



## BOARD OF WATER SUPPLY

Duane R. Miyashiro, Chair; Mahealani Cypher, Vice-Chair; Theresia C. McMurdo; Kaulana H.R. Park; Adam C. Wong; Ross S. Sasamura, Ex-Officio; Glenn M. Okimoto, Ex-Officio; Ernest Y. W. Lau, P.E., Manager and Chief Engineer (2/1/12 – Present); Ellen E. Kitamura, P.E., Deputy Manager and Chief Engineer (3/16/12 – Present)

### POWERS, DUTIES AND FUNCTIONS

The Board of Water Supply (BWS) manages Oahu's municipal water resources and distribution system, providing residents with a safe and dependable drinking water supply.

The BWS is the largest municipal water utility in the State, serving approximately 145 million gallons of water a day to roughly one million customers on Oahu. To keep the water flowing, the BWS must carefully and proactively manage and invest in its intricate system, consisting of 94 active potable water sources, 172 reservoirs, and nearly 2,100 miles of pipeline servicing nearly every community on Oahu.

The BWS is a financially self-sufficient, semi-autonomous agency of the City and County of Honolulu. Its operations and projects are financed with revenues generated by water transmission and distribution fees. Its budget does not include tax money collected by the City. The BWS also pursues federal and state grants to help subsidize BWS projects.

A seven-member board presides over and determines BWS policies. Five members are appointed by the Mayor and confirmed by the Honolulu City Council. The remaining two serve in their capacities as Director of the State Department of Transportation, and Director and Chief Engineer of the City Department of Facility Maintenance.

The Board appoints the BWS Manager and Chief Engineer to administer the Department. The Manager appoints the Deputy Manager and Chief Engineer. Together, they provide leadership and direction for the organization while supervising its day-to-day business activities.

### MISSION

The Board of Water Supply's mission of Water for Life is to provide a safe and dependable water supply that is affordable to its customers, now and into the future, with three strategic objectives: resource, economic, and organizational sustainability.

### ORGANIZATION

In Fiscal Year 2013 the Department consisted of 14 offices and divisions that worked together to implement the BWS's mission. It included:

- Business Development Division - manages the Department's water business programs and compliance with all federal and state drinking water and applicable environmental rules and regulations. The Division also manages the Department's emergency

response and disaster preparedness program. This Division was reorganized to include the Department's Microbiological and Chemical Laboratories into a new Water Quality Division.

- Capital Projects Division - implements the Department's Capital Program, including the design and construction of new source, storage, treatment, transmission and distribution facilities and the repair, maintenance, and upgrade of aging water mains and facilities.
- Communications Office - provides comprehensive strategic communication services and support to the Department, including internal communication with employees and the Board; external communication with key stakeholder groups such as customers, community/advocacy groups, neighborhood boards, business/community leaders, media, and elected officials.
- Customer Care Division – interfaces primarily with BWS customers to provide services in the areas of bill payments, delinquent bills, account inquiries, water service investigations, review of building permit applications, new water services, and investigation of water leaks and possible causes for high water bills.
- Executive Support Office – develops and executes the Department's administrative programs in the areas of budget, procurement, risk management, security, and emergency preparedness.
- Field Operations Division – maintains and repairs Oahu's water delivery system, which includes all pipelines, valves, and fire hydrants. This division also maintains the BWS's corporation yards and conducts landscaping work at all of its facilities.
- Finance Division - ensures the BWS's financial resources are efficiently and effectively managed by providing support for all of the BWS's financial and fiscal functions, including meter reading, general accounting, payroll, accounts payable, planning, and analysis, inventory, fixed assets, treasury, and purchasing.
- Human Resources Office - administers and manages the Department's training and development, labor relations, classification, recruitment and examination, and personnel transaction programs.
- Information Technology Division - plans, designs, implements, maintains, and supports BWS information technology (IT) and geographic information

systems (GIS) applications and the BWS IT infrastructure, which includes physical and virtual data centers, servers, personal computers, mobile computing, wired and wireless network communications, telephone systems, the call center system, and video surveillance systems.

- Land Division - acquires real property and interests therein, in the name of the City and County of Honolulu through purchase, condemnation, lease, easement, and executive land order; recommends to the City Council the disposal of surplus real property; and manages real property and real property interests that are under the control of the Department.
- Office of the Manager and Chief Engineer - administers the affairs of the Department in accordance with policies and regulations adopted by the Board and the provisions of the City Charter.
- Security Office - develops, reviews, and implements plans, policies, and initiatives to improve the security for the BWS employees, water resources, and distribution system; and provides a prompt and coordinated response, together with other city, state, and federal agencies to appropriately respond to emergencies.
- Water Resources Division - directs the BWS long-range water resource and capital planning for the island's water system, and ensures that there is an adequate water supply for current and future customers.
- Water System Operations Division - monitors, maintains, repairs, and operates the Department's diverse water systems, including well and booster stations, control valves, and the various water treatment facilities; and inventories, maintains, and repairs the Department's fleet of motor vehicles, construction equipment, and trailers.

## HIGHLIGHTS

BWS employees worked diligently to provide safe and dependable water service to its customers by concentrating their efforts on the following current strategic objectives:

## RESOURCE SUSTAINABILITY

This strategic objective ensures that natural groundwater supplies are protected and managed efficiently. The BWS plans for diversified strategies and projects in conservation, potable groundwater, and alternative water supplies, including brackish, recycled, and desalinated water to meet future demands. Efforts also focus on protecting the natural environment, important watersheds, and water sources by monitoring Oahu's rainfall and aquifer water levels and salinity, and taking appropriate precautions to ensure the sustainability of the island's potable water supplies in a climate change future.

The BWS's comprehensive water conservation program continues to foster effective water management policies and practices that reduce per capita use of potable water to encourage sustainable behaviors to all users on Oahu. Resource and demand-side management, alternative water supplies, water system optimization, consumer education, and collaboration with other utilities on industry best practices, combine to form a holistic approach to this growing and expanding program.

- The BWS Leak Detection Team surveys approximately 25 to 50 miles of pipelines per month to find leaks in the distribution system using a combination of digital correlating loggers to record pipe vibrations as water pushes through the pipes and toning equipment to pinpoint the location of the leak. The data collected is used to prioritize and schedule planned repairs to the water system, which results in the prevention of potential emergency main breaks. Leak detection efforts have resulted in an estimated savings of approximately 3.3 million gallons of water per day (mgd), or about 1.2 billion gallons per year. Water loss in the potable distribution system for calendar year 2012 was approximately 10 percent of the total water production. Potable water demand has decreased approximately nine percent from 1990 to 2012, due to advanced water conservation efforts, economic incentives from sewer and water rate increases, recycled water, public education, and leak detection and repair programs in the BWS water system. Infrastructure capacity has been "freed-up," saving BWS rate payers from the deferral and down-sizing of new water system capacity projects as a result.
- Private development reviews and water master plans have increased islandwide with a growing economy, especially in Kakaako and Ewa. Water master plans are or have been reviewed for West Kapolei, Harborside, Makaiwa Hills, University of Hawaii (UH) West Oahu, Ho'opili, Koa Ridge and Kakaako. Water system infrastructure continues to expand in concert with these developments. Water supply is available within the City's planning horizon to 2035.
- Recycled water is an important conservation strategy to reduce potable water consumption to extend our high quality water supplies for future generations. The Department continues to produce reliable and drought proof recycled water for irrigation and industrial purposes.

Recycled water production from the BWS Honouliuli Water Recycling Facility averaged 8.5 mgd in FY 13, which was approximately the same as the previous fiscal year. In the coming fiscal year, the State Department of Hawaiian Home Lands' administrative complex along Kapolei Parkway, the City of Kapolei, and the Oneula and Ocean Pointe District parks

are planned to begin using R-1 recycled water, and H-Power is closer to begin using reverse osmosis demineralized recycled water for boiler feed instead of potable water.

- The BWS continues to make progress on the regional Watershed Management Plans (WMP) for Oahu's water resources. The North Shore, Ewa, and Central Oahu WMPs are ongoing. The Waianae, Koolauloa, and Koolaupoko WMPs are already adopted. WMPs are concurrent with the City's development and sustainable communities' plans for Oahu and provide the long range strategic water resource plans for watershed protection and water use and development for municipal, agriculture, military, and private water supply. The WMPs guide the BWS's long-range capital improvement program, ensuring that adequate water supplies and water system infrastructure will meet Oahu's future water demands.
- To address climate change, the University of Hawaii and the US Geological Survey have been contracted to conduct hydro-geological research to assess Oahu's diminishing rainfall trends and provide numerical groundwater modeling capability for the Pearl Harbor aquifer in a climate change future.
- The BWS placed two new source stations in service:
  - Waimanalo Wells III – A new well source station capable of producing 0.5 mgd of water to the East Waimanalo area.
  - Opana Wells – A new well source station capable of producing one mgd of water to the North Shore area.
- In FY 2012-2013 the BWS conducted almost 37,000 water quality tests on samples collected from its water sources, distribution system and treatment facilities to ensure all water served is safe to drink.
- In June 2013, BWS completed its annual production and delivery of the Consumer Confidence Report (CCR), also known as the Water Quality Report, to all BWS customers. The report provides information on the quality of the water delivered from the BWS system. The report is available on the BWS website at [www.boardofwatersupply.com](http://www.boardofwatersupply.com).
- The BWS implemented an array of activities that supported efforts to educate customers about the importance of conserving water throughout the year and about other BWS programs.
  - Through the BWS Water Conservation Week contests, Oahu students learned about the importance of water and water conservation. The poster contest component was open to students in kindergarten to sixth grade and the poetry contest component was open to students in the seventh to

12th grade. The winning posters and poems are featured in the BWS 2014 Water Conservation Calendar, available to the public (at the end of 2013). The BWS formed public-private partnerships with sponsors in the community in order to offset calendar printing costs.

- In an effort to teach water-efficient gardening practices, the BWS held the annual Halawa Xeriscape Garden Open House and Unthirsty Plant Sale. The event promotes water conservation through water-efficient landscaping, otherwise known as "xeriscaping." The Friends of Halawa Xeriscape Garden and about a dozen local nurseries offered a variety of drought-tolerant, less-thirsty plants for sale to the public. Proceeds from the plant sale supported educational programs and classes at the Halawa Xeriscape Garden.

## **ECONOMIC SUSTAINABILITY**

The second strategic objective calls for a sound financial strategy to support the Department's operating and capital needs. While operation and construction costs steadily increase, the BWS continued to focus its efforts on addressing aging infrastructure and ensuring the reliability and quality of water provided to all customers on Oahu.

- The BWS initiated work on a comprehensive Water Master Plan to provide a 30-year Capital Improvement Program for the capacity expansion, and repair and replacement of aging water infrastructure. The Water Master Plan applies new technology and best practices in planning and engineering tools, and will guide the update of the BWS financial plan to ensure sufficient funding for infrastructure needs while keeping water rates affordable.
- On March 15, 2013, the BWS issued a Request for Proposals to develop its six-acre Beretania Street property. The project was initiated at the suggestion of the Honolulu City Council to allow the BWS to explore and evaluate alternative sources of revenue to reduce its reliance on ratepayer-generated funds.
- More than \$26.5 million in construction contracts and more than \$5.5 million in professional services contracts were awarded as of June 30, 2013. The major projects included the following:
  - Water Main Replacement Program. Aging and corroded water mains are systematically identified and replaced throughout the municipal water system to improve system reliability, reduce main breaks, and to ensure sufficient pressure during periods of peak demand. In conjunction with main replacement projects, existing fire hydrants are replaced and new hydrants are installed to improve fire protection and ensure that current

standards are met. Nearly \$18 million in new water main construction projects was awarded by the BWS. Once completed, these projects will improve the water systems in the Ala Moana, Foster Village, Heeia, Manoa, and Mapunapuna areas. Design work was awarded for a new 36-inch transmission main along Salt Lake Boulevard and also for fire hydrant installations at various locations.

- Water Facility Improvement Program. Capital Projects continues to identify deficiencies and improve the appearance and integrity of aging BWS water facilities. These facilities include water reservoirs, well and booster stations, and administrative offices belonging to the Department. During this fiscal year, new construction contracts were awarded to repair, renovate, repaint and/or reroof Aiea 782 Reservoir, Barbers Point 215 Reservoir, Halawa 550 Reservoir, Halawa Gardens, Hawaii Loa 800 Reservoir, Kaonohi 850 Reservoir, Makiki 705 Reservoir, Mariner's Ridge 500 Reservoir, Pohakupu 272 Reservoir No. 1, Waianae 242 Reservoir, and Woodlawn 705 Reservoir. New design contracts were awarded for facility improvements at Hawaii Loa 475 Reservoir and Booster No. 2, Kailua Heights Booster, Kapolei 215 Reservoir, Kawela 228 Reservoir, Wahiawa 1361 Reservoirs No.1 and No. 2, and Waimanalo Booster.
- Mechanical and Electrical Renovation Projects. Renovation projects ensure the dependable service and operational efficiency of the Department's pump and booster stations. Pump and motor replacement, motor control center replacement, electrical, power, and control wiring work are performed under this program. This year, construction contracts were awarded for the renovation of the mechanical and/or electrical systems at the Kalauao Springs and Mililani Wells III and air conditioning improvements at Heeia Corporation Yard. Design contracts were awarded for work at Aina Koa Booster No. 1, Barbers Point Line Booster, Diamond Head Line Booster, Kalihi Pump Station, Kaluanui Line Booster, Kaonohi Booster No. 1, Keanu Line Booster, Kamaile Wells, Mariner's Ridge Booster No. 1, Maunawili Booster, Punaluu Wells II, and Waihee Line Booster.
- While the replacement of aging water mains help to reduce the amount of water emergencies, main breaks are still an acknowledged part of the water utility industry and can have a tremendous impact on the public. BWS crews respond 24 hours a day, seven days a week to water emergencies. In FY 13,

BWS employees responded to a total of 350 main breaks or about 17 breaks per 100 miles of pipeline. According to the American Water Works Association, water utilities nationwide should strive to limit breaks to 25-30 breaks per 100 miles of pipeline. The BWS ratio was better than the national experience, and BWS employees were also consistently commended for their efforts to quickly repair and restore water service to customers in a timely manner, often under difficult conditions.

- The BWS completed the installation of a new Customer Care & Billing System (CC&B) to replace its aged system. In January 2013, the BWS launched CC&B and monthly billing. Converting to a new system presented a number of challenges, including changing from bi-monthly to monthly billing and addressing deferred maintenance on the Automatic Meter Reading system. The BWS also completed efforts to enable customers to go online to request start and stop service, change account information, and view and pay their bills. The BWS hopes to implement a full service online customer portal in the coming year.
- The BWS has initiated the upgrade of its Financial Management System with a target completion of Phase I by the second quarter of FY 14. Planning for Phase II enhancements will take place concurrently with Phase I.
- In preparation for a much needed upgrade, the BWS completed an assessment of its current utilization of the Computerized Maintenance Management System. Planning for this major system upgrade project is underway, with active engagement beginning in the second quarter of FY 14 and lasting well into FY 15.
- The BWS's nationally recognized Geographic Information System (GIS) database and applications continue to be upgraded for best in class industry functionality and performance. This system gives Department users access to GIS layers and updated imagery, and integrates map service sharing with other city departments. Enhancements for mobile data gathering and data sharing in the cloud are underway.
- The BWS Hydraulic Model Program effort has trained other Departmental users on how to use new modeling software. In conjunction with the Water Master Plan Project, the hydraulic modeling methodology for calibration is being updated, improved, and accelerated. Major calibration work will take place in FY 14.
- The BWS completed a pilot Project Information Management System project. The resulting system is in place for a small group of users to gather information and user requirements to plan, design, and implement





**Water Main Breaks. BWS Field Operations crews respond to water main breaks to minimize water loss and to restore water service as quickly as possible.**

a Project Information Management System which will track the entire life cycle of BWS capital projects.

- The BWS has activated a second data center, using the existing facility and resources previously allocated solely for disaster recovery purposes. This initiative allows BWS to meet new business requirements with minimal investment.
- The BWS Wireless Network Project continues deployment of site connectivity to provide high speed backbone links. A majority of our sites will be connected by the end of FY 14, providing a foundation for potential migration of our existing process control systems to IP transport.

## **ORGANIZATIONAL SUSTAINABILITY**

Maintaining a strong, flexible organization that is able to resolve economic, regulatory, and service challenges requires that the BWS use aggressive as well as time-tested strategies to meet objectives of organizational sustainability.

- The BWS processed more than 128,000 customer calls and inquiries regarding bill payments and delinquent bills during the fiscal year. In July 2012, the BWS implemented a callback feature allowing customers to leave their phone numbers for returned calls.
- The BWS continues to work with the City Department of Emergency Management and Hawaii State Civil Defense to ensure it has the plans and procedures in place to respond effectively to emergency situations such as tropical cyclones, island-wide power outages, pandemic flu, tsunamis, or other major events. The Division manages the BWS Emergency Response Plan to insure the Department is prepared to respond in the event of a natural or man-made disaster.
- With the launch of the new billing system, BWS contracted payment services to First Hawaiian Bank, who will process all payments received via mail, and also accept payments from BWS customers at bank branches.
- On March 1, 2013, BWS began offering customers the option to pay their bill online using a credit card with BWS ePay.