clean Water Transmission Mains in Xindian River, as well as the Yongfu Water Pipeline Bridge.

2. Site Retrofitting

For aging and high-risk water treatment facilities and booster station distribution reservoirs, functional assessments have been completed for 95 locations by the end of 2023. Additionally, improvements totaling 45,170 cubic meters in site efficiency have been achieved, meeting the expected targets. Among these, the Datong Booster Station and Distribution Reservoir Project were completed in January 2023, the Shi'erzhang Booster Station was completed in February 2023, and the Wanfang 3rd Distribution Reservoir underwent facility improvements and reinforcement in June 2023.

(V) Emergency Water Supply During Disasters

1. Emergency Water Supply Stations

In the Taipei Water Department's jurisdiction, a total of 144 emergency water supply stations have been established, capable of providing approximately 27,000 metric tons of emergency water. This includes 20 temporary water supply stations and 124 public schools designated as water supply stations, providing convenient access to water for the public during water shortages caused by natural disasters.

2. Emergency life-support water supply station

In the Taipei Water Department's jurisdiction, a total of 46 emergency survival water supply stations have been established, including distribution reservoirs, water delivery pipelines, and survival storage tanks. These stations can provide approximately 344,000 metric tons of survival drinking water, supplying each person with 3 liters of survival water per day, meeting the short-term shelter needs for disaster prevention for a period of 28 days.

3. Disaster prevention groundwater wells

Taipei City has established 73 disaster

prevention underground water wells, capable of providing 110 liters of daily water supply for miscellaneous use per person for a total of 109,000 people.

4. Emergency Survival Facility Drills and Maintenance

In 2023, maintenance operations were carried out on 46 survival water supply stations, alongside inspections conducted on 124 school water supply stations. The disaster prevention underground water wells underwent monthly equipment inspection and cleaning maintenance, totaling 876 times, along with quarterly water pumping tests and water quality assessments. Furthermore, collaborative drills with district offices were conducted to enhance disaster prevention measures.

4. Smart and Convenient Services for the Public

(I) 24/7 Year-Round Customer Service

1. To serve users at any time, a 24/7 customer service hotline 02-87335678 has been established. The hotline is integrated with the

1999 Citizen Hotline system, providing telephone consultations, online applications, dispatch services and more.

2. In the year 2023, there were 289,472 calls, with a service level target (answering rate within 10 seconds) reaching a high standard of 94.6%. The average call abandonment rate was only 0.66%.
3. Each call is handled by a dedicated specialist, with a 92.91% online real-time processing rate in the year 2023. For cases where phone calls cannot be answered, cases are logged for on-site handling and follow-up to ensure service quality.

(II) Optimization of Electronic Billing and Mobile Payments

1. The Taipei Water Department is facilitating the swift adoption of electronic billing through a dedicated QR code system, enabling users to easily transition from paper to electronic bills by scanning the code provided with their paper bills.
2. To encourage the uptake of electronic billing and

payments, the Taipei Water Department launched a promotion called " Save NT$10 on Water Bills with e-Bill + e-Payment," incentivizing the public to adopt these digital services.

3. In 2023, the Taipei Water Department registered a record-breaking 47,663 applications for electronic billing, showcasing significant growth compared to previous periods. Additionally, on March 15, 2023, the Taipei Water Department introduced SMS billing, expanding billing options for users. By the end of 2023, the number of SMS billing users had reached 9,590.
4. Our collaboration with payment service providers for water bill payments intensified in 2023, with 21 mobile payment providers integrating payment functionalities. This concerted effort resulted in a notable increase in the adoption rate of mobile payments, reaching 12.85% by the year's end.

(III) Remote Services

1. Starting from March 15, 2023, the Taipei Water

Department has been providing the "Online Settlement of Water Bills" service. Users who need to settle water bills due to relocation or property transactions can now do so conveniently without leaving home or visiting our counters. As of the year 2023, a total of 5,623 cases have been settled online.

2. The Taipei Water Department offers diverse payment channels, with only 1.59% of users opting to pay their bills physically at service counters.
3. Convenience stores have been offering e-invoice consolidation services since February 2023, allowing individuals to consolidate water bill invoices directly to their mobile barcode for easy management, ensuring they don't miss any winning invoices.

5. Carbon Emissions Reduction, Sustainable Development

(I) Environmental Protection and Energy Saving

1. To mitigate water supply energy consumption, the Taipei Water Department has implemented

variable frequency control with remote pressure feedback for pump operations at booster stations. This system ensures optimal water pressure in the network. Additionally, we utilize gravity-fed water supply and adjust reservoir levels based on residual pressure in the mains. Despite the impact of construction activities along the 1st Clean Water Transmission Mains in 2023, resulting in decreased network pressure and necessitating additional pump operation, energy consumption per unit of water supplied remained consistent with 2022 levels at 0.107 kWh per ton, thanks to effective network pressure stabilization control.

2. Solar photovoltaic systems at the Changxing Water Treatment Plant: In line with the solar photovoltaic policies promoted by the Ministry of Economic Affairs and the Taipei City Government, roofing was installed over the Changxing Water Treatment Plant Reservoir. The roof was leased to private businesses for the installation of photovoltaic solar panels. In 2023,

these solar panels generated a total of 2.27 million kWh of electricity, resulting in a reduction of 1,123 tCO_2 of carbon emissions.

3. The reuse of sludge generated during the water treatment process at the water treatment plant involves concentrating and dewatering the sludge to produce dewatered sludge cakes. Contracts are established with private businesses for the re-use of these dewatered sludge cakes. In the year 2023, a total of 32,471 metric tons of dewatered sludge cakes were reused, achieving a re-use rate of 100%.

(II) Promoting water conservation

1. Residences and Communities

(1) Household water conservation home services: The Taipei Water Department offers tailored services to households with high water consumption. These services include toilet leak detection, installation of water-saving devices on faucets, and water quality testing. In 2023, we provided a total of 6,031 service calls to assist households in conserving water.

(2) Community outreach activities:
The Taipei Water Department conducted 67 community outreach events in 2023, directly engaging with residents to provide water conservation services and encourage the adoption of water-saving habits. Additionally, we advertised on bus bodies and LINE messaging app and promoted water-saving tips and free home leak detection services on radio and podcast channels.

2. Government agencies and schools

(1) In accordance with the Taipei City Net Zero Emission Management Ordinance, the Taipei Water Department has established the "Water Conservation Implementation Plan for Government Agencies and Schools from 2023 to 2026," aiming to reduce water consumption by 2% in 2023 compared to the baseline of 2019. In 2023, we achieved a reduction in water consumption of over 7% compared to the same period in 2019.

(2) We utilized the public water consumption platform to monitor and control abnormal water usage, providing alerts to government agencies and schools to identify and rectify any abnormal water consumption patterns.

3. Large Water Users

(1) We have initiated a user-driven water management program, targeting major water consumers. These users can set their own abnormal usage alert conditions, enabling them to receive alerts if water consumption exceeds the set threshold. This allows for prompt action to address leaks and prevents wastage of water resources and unnecessary expenditure.

(2) In 2023, we assisted in improving 1,333 cases, resulting in a preventive reduction of approximately 1.47 million cubic meters of water wastage.

(III) Water Environmental Education

The Taipei Water Department collaborated with the Taipei Feitsui Reservoir Administration and the

Sewerage Systems Office of the Public Works Department of the Taipei City Government to organize the "Taipei Water Journey," offering comprehensive water environmental education experiences. In 2023, we conducted 10 sessions with a total of 276 participants. Additionally, the Taipei Water Department conducted educational visits for college students and faculty to learn about Taipei's tap water facilities, water sources, and the water treatment process. Students from various universities, including National Taipei University of Technology, National Taiwan University, National Taiwan University of Science and Technology, Fu Jen Catholic University, and Vanung University, participated in these visits, totaling 237 individuals. Additionally, we have curated a range of courses and activities at the Taipei Water Park, spanning guided tours, educational sessions on water resource management, and hands-on DIY projects. Throughout 2023, we hosted 64 environmental education events at the park, attracting a total of 4,184 participants.

(IV) Open and Shared Facilities

1. Synergies of the Taipei Water Park: The Taipei Water Park is strategically located in the heart of the Gongguan area. We have enhanced recreational facilities and provided high-quality guided tours. Through collaborations with private enterprises and public institutions, we continue to organize large-scale events such as the Taipei Water Festival and the Gongguan Christmas Season. Additionally, we collaborate with local organizations to promote the joint prosperity of the local shopping district. In recent years, we have been actively promoting the revitalization of historical sites. For example, since 2020, we have organized the "Taipei Good Water Secrets" tour, which explores historical landmarks and their significance in Taipei's water history. These efforts aim to enrich the cultural landscape of Taipei while providing educational and recreational opportunities for residents and visitors alike. The Taipei Water Park received a total of 552,406 visitors by the end of December 2023, with 4,112

visitors to the "Taipei Waterway- Guanyinshan Reservoir" and 10,692 visitors to the "Caoshan Waterway- Yangmingshan Sapphire Spring" respectively.

2. Thermal Valley Park: Landscaping improvements have been made, including the construction of a lakeside trail and the installation of hot spring experience facilities, allowing visitors to experience the hot springs up close. Additionally, in collaboration with the Taipei City Hot Springs Association, events such as the 2023 Beitou Flower Yukata Festival and the Hot Spring Season were organized. The total number of visitors to the park in 2023 reached 416,179.
3. Open Facilities to Surrounding Communities:
   (1) Open up partial parking spaces at the Changxing Water Treatment Plant to establish the Xinhai Shui’an Parking Lot, which commenced operations to the public in December 2023. The Minsheng Technology Service Building, leased by the Institute for Information Industry, provides technological

and information services to assist businesses in transformation. Additionally, it offers 100 monthly parking spaces at discounted rates to benefit nearby residents. Collaborating with the Bao'an Borough in Datong District, discounted monthly parking spaces are planned and prioritized to local residents at favorable rates.

(2) Undertake outdoor space landscaping and greening for the Water Experience Education Area, which was opened for use in September 2023.

(3) Enhance park services and facilities, update maintenance equipment indicators (including public facilities such as the Water Plaza, Siyuan Street intersection, and around the Water Measurement Office). Regular environmental cleaning and disinfection, maintenance of landscape flowers and trees, and free admission for morning exercise to residents of nearby neighborhoods at the Taipei Water Park, with a total of 5,411 visitors

in 2023.

IV. Implemented Innovative Initiatives

1. Feitsui Raw Water Supply Tunnel Breakthrough Completed

The Taipei Water Department has been promoting the Feitsui Raw Water Supply Tunnel Project, with a daily water intake capacity of up to 2.7 million cubic meters, to reduce environmental impact and ensure the safety of the Feitsui Reservoir. Instead of faster but more environmentally disruptive methods like blasting, the project has adopted the New Austrian Tunneling Method (NATM) for mechanical drilling, ensuring safety and stability throughout the process. Despite facing challenges such as geological variations and hard rock formations, the construction team has utilized various auxiliary techniques to overcome difficulties. As a result, the tunnel was successfully bored through on May 12, 2023.

2. The Taipei Water Department's Smart Information Management System 2.0 Introduces Innovative Feature: Automatic Integration with

Mapping Data from Road Management Authorities

(I) To ensure the precision of construction data and mapping details, the system has implemented a GML consolidation platform via source management. It enhances correctness verification and automatically forwards outcomes to road management authorities for mapping integration. This groundbreaking initiative, and was recognized with the Engineering Digital Innovation Application Award by the Chinese Institute of Civil and Hydraulic Engineering, standing as the inaugural effort of its kind nationwide.

(II) In the event of a pipe burst or water leakage, supervisors can utilize mobile devices to automatically calculate the affected area using pipeline topological mapping and intelligent water cutoff tracking functions. This enables quick identification of valves that need to be closed and provides statistics on affected users, expediting the process of addressing any event of water leakages.

3. Long-distance Curved Pipe Pulling Method to

Overcome Construction Environmental Challenges in Mountainous Areas

The location of the backup water transmission pipeline for the Shuangxi Water Treatment Plant is situated in a mountainous area where heavy machinery cannot reach. To address this challenge, a long-distance multiple-curved pipe pulling method was utilized, achieving a maximum pipe pulling distance of 1.6 kilometers. This achievement set a record for the longest single curved pipe pulling distance using flexible pipe lining technology in Taiwan. As a result, it was awarded the Special Distinction Award for Underground Pipeline Engineering by the Chinese Taipei Society for Trenchless Technology.

V. Future Administrative Priorities

1. Improving the Water Supply Environment

(I) Commencement of Feitsui Raw Water Supply Tunnel Operations to Ensure Raw Water Quality

The Feitsui Raw Water Supply Tunnel is scheduled

to commence operations in June 2024. Upon completion, it will draw water from the downstream of the Beishi River in the vicinity of the Feitsui Reservoir. The daily water intake is projected to reach 2.7 million metric tons, guaranteeing stable water supply to the greater Taipei area.

(II) Optimized Facility Management and Stable Regional Water Supply

Continued efforts are being made to promote the backup mains pipeline project of the 1st Clean Water Transmission Mains-Chenggong Road to enhance water supply scheduling and support capabilities. It is anticipated that after completion in 2024, water will flow from the downstream section to the pressure relief tower. Additionally, the Sanchong No.2 Water Distribution Reservoir and Booster Station project in Sanchong is ongoing, and is set to increase water storage and regulation capacity in the Sanchong Water Supply Zone.

(III) Comprehensive Water Supply Network, Proactive Monitoring and Leak Reduction

Continued efforts are being made to promote water

supply pipeline improvement and management plans. It is anticipated that by the end of 2024, 100 kilometers of pipelines will be replaced, leading to a reduction in the leakage rate to 10.31%.

(IV) Reduce Water Supply Risks and Improve Disaster Preparedness

The following projects will continue as scheduled in 2024: Completion of the announcement for the Guandu-Sanchong branch line project; completion of the planning for the Huanbei mains line. Additionally, improvement works for the Songshan Booster Station and Distribution Reservoir are underway, expected to be completed by 2025.

(V) Moreover, aligning with the Ministry of Economic Affairs' Water Resources Agency plan to establish backup wells in the Greater Taipei area, there are plans to install 25 new production wells and 4 basic

observation wells between 2024 and 2026.

2. Enhanced Service Management

(I) Friendly Access to Direct Drinking

To promote tap water consumption, the Taipei Water Department plans to install fixed drinking fountains at key shopping and commercial districts, large venues, and entrances to major walking trails where crowds and tourists converge. In 2024, the Taipei Water Department aims to install 25 fixed drinking fountains at such locations. Additionally, mobile drinking fountains will be set up at various large-scale events organized by the government to further promote tap water consumption. Furthermore, these drinking fountains will be equipped with smart water meters and automatic transmission devices to enhance smart management services.

(II) Innovative and Convenient User Services

In 2024, the Taipei Water Department aims to complete: The "New Customer Service System" aims

to enhance backup mechanisms and support remote duty scheduling. It will provide improved reliability and accessibility for customer service representatives. Establish a one-stop "Convenient Water Service" platform, which will reduce redundant data entry and allow users to address multiple issues without visiting physical service counters. The system will pro-actively send SMS reminders to users and provide direct links for payment, application submissions, and issue resolution. Offer a "Consolidated Billing Service," allowing users to combine multiple bills into a single invoice, facilitating easier management and payment while reducing paper usage and postage costs.

(III) Continued Promotion of Smart Water Meters

The Taipei Water Department aims to provide users with real-time water usage information and alerts for abnormal water usage. It will integrate with DMA and prioritize the installation of smart water meters on individual and master meters, enhancing operational efficiency.

(IV) Optimize Hot Spring Supply

To promote the utilization of hot spring water resources, the following measures are being implemented:

1. Utilization of resources in the Xingyi Road Hot Spring Special Zone: The Xingyi Road Sulphur Hot Spring System will be incorporated into the pipeline network for effective utilization of the hot spring resources.
2. Establishment of the Zhongshan Building Hot Spring Supply Business: A public pipeline will be established, and it is expected to open for user applications in 2026.

3. Sustainable Development and Governance

(I) Green Photovoltaics

Taking stock of suitable locations for solar photovoltaic facilities across various stations, plans are in motion to install a 200kW solar photovoltaic system at the Gongguan Reservoir, alongside the construction of a multi-purpose integrated building. Additionally, a 32.34kW solar photovoltaic system is slated for installation in the new construction project at the

Sanchong No. 2 Booster Station.

(II) Net Zero City

In line with Taipei City's Net Zero Emissions Management Ordinance, efforts are underway to conduct organizational greenhouse gas inventories and verifications. Initiatives promoting energy conservation and carbon reduction in engineering projects are also being implemented, with a gradual progression towards achieving the target of zero net emissions by 2050.

(III) Water Conservation and Water Travel Environmental Education

Continuing the implementation of home water conservation services, collaborating with borough chiefs and management committees to promote community water conservation activities, providing guidance to large water users and institutions on water self-management. Additionally, collaborative efforts across departments are being made to promote water travel environmental education, with

a target of completing 100 sessions in 2024.

(IV) Taipei Water Park Paradise

1. Promoting Regional Integration to Revitalize the Gongguan Area

(1) From the Taipei Water Festival in summer to the Gongguan Christmas Season in winter, efforts are being made to expand the scope of seasonal events to include spring, summer, autumn, and winter themed activities through public-private partnerships. By leveraging resources from both public and private sectors and collaborating with Gongguan shopping district organizations, the aim is to boost the overall benefits to the Gongguan area and attract diverse customer groups.

(2) In 2024, plans are underway to renovate the water experience education area, with the outdoor water play area expected to reopen in 2026, rejuvenating this popular spot in Gongguan.

(3) Establishment of the Taipei Water Education Museum: This center will showcase the water

resources and water supply system of Greater Taipei, providing insights into the significance of water conservation and the development of water resources.

2. The renovation and construction of the Gongguan reservoir and the multi-purpose integrated building will create a new landmark for regional development. The upper structure concrete floor slabs are scheduled to be poured by the end of 2024, with completion slated for 2025, attracting industries and businesses to the area.

VI. Conclusions

In the future, the Taipei Water Department shall strive to implement the policies mentioned above, strengthen Taipei's disaster prevention capabilities and provide quality water and convenient services to the public.

We would like to express our appreciation to members of the City Council for your longstanding support. In the future, under your encouragement, continuous supervision and guidance, the TWD will lead all staff members to jointly make progress

together with society and provide the best services to the public. End of presentation.

Attachments

Photo 1: The Feitsui Raw Water Supply Tunnel Project achieved full breakthrough on May 12, 2023, and was honored with the Distinguished Public Construction Award by the Taipei City Government in 2023.

Photo 2: Taipei Water Department's Smart Information Management System 2.0, which pioneered automatic integration of mapping data with road authority units, was awarded the Engineering Digital Innovation Application Award by the Chinese Institute of Civil and Hydraulic Engineering.

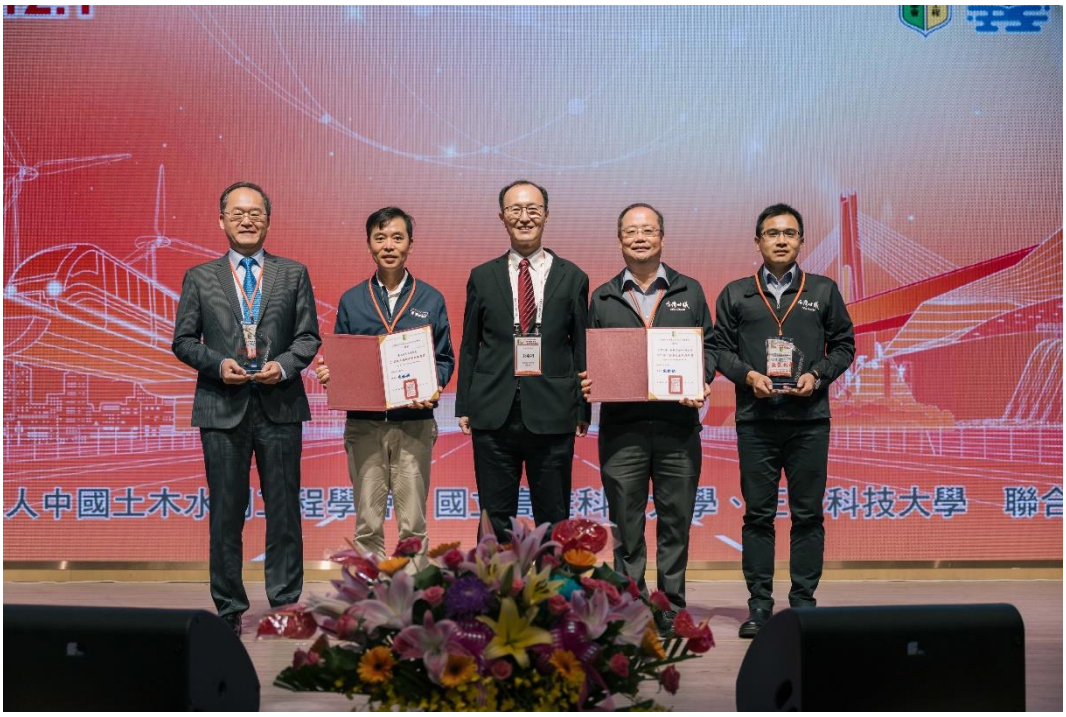

Photo 3: The Shuangxi Backup Water Supply Pipeline Turnkey Project, was awarded the Special Distinction Award for Underground Pipeline Engineering by the Chinese Taipei Society for Trenchless Technology