

BOARD OF WATER SUPPLY

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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's 500-plus employees fully understand and embrace their crucial roles as stewards of Oahu's most precious resource and work together to accomplish its mission of "Water for Life." This includes repairing and replacing aging infrastructure, and maintaining and updating components critical to delivering water.

The BWS is the largest municipal water utility in the State, serving approximately 150 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, 170 reservoirs, and nearly 2,100 miles of pipeline servicing nearly every community on Oahu.

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. 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 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 administer 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 Board of Water Supply's mission of Water for Life is to provide a safe and dependable water supply, now and into the future.

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

ORGANIZATION

Currently, the department consists of 14 support offices and divisions that work together to implement the BWS's mission by effectively managing Oahu's water resources and distribution system. It includes:

- **Business Development Division** - investigates opportunities to improve and enhance the Department's water utility business and oversees the compliance of the Department's water operations with all applicable environmental rules and regulations.
- **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 permits, new water services, or meter reading; and investigation of water leaks and possible causes for high water bills.
- **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 general accounting, payroll, accounts payable, planning and analysis, inventory, fixed assets, treasury, and purchasing.
- **Human Resources Office** - administers and manages the human resources programs, including training and development, labor relations, classification, recruitment and examination, transactions, benefits administration, and contract negotiations.
- **Information Technology Division** - plans, designs, implements, maintains, and supports BWS information technology (IT) applications and the BWS IT infrastructure, which includes servers, personal computers, wired and wireless networks, telephone systems, the call center system, and security camera systems.

- **Land Division** - acquires land and land interests for the BWS through purchase, condemnation, lease, easement, and executive land order; disposes surplus real property; and manages land that is under the control of the BWS.
- **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 BWS in implementing industry best practices; and works to limit the department's exposure to liabilities.
- **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

The BWS's 510 employees met the challenges of furloughs by continuing to show their commitment to providing safe and dependable water service to its customers. Employees pulled together to accomplish what was needed to advance the following BWS strategic objectives:

Resource Sustainability

This strategic objective ensures that natural groundwater supplies are protected and managed efficiently. The BWS planned 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. Efforts also focused 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 and actions to ensure the reliability of the island's potable water supplies.

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 behavior and practices to all users across the island of Oahu. Resource management, alternative water supplies, BWS water system optimization, and consumer

education combine to form a holistic approach to this growing and expanding program that also involves collaborating with other utilities to learn and implement industry best practices.

- BWS investigators responded to numerous customer calls of water seepage on public property, pinpointing underground water leaks for repair.
- Recycled water is an important component of a host of conservation strategies to reduce potable water consumption. The Department continues to support the use of recycled water in the Ewa area as an appropriate and more efficient source of water for irrigation and industrial purposes.
 - Recycled water use from the Honouliuli Water Recycling Facility continues to provide alternative water supply in Ewa for irrigation and industrial purposes. Recycled water production averaged 7.5 million gallons per day in FY 2011, which was on average 1.0 mgd less than 2010 due to the above average rainfall experienced during the winter and spring from a strong Pacific La Nina event.
 - The State Department of Hawaiian Home Lands' administrative complex along Kapolei Parkway, the City of Kapolei, and two parks are also slated to begin using recycled water. The BWS is also working with the City Department of Environmental Services to use demineralized recycled water for the H-Power plant expansion.



Honouliuli Water Recycling Facility. *The facility continues to offset potable water demand by producing recycled water as an alternative for irrigation and industrial purposes*

- The Waianae and Koolauloa Watershed Management Plans (WMP) were adopted by the City Council in August 2010 as Bills 9 and 10; respectively, revising Chapter 30, Revised Ordinances of Hawaii (ROH). The State Commission on Water Resource Management subsequently adopted the plans in March 2011. The Koolaupoko WMP is expected to be adopted in early 2012, and the North Shore WMP has been initiated. These plans are the regional component of long-range strategic water plans for the City and County of Honolulu. The watershed management plans follow the community land use plans adopted by the City as a guide for water resource management. Watershed

management plans provide the strategic planning framework for watershed protection projects and water use and development for the BWS's long-range capital program, ensuring that adequate water supplies and water system infrastructure will meet Oahu's future water demands.

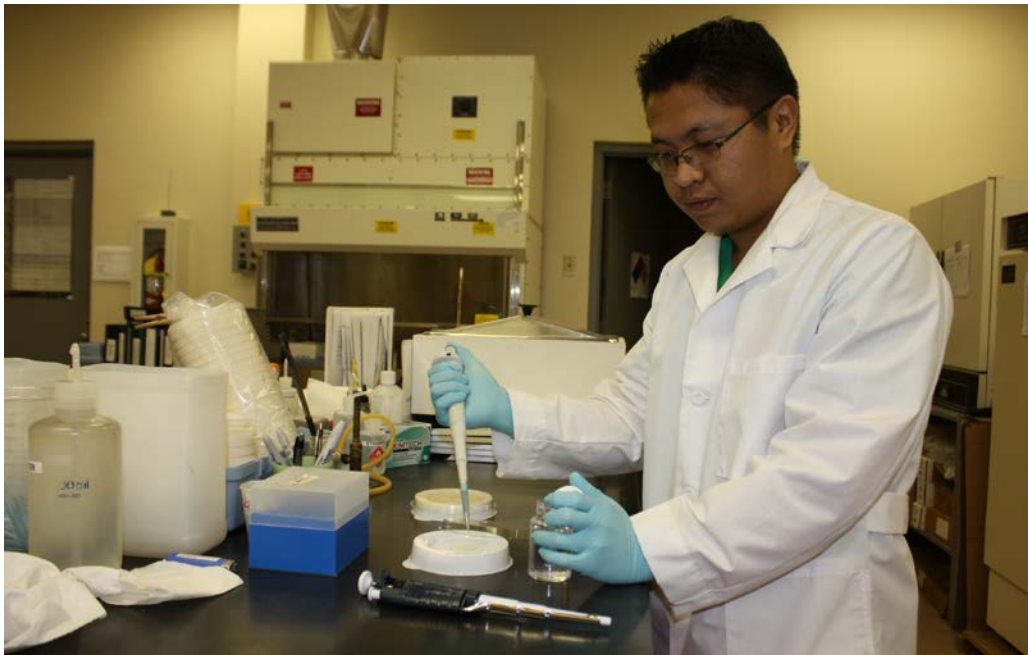
- The BWS and City Department of Environmental Services ended the rebate program for low flow toilets in December 2010. The successful program facilitated replacement of residential high flow toilets and helped to conserve millions of gallons of freshwater and reducing wastewater flows.
- The BWS implemented an array of activities that supported and reinforced efforts to educate customers regarding the importance of conserving water throughout the year and about other BWS programs.
 - Through the BWS Water Conservation Week contests, Oahu students can learn about the importance of water and water conservation. The poster contest component is open to students in grades K-6 and the poetry contest component is open to students in grades 7-12. The winning posters and poems will be featured in the BWS 2012 Water Conservation Calendar, which will be available to the public at the end of 2011.



Water Conservation Education. BWS Acting Manager Dean Nakano (back row) posed with some of the winners from the 2011 water conservation week poster and poetry contest. Thousands of students learned about the importance of water conservation through these contests.

- With a drier than normal weather forecast for the 2010 summer, hundreds of Oahu residents gathered at the BWS Halawa Xeriscape Garden Open House

- and Unthirsty Plant Sale to learn how they can conserve water through 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. Visitors were also treated to free educational workshops and classes on xeriscaping, composting, and rain barrel catchment systems, just to name a few. Other activities included keiki games, keiki garden planting, a scavenger hunt in the three-acre demonstration garden, and a free mulch giveaway.
- During the summer months, television and radio public service announcements encouraged consumers to use the water they need, but not to waste it. The water conservation media campaign helped customers understand the importance of sustaining Oahu’s groundwater resources and provided easy tips for residents to reduce daily personal water use.
 - Other public education programs, such as the year-round facility tours program, various outdoor water conservation classes offered throughout the year at the Halawa Xeriscape Garden, and numerous school presentations and event educational booths also helped teach thousands of Oahu’s youth and the general public about the island’s finite water supply. More information about the BWS’s educational programs can be found at www.boardofwatersupply.com.
- The BWS understands its responsibility includes protecting and preserving the quantity as well as the quality of our island’s drinking water supplies through compliance with all federal and state safe drinking water regulations and the installation of new and replacement water treatment facilities.



Ensuring Water Quality. Board of Water Supply chemists and microbiologists understand the importance of their roles in providing safe drinking water to Oahu residents. Each year they conduct thousands of water quality tests and incorporates state-of-the-art techniques and procedures.

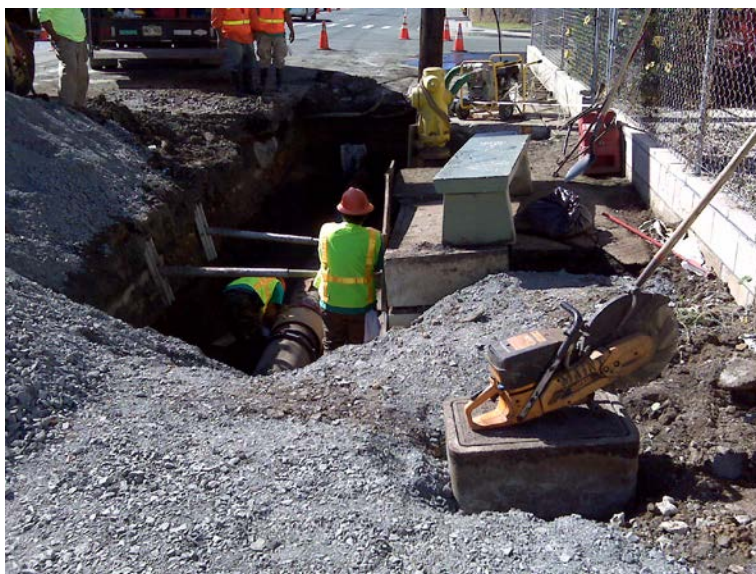
- In FY 2010-2011 the BWS conducted 27,457 water quality tests on various samples collected from its water sources, distribution system and treatment facilities to ensure all water served is safe to drink.
- In June 2011, BWS completed its annual production and delivery of the Consumer Confidence Report (CCR), also known as the Water Quality Report, to all BWS customers. The report provided information on the quality of the water delivered from the BWS system and was mailed to all customers on record. The report is also available on the BWS website at www.boardofwatersupply.com. The department also placed ads in Honolulu newspapers, including various ethnic language publications, to inform community members of the distribution.

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 improving its core services, by addressing aging infrastructure and ensuring the reliability and quality of water provided to all customers in the City and County of Honolulu.

- The BWS implemented a five percent water rate increase on July 1, 2010. The additional revenue was necessary to fund infrastructure repair and replacement programs and to keep up with the rising cost of delivering water to customers.
- On July 1, 2010, the BWS implemented a power cost adjustment to help pay for unexpected electrical cost surcharges incurred during the prior fiscal year (FY 2010). The power cost adjustment was 2.8 cents for every 1,000 gallons of water used and is reviewed annually so that the adjustment only recovers unanticipated energy cost surcharges from the prior fiscal year.
- A total of more than \$26.3 million in construction contracts and nearly \$4.3 million in professional services contracts were awarded as of June 30, 2011. The major projects include the following:
 - Aging and corroded water mains were 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 were replaced and new hydrants were installed to improve fire protection and ensure compliance with current standards. Water main installation was recently completed in the Pacific Heights area and contracts were awarded by the BWS for water main construction projects in downtown Honolulu, Hawaii Kai, and Mapunapuna. Design work was awarded for water main replacement in advance of the City's Department of Design and Construction reconstruction of concrete pavement in the Aina Haina, Alewa Heights, Punchbowl, Kaimuki, Manoa, and Waialae areas.
 - The Capital Projects Division continued to identify deficiencies and improve the appearance and integrity of aging BWS water facilities. Such facilities included water reservoirs, well and booster stations, and the administrative offices belonging to the Department. During this fiscal year, new construction contracts

- were awarded to repair, renovate, repaint and/or reroof Aiea 497 Reservoir, Aiea 977 Reservoir, Aina Haina 395 Reservoir, Alewa Heights 850 Reservoir, Barbers Point 215 Reservoir Numbers 1, 2 & 3, Beretania Pump Station, Diamond Head 180 Reservoir, Halawa Booster No. 1, Kahana 315 Reservoir, Kaonohi Booster No. 2, Makakilo 675 Reservoir No. 1 & No. 2, Mililani 994 Reservoir No. 1 & No. 2, Newtown 285 Reservoir, Niu Valley 170 Reservoir, Nuuanu 405 Reservoir, Nuuanu 640 Reservoir, Pearl City 385 Reservoir, Punchbowl 180 Reservoir, Roundtop 705 Reservoir, Waiau Booster No. 2, Waialae Iki 1300 Reservoir, Waipio Heights 395 Reservoir, and Wilder Wells. New design contracts were awarded for repair of various BWS facilities, including Diamond Head Line Booster, Halawa Shaft and Garden, Makaha Shaft, Makiki 180 Reservoir and Booster Station, Maunaolu 530 Reservoir, Niu Valley Line Booster No. 1, Wahiawa 1075, Makakilo 920, and Waipahu 228 No. 2 Reservoir. A slope stabilization contract was awarded for the Hahaione 500 Reservoir, Kalama 170 Reservoir, Kamehame 500 Reservoir, and Waialae Iki 1080 Reservoir sites.
- Pump and pump station projects ensure the dependable service and operational efficiency of the Department's many well pump and booster stations. This year, construction contracts were awarded for the renovation of the mechanical and/or electrical systems at Aiea Wells, Beretania Complex, Farrington Line Booster, Hawaii Loa Booster Numbers 1, 2 & 3, Kahaluu Well, Kahuku Wells, Kuliouou Line Booster, Makaha Well VI, Punaluu Wells II, Wahiawa Wells I, Waialua Wells, Waipahu Booster No. 1, and Waipio Heights Wells I. Renewal projects were completed at Aiea Gulch Wells, Barbers Point Line Booster, Hoaeae Wells, Kahuku Wells, Kalauao Wells, Kunia Booster, Manoa Well II, Mililani Wells III, Palolo Wells, Waiau Wells, and Waipahu Booster.
 - The BWS is actively designing and installing improvements to eliminate pollutant runoff from its corporation yards as identified in the BWS's Storm Water Management Plan. A design project is underway for improvements at the Beretania Complex, and at the Manana, Wahiawa, and Heeia Corporation Yards.
- 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. The BWS crews respond 24 hours a day, seven days a week to water emergencies. In calendar year 2010, BWS employees responded to a total of 331 main breaks or about 16 breaks per 100 miles of pipeline. According to the American Water Works Association, water utilities nationwide should strive for roughly 25-30 breaks per 100 miles of pipeline. The BWS ratio was better than the national benchmark, 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. In addition to working on pipeline repairs, 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 as quickly as possible to allow normal traffic to resume.



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

- The BWS is replacing its 14-year-old customer information and billing system with a state-of-the-art Customer Information System (CIS). The CIS system will provide BWS customer service representatives and other users with a system that is more reliable, faster, easier to learn and use, provides more complete customer information and increased functionality. The CIS system will also provide additional features for customers such as enhanced payment options.
- The BWS's nationally recognized web-based GIS System has been upgraded and gives department users access to updated imagery, enhanced functionality, and faster performance. The ongoing Global Positioning System (GPS) asset collection and verification project that started in Halawa has progressed clockwise around the island to Sand Island and Kalihi. To date, 221,032 BWS assets have been located and mapped and more than 32,322 asset locations (e.g. meters, valves, hydrants, and manholes) have been added. Many of these assets had been asphalted over, buried, overgrown with brush, or never spatially inventoried as BWS equipment.



Asset Management. *Contractors help map BWS assets using Global Positioning System technology.*

- The BWS has implemented a program to “virtualize” its computer servers, reducing the number of servers from over 60 to four. This consolidation of many physical servers into virtual servers running on a small number of hardware systems has significantly reduced electrical power, air conditioning load and physical space requirements in the computer center. The virtual servers are also more fault-tolerant and easier to maintain and support.
- The BWS is replacing desktop personal computers (PC) with “thin-client” systems. The thin-clients that run PC applications on computer servers are less expensive, use less power, take up less space, and are much easier to install, maintain, and support than desktop PCs.
- The BWS replaced aging security camera systems at key pump stations and reservoirs with state-of-the-art digital systems. These new systems are networked based and provide higher quality video images, wider coverage, enhanced functionality, significantly improved detection capability, and greater reliability. The new camera system greatly increases the BWS’s ability to detect and respond to intruders.
- The BWS wireless network project continues with the completion of a high speed wireless backbone on the leeward side of the island from Koko Head to Makakilo. The wireless backbone connects relay sites, the main office at Beretania, BWS corporation yards, and the BWS disaster recovery center near the Airport at speeds similar to fiber optic connections. Plans for the 2012 fiscal year call for the installation of wireless links from these relay sites to BWS pump stations and reservoirs from Hawaii Kai to Honouliuli for security camera communications and to replace aging SCADA (Supervisory Control and Data Acquisition) telephone lines. The wireless links are more cost effective and provide faster speeds than wired connections.

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 the third BWS objective of organizational sustainability.

- The BWS successfully processed more than 222,450 customer calls and inquiries regarding bill payments, delinquent bills, set-up and closing of water service, or new water services during the fiscal year. The BWS employees were consistently commended for their efforts to resolve customer’s needs in a timely and efficient manner.
- The BWS worked continually with the City Department of Emergency Management and Hawaii State Civil Defense to insure it has the plans and procedures in place to respond effectively to emergency situations such as a tropical cyclone, an island wide power outage, pandemic flu, tsunami, or other events.
 - In May 2011, the Department completed a revision of its Emergency Response Plan (ERP) which contains the key action steps, roles, responsibilities, and strategies to recover from, and restore water service in the event of a natural or man-made disaster. The ERP also contains a Continuity of Operations Plan

(COOP) that identifies the essential functions, key personnel, and orders of succession during a disaster that take effect so that BWS can staff and operate the water system.

- The pipefitters of the Field Operations Division maintain the BWS distribution infrastructure. Pipefitters are a specialized trade and BWS positions are filled through a trades apprenticeship program. This year, BWS worked with the City Department of Human Resources to conduct a Trades Apprentice recruitment for pipefitters. Normally handled by the City's Department of Human Resources, the BWS Human Resources Office (HRO) assumed responsibility for processing the recruitment. This entailed coordinating test sites, monitoring six written tests, and notifying applicants of their eligibility. HRO processed more than 650 applications and tested 400 applicants. The three months of work resulted in nearly 150 qualified candidates. The list of candidates will also be used to fill other city departments' needs.
- The Upward Evaluation Program that provides subordinates an opportunity to evaluate and provide constructive feedback to their immediate supervisor is unique to the BWS. In our second year, program participation reached 43 percent.
- In order to meet the challenges of emergencies as a major utility, the BWS committed to having all of its employees complete basic certification under the Federal National Incident Management System (NIMS). With four employees remaining to complete certification, the BWS achieved a 99 percent compliance rate.
- The BWS continues to be an active participant in the City's successful Po'okela Internship Program. The interns have been a tremendous benefit to the BWS, providing needed data collection, research, and analysis services via challenging work projects. In return, the interns gained valuable knowledge about BWS operations and the complexity of providing water to our customers. A few of the interns have continued employment with BWS after graduation.



Po'okela Internship Program. *Interns learned about the BWS and where Oahu's water comes from during a tour of Waihee Tunnel.*

- Open communication with public employee union shop stewards of the Hawaii Government Employees Association (HGEA) and United Public Workers (UPW) continues to foster improved labor-management relationships. The meetings are a forum where stewards are able to obtain clarification and guidance on personnel-related questions and concerns. These sessions help to limit and resolve misinformation and clarify issues that could turn into grievances.
- Throughout the year, the BWS regularly recognized and expressed its appreciation for its employees' accomplishments.
 - For the second successive year, the BWS Women Pipe Tapping Team won the National Championship title for the Women's Division at the American Water Works Association's annual conference in Washington, D.C. in June 2011. The pipe tapping contest tests the skill, strength, and speed of participants who drill into a live water main and set up a connection to a working faucet in the fastest time while maintaining industry standards. The pipe tapping team members Susan Oda, Water Meter Mechanic; Danielle Ornellas, Multi-Skilled Worker III; Carolyn Sawai, Civil Engineer IV; and Coach Gary Fernandez, Scheduler, turned in a winning time of two minutes, 35.81 seconds (2:35.81).
 - The BWS is staffed with career employees. About 26 percent of BWS employees have more than 25 years of city service. Over the past year, 22 employees retired from service.