

BOARD OF WATER SUPPLY

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POWERS, DUTIES AND FUNCTIONS. The Board of Water Supply (BWS) manages O‘ahu’s municipal water resources and distribution system, providing residents with a reliable system and safe drinking water supply. As the stewards of O‘ahu’s most precious resource, the Board’s nearly 600 employees embrace this tremendous responsibility. The Board’s mission and vision “Water for Life – Ka Wai Ola” seeks to capture the essence and magnitude of that responsibility. This includes caring for O‘ahu’s watersheds, preserving and protecting the island’s finite water supply, and repairing and replacing the aging infrastructure.

The BWS is the largest municipal water utility in the state, serving one million customers on O‘ahu with 55 billion gallons of water every year. In order to keep the water flowing, BWS must carefully and proactively manage and invest in its intricate system consisting of 95 active potable water facilities, 166 storage tanks, and more than 2,000 miles of pipeline servicing nearly every community on O‘ahu.

The BWS is a financially self-sufficient, semi-autonomous city agency. Its operations and projects are financed with revenues generated by water transmission and distribution fees, and does not rely upon monies from the City or State.

A seven-member Board of Directors 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 the Director of the State Department of Transportation and the Director and Chief Engineer of the City Department of Facility Maintenance.

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

MISSION. The mission of the Board of Water Supply is to improve the quality of life in the community by providing world-class water services. The Board’s mission statement, “Water for Life – Ka Wai Ola,” addresses the need to ensure customers continued access to safe and dependable water supplies now and into the future.

Three main strategic objectives emanate from this mission: resource, economic, and organizational sustainability.

- **Resource sustainability** ensures the protection of natural groundwater supplies and its efficient management.
- **Economic sustainability** calls for a sound financial strategy to be employed to support system operating and capital needs, while keeping water rates affordable.
- **Organizational sustainability** calls for a well-structured, efficient organization with the tools and skills necessary to provide exceptional value to BWS customers, the community, and the watersheds.

ORGANIZATION. The Department is made up of 12 support offices and divisions that work together to implement the BWS' mission and vision by effectively managing O'ahu's water resources and distribution system to ensure a sustainable supply that meets current and future water needs. They include:

- **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 communications services and support to the Department, including internal communication with employees and the Board of Directors; external communication with key stakeholder groups such as customers, community/advocacy groups, neighborhood boards, business/community leaders, media, and elected officials.
- **Customer Care Division** - ensures that all BWS customers are provided the best possible customer service in resolving their needs, including bill payments, delinquent bills, account inquiries, water service investigations, building permits, new water services, or meter reading.
- **Field Operations Division** - responsible for ensuring uninterrupted water flow to the Department's customers, including line leak repairs; installing, replacing, and enlarging water service lines; maintaining fire hydrants, waterline valves, and BWS grounds and buildings; and 24-hour response to trouble calls and requests for leak investigations and closing and opening customers' water services.
- **Finance Division** - ensures that BWS' financial resources are efficiently and effectively managed by providing support for all of the Board's financial and fiscal functions, including general accounting, payroll, accounts payable, planning and analysis, inventory, fixed assets, treasury, and purchasing.
- **Human Resources Office** - administers and manages the human resources program, including training and development, labor relations, classification and compensation, benefits administration, and contract negotiations.

- **Information Technology Division** - provides complete computer, telephone, and network related services to BWS employees.
- **Land Division** – acquires water rights, land, and land interests for the BWS by purchase, condemnation, lease, easement, and executive land order; and disposes surplus real property and manages approximately 13,242.198 acres of land, which are under the control of the Department.
- **Legal Counsel Office** - provides legal counsel and advice to the BWS and its officers and employees; ensures compliance with federal, state and local laws; assists the Board in implementing industry best practices; and works to limit the Department’s exposures and liabilities.
- **Security Office** – develops and implements priority initiatives; reviews plans and policies to improve the protection of the BWS physical infrastructure, employee safety, and response to terrorist incidents and other emergencies; and develops prompt and effective responses to protect the water supply in times of crisis and to coordinate with intergovernmental, inter- and intra-departmental groups in a major emergency.
- **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 and operates the Department’s diverse water systems, including pumps, reservoirs and booster stations; conducts thousands of water quality tests annually and maintains various water treatment facilities; and keeps the Department’s fleet of motor vehicles, construction equipment, and trailers in good condition.

ACCOMPLISHMENTS. Throughout the year, the Department’s 552 full-time employees work hard to meet the challenges of providing safe and dependable water service to our customers. Employees concentrate their efforts and attention in support of the Department’s mission, “Water for Life – Ka Wai Ola,” with a focus on the following strategic objectives:

- **Resource Sustainability.**
This strategic objective ensures that natural groundwater supplies are protected and managed efficiently. The BWS plans for a variety of strategies and projects in conservation, potable groundwater, and alternative water supplies, including brackish, recycled, and desalinated water to meet future demands. Its efforts also focus on protecting the natural environment, prime watersheds, and water sources by monitoring O‘ahu’s rainfall and aquifer water levels and salinity, taking appropriate precautions and actions to ensure the reliability of the island’s potable water supplies.

The BWS is developing a **comprehensive water conservation program** benchmarked with the nation’s top water utilities best practices. The program fosters effective water management policies and practices that reduce per capita use of potable water through resource management, alternative water supplies, BWS water system optimization and consumer education. The objectives of the conservation program are:

- To institute sustainable behavior and practices to all users across the island of Oahu.
- To develop, design, implement and measure the effectiveness of programs that promote sustainability and to demonstrate through action, the Department's core mission of "Water for Life".

Our Internal Conservation efforts have improved water loss percentages within the BWS water system from 13.5% in 2004, 12.8% in 2005 and 11.5% in 2006.

Overall conservation savings have resulted in our demand remaining constant at around 155 mgd since 1990 to now, even with significant urban residential and commercial development growth occurring within our system area of service during this period of time.

Recycled water is an important component of the conservation program and is one of a host of conservation strategies to reduce potable water consumption. A new design contract was awarded to install a 16-inch recycled water main along North South Road, which will help to facilitate the expansion of the recycled water system to serve the proposed UH West O‘ahu campus on the ‘Ewa plains. The project upgrades the recycled water infrastructure in this area and is part of the BWS’ continued efforts to promote recycled water as an appropriate and more efficient alternative water source for irrigation purposes. BWS is also in negotiations with Hawaiian Electric Company (HECO) to provide high grade recycled water used for industrial purposes, known as Reverse Osmosis (RO) water. HECO plans to use the RO water at its Kahe power plant and future Campbell bio-diesel peaking power plant.



***Honouliuli Water Recycling Facility.** This BWS facility is designed to generate 12 million gallons of recycled water per day for irrigation and industrial uses.*

The Wai‘anae and Ko‘olauloa **watershed management plans** were completed and will be submitted to the City Council and State Water Commission for adoption. These plans are the regional component, long-range strategic water plans for the City and County of Honolulu. They follow the community land use plans adopted by the City as a guide for water resource management. Funding has been appropriated to start the next two regions, namely Ko‘olaupoko and North Shore. The watershed management plans provide the strategic planning framework for watershed protection

projects and the long-range capital program, ensuring that the infrastructure will meet all future water demands.

The BWS also continued to implement a wide array of activities supporting and reinforcing efforts to educate customers about BWS and its programs while continuing to stress the importance of conserving water throughout the year. Key **public education and outreach activities and projects** include:

- Television and radio public service announcements (PSAs) and posters on buses and in shopping malls all urged consumers to use the water they need, but not waste it. The water conservation media campaign helped customers understand the limits of O‘ahu’s groundwater resources and provided simple tips for the average resident to reduce daily personal water use.
- Thousands of O‘ahu’s youth and the general public learn about the island’s finite water supply by participating in the Board’s public education programs, including the annual Water Conservation Week poster contest and Detect-A-Leak Week program, year round facility tours program, and presentations at schools and other public venues.



The Fred C. Ohrt Museum. “The Old Man of Kalihi”, an 1899 vertical triple expansion steam pump, is housed in the museum where students from O‘ahu schools learn about its operation in the early years of the water supply.

The BWS understands the importance of ensuring not just the quantity of water available on O‘ahu, but the quality of those drinking water supplies. To that end, the Board continues to make sure the community’s **water supply is safe** by ensuring compliance with all Federal and State safe drinking water regulations; monitoring changes in safe drinking water regulations, reviewing and commenting on new and replacement water treatment and system projects; and overseeing special water quality studies and research projects.

- The Board collects and analyzes water samples from the BWS’ water sources, distribution system, including well stations and reservoirs, and water treatment facilities. BWS conducted more than 18,300 water quality tests during the fiscal year. The BWS laboratories

maintain its State Department of Health and Federal Environmental Protection Agency certifications.

- Since 1998, information about the quality of the municipal water supply has been made available to all BWS customers through the Consumer Confidence Report (CCR), also known as the Water Quality Report. Containing source, contents of water and its treatment, and information about the quality of water for address-specific services within the BWS system, the 2007 CCR was mailed to all customers in June 2007. The reports were also made available on the BWS website, www.boardofwatersupply.com. Prior to the mailing, the Department placed ads in Honolulu newspapers to inform community members of its distribution. For the first time this year, ads were also placed in Filipino, Korean, Japanese, and Chinese newspapers to ensure we reached those ethnic groups.



A safe drinking water supply. Ensuring the safety of O'ahu's water supply is serious business for all BWS employees, particularly the microbiologists and chemists who sample and test the water.

- The BWS also oversees numerous programs to protect the public drinking water system from “backflow.” “Backflow” is when water in a customer’s property pipe gets sucked back into the BWS system when a main breaks, when water pressure is too high, or if a water hose is left in a filled tub or sink or attached to garden spray container. There are more than 6,300 private and government customers with backflow prevention devices on Oahu. These devices provide critical protection for the water system and must be tested on a yearly basis by State of Hawai‘i certified testers. The BWS implemented a new Backflow Prevention Assembly Tester Training Course to ensure adequate numbers of State certified testers to check these devices. This training course has been endorsed by all of the other county water departments as well as the State Department of Health-Safe Drinking Water Branch.
- **Economic Sustainability.**
The second strategic objective calls for a sound financial strategy to support the Department’s operating and capital needs, while keeping water rates affordable. While operating and construction costs steadily increase, the BWS continues to focus its efforts on improving its aging infrastructure

and ensuring the reliability and quality of water provided to all customers in the City and County of Honolulu.

After 11 years of deferring water rate increases, the BWS implemented a 13 percent water rate increase on October 1, 2006. The additional revenue is necessary to **fund proactive infrastructure repair and replacement programs** and to keep up with the rising cost of delivering water to customers. Additional increases are scheduled for the next four years on July 1 of each year. Despite these increases, BWS rates continue to remain among the nations lowest for communities of similar size.

A total of \$23.7 million in construction contracts and \$2.9 million in professional services contracts (infrastructure design, archaeological and environmental assessment services) were awarded as of June 30, 2007. The repair and replacement projects aim to **proactively address the needs of our aging water delivery system**, while maximizing investments. These programs include:

- ⊖ Water Main Replacement Programs. Aging and corroding water mains are systematically replaced throughout the municipal water system to improve system reliability, reduce main breaks, and to insure sufficient pressure during periods of peak demand. Fire hydrants are also installed to improve fire protection to meet current standards.

Water main installation projects were completed in ‘Āina Haina, Enchanted Lake (Kailua), Hale‘iwa, Hawai‘i Kai, Kalihi, Kamehameha Heights, Nu‘uanu, Pearl Ridge, and Wilhelmina Rise. Work is continuing along Kapi‘olani Boulevard and Atkinson Drive to install a water line in conjunction with the City’s Sewer Main Rehabilitation Project. The BWS awarded nearly \$15 million in new water main projects around the island, including Kailua, Kaimukī, Kalihi, Mānoa, North Shore, and Waikīkī.

- Water Facility Improvements. BWS continued to identify and improve the integrity of aging water facilities, including water reservoirs, well and booster stations, and other Board structures. Among the improvement work that was completed this fiscal year included the repair and/or renovation of the BWS headquarters, and reservoirs and well facilities in Haha‘ione, Mākaha, and St. Louis. Residents in Hawai‘i Kai, Kailua, Kalihi Valley, Kāne‘ohe, Kuli‘ou‘ou, Mānoa, and Pearl City will see work beginning in their communities during the next fiscal year.
- Renovation Projects. Renovation projects ensure the dependable service and operational efficiency of the Department's pump and booster stations throughout the system. This year, renovation projects were completed in Hālawa, Kalihi, and Koko Head. Construction contracts were awarded for the renovation of the mechanical and/or electrical systems for facilities in ‘Aiea, Downtown, Honouliuli, Kalihi, Kapolei, Mililani, Pearl City, and Waipi‘o.

To better inform residents and customers about ongoing construction projects within neighborhood board districts, the Board of Water Supply **added project maps to its website** at boardofwatersupply.com in August 2006. Found under the “Community” tab, interested individuals can see the streets and neighborhoods that are impacted by new water main installations and can see how the BWS is working to prevent main breaks and improve the water system in their communities.

The Department received an **Aquarius award** in May 2007 from the U.S. Environmental Protection Agency for effective use of Drinking Water State Revolving Funds (DWSRF). The DWSRF program provides low interest loans to help pay for projects that install, upgrade, or replace water system infrastructure to provide drinking water supplies that meet the federal safe drinking water standards. The Department used the \$21 million DWSRF loan to help fund projects that benefited more than 770,000 customers across O‘ahu. These projects included installing new water treatment facilities in Kunia and ‘Ewa, replacing a well in Waimānalo, and replacing aging pipelines and equipment in the water distribution system for Wahiawā and ‘Ewa Beach.



***Aquarius Award.** Mayor Mufi Hannemann, center, with BWS Manager and Chief Engineer Clifford Lum, right accept the Aquarius Award from Wayne Nastri, EPA Region 9 (Pacific Southwest) administrator, left.*

BWS crews respond 24 hours a day, seven days a week to water emergencies. From traffic impacts to loss in water service, main breaks have a tremendous impact on the public. BWS employees were consistently commended for their efforts to quickly and, often under difficult conditions, repair and restore water service to customers in a timely manner. In addition to working on pipeline repairs,



***May 2007 Liliha Street main break.** BWS crews often work in muddy trenches under bad weather conditions, day and night, to quickly restore water service to customers.*

BWS crews provided affected customers with water by stationing water wagons in the neighborhood and/or installing a tap on a fire hydrant during repairs. Because BWS pipelines are typically under roadways, BWS crews also cleared the area of debris and repaired the damaged roadway to allow normal traffic to resume.

The Board again saw a **decrease in the number of main breaks** occurring during the past fiscal year and credits both the proactive water main replacement and leak detection programs for this reduction. There were 334 broken water mains repaired this fiscal year, 23 less than last year and 96 less than in 2003. This number is below the 400-plus annual main break average experienced in the 1990s. With 2,000 miles of pipe in the BWS water system, the number of BWS main breaks is also well below the national benchmark of 25-30 main breaks for every 100 miles of pipe.

As part of the Board's objective to **better manage fieldwork** and the costs associated with the maintenance of its water distribution system, BWS finalized the Computerized Maintenance Management System (CMMS) rollout to all field corporation yards in July 2007. CMMS allows crew members to capture labor, vehicular/equipment, and parts and materials costs via work orders, time sheets will be automatically calculated at job completion, and an integrated electronic map will be readily available so that they can make better and more informed decisions in the field.

The Board's **award winning HONU GIS (Honolulu Online Utilities Geographic Information System) application upgrade** was released this spring. This computer program enables employees to quickly and easily access critical water system data and information. The new and improved version has added functionality, new layers, new symbols that help users easily identify assets, a rollover attribute that enables key information to automatically pop-up by simply "rolling" the mouse over an area, and an aerial photo overlay.

- **Organizational Sustainability.**

The Board's third objective calls for a sound, well structured, efficient organization with the tools and skills necessary to provide exceptional value to customers, the community, and watersheds.

BWS continues to emphasize the importance of fostering a work environment that encourages open communication and collaborative problem solving – key components to building an efficient and healthy workforce. **Employee communications programs** include:

- The Board holds employee quarterly and annual meetings, which provide a forum for the Manager and Deputy Manager to discuss issues impacting the organization and its employees.
- In August 2006, a monthly "Brown Bag with the Manager" program started at the Beretania headquarters and provided employees and Manager Clifford Lum an opportunity to "talk story" and become better acquainted during informal lunches. This led to a Field Office Hours program where the Manager visits various corporation yards (Mānana, Kalihi, Wahiawā, Wai'anae, and He'eia) each quarter to chat informally with field-based employees, who because of their work requirements are often unable to attend the "Brown Bags".

Employee recognition programs help to foster employee morale and further encourages employees to strive for excellence. These programs are an important part of the Board's human resources development:

- During this fiscal year, the Department recognized its outstanding employees for the calendar years 2006 and 2007. All five employees are excellent examples of the caliber of the BWS workforce.

In July 2006, Jo Ann Wong, a secretary III in the Water System Operations Division, and Thomas Otaguro, a civil engineer IV with Water Resources, were honored as the BWS Employees of the Year for 2006. Both represented the Board in the annual City Employee of the Year competition at the end of the year.

In May 2007, water service superintendent Daryl Hiromoto and plant electrical/electronic equipment repairer Donald Estrella were named BWS Employees of the Year for 2007, and Ronald Wada, assistant chief of data processing was recognized as Manager of the Year for 2007. Hiromoto, Estrella, and Wada represented the Department in the City competitions in late summer.

- The Department and the City also recognized employees who have dedicated many years to public service. Seven BWS employees received 35-year service awards, and 29 employees received 25-year service awards. A total of 146 BWS employees had acquired 25 or more years of government service by the end of the year.
- Civil engineer V Susan Uyesugi was recognized by the American Water Works Association (AWWA) with its George Warren Fuller Award, the organization's most prestigious industry award, for her "distinguished service to the water supply field in commemoration of the sound engineering skill...the brilliant diplomatic talent...and the constructive leadership which characterize the life of George Warren Fuller." AWWA is an international nonprofit scientific and educational society dedicated to the improvement of drinking water quality and supply.
- Graphic artist Sheryl Suzuki received the AWWA Hawai'i Section's Outstanding Section Member Award during its June 2007 conference. The award was presented to Suzuki for her contributions to the progress and well being of the organization.

In September 2006, the BWS' women's pipe tapping team, Na Wāhine O Ka Wai, traveled to the Netherlands to participate in The **World Water Cup of Drilling and Tapping** at the AQUATECH Conference and Exhibition. Na Wāhine O Ka Wai was the first women's team to represent the United States at an international arena. Team members, pipefitter Danielle Ornellas; civil engineer Carolyn Sawai; water meter mechanic Anna Tanaka; and coach Gary Fernandez, a water service supervisor, demonstrated the American method of pipe tapping.



Na Wāhine O Ka Wai. 2006 National Women Pipe Tapping Champions show their style in competition at the national AWWA Annual Conference. L-R, Danielle Ornellas and Carolyn Sawai; in front, Anna Tanaka.

The BWS continues to **encourage professional development** among its employees by conducting and coordinating classes, workshops, conferences, seminars, and career development training sessions. Spanning a wide range of informational and developmental subjects, these classes cover job-related skills and supervisory management, retirement and financial planning, drug abuse, workplace violence and sexual harassment prevention, employee assistance programs, and orientation sessions on new collective bargaining agreements.