BOARD OF WATER SUPPLY

Eddie Flores, Jr., Chairman
Charles A. Sted, Vice Chairman
Herbert S. K. Kaopua, Sr.
Darolyn H. Lendio
Rodney K. Haraga, Ex-Officio
Larry J. Leopardi, Ex-Officio
Clifford S. Jamile, Manager and Chief Engineer
Donna F. K. Kiyosaki, Deputy Manager and Chief Engineer

POWERS, DUTIES AND FUNCTIONS

The Board of Water Supply (BWS) manages Oahu's municipal water resources and distribution system. This City and County Department provides residents with a reliable system for safe drinking water. Water sales revenue finances the Department's operations and projects.

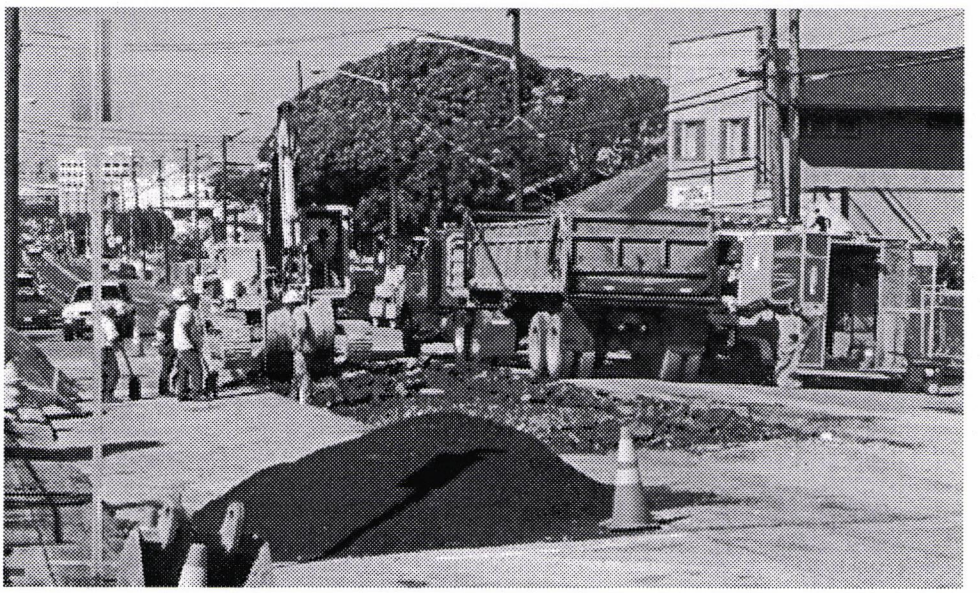
A seven-member Board of Directors presides over the semi-autonomous agency and determines its policies. Five members are nominated by the Mayor and approved by City Council. The remaining two serve in their capacities as the Director of the State Department of Transportation and the Chief Engineer of the City Department of Facility Maintenance.

The Board appoints the BWS Manager and Chief Engineer to oversee the agency's overall operations and the Deputy Manager's office. The Board-appointed Deputy Manager, with the assistance of a Chief of Staff officer, supervises the day-to-day functions and the Department's support offices – Community Relations, Compliance, Human Resources, and Security; and its Divisions – Business Development, Customer Care, Engineering, Field, Finance, Information Technology, Operations, and Water Resources.

HIGHLIGHTS

The BWS manages Oahu's groundwater sources and distribution system to ensure a sustainable resource that meets current and future customers' needs.

During Fiscal Year (FY) 2004, the BWS responded to 400 main breaks, 1.25 percent less than the average number (405 per year) recorded for the preceding ten-year period.



Emergency repair. This past fiscal year, the BWS responded to 400 main breaks such as this one on Liliha Street.

In May 2003, Governor Linda Lingle signed into law Senate Bill 363, creating Act 40, which allowed the BWS to start some of its Experimental Modernization Project (EMP) pilot programs.

EMP's goal is to create a more effective and efficient government organization. One of its provisions allows the BWS to consult directly with public worker unions.

When Act 40 was enacted, work resumed on the previously stalled Multi-Skilled Worker pilot program, which was launched in March 2004. Act 40 also allowed the BWS to contract executive-level personnel with specialized

Drought announcement. Five years of low rainfall coupled with record water use prompts Manager and Chief Engineer Clifford Jamile (right) to ask BWS customers to help reduce consumption through a voluntary irrigation schedule, for lawns and gardens. It lasted from August through November 2003.

expertise and knowledge to assist existing staff with achieving reorganization goals and objectives.

In July 2003, Oahu water production hit an all-time high of 180 million gallons per day (mgd) while key monitor station head levels fell almost two feet since May 2002. In August 2003, the BWS called for a 10 percent reduction from all water users through voluntary conservation to allow wells to recover and rebuild reserves.

Under a voluntary irrigation schedule, customers were asked to water their lawns on Sundays, Tuesdays, and Thursdays, between 12:01 a.m. and 10 a.m. and 6 p.m. to midnight. Government agencies were given a Monday-Wednesday-Friday schedule to avoid personnel overtime costs. The Department asked for deferment of lawn installations and fundraising car washes until the water situation improved. Voluntary measures were lifted during the last week of November.

At an annual meeting in January 2004, the administration showcased notable departmental accomplishments, introduced the team of senior staff officers hired under the EMP, and discussed a renewed focus on sustainability as the basis of BWS's water management efforts.

Forming partnerships with community groups to promote conservation education and watershed protection continued:

The Department coordinated a Waihee watershed cleanup for "Make a Difference Day" on October 25, 2003, as well as the signing of the Waihee watershed partnership memorandum of understanding (MOU). The MOU created an alliance between the BWS and the Kualoa Heeia Ecumenical Youth (KEY) Project to preserve, protect and develop stewardship of the Waihee ahupuaa.

In April, the Kuleana Project — a joint effort between the BWS, the community association Malama O Manoa, and 12 public and private schools in the district to educate area residents how to be better stewards of Oahu's water — received Federal recognition as a model program by the Environmental Protection Agency.

This past fiscal year, work began on revamping the existing BWS external and internal websites. The renewed www.hbws.org website has easy-to-navigate features and is designed to be more user-friendly.

The BWS water bill was redesigned to clearly separate water and sewer charges, and provide more meaningful billing information. BWS customers will start receiving their re-designed bills early next fiscal year.

The Department recognized the accomplishments of several employees this year:

In January, the Hawaii Society of Professional Engineers named civil engineer Lorna Heller as its 2004 Young Engineer of the Year.

Heller works in the Long Range Planning Section of the Water Resources Division. Her tasks include projecting population and water use rates to help schedule and coordinate projects necessary to meet future water demand, assisting with the Kakaako District Chilled Water project, and the Deep Ocean Water Application Project.

Heller has worked in various BWS engineering Sections, and is active within the Board and the community as a BWS representative at several Neighborhood Boards, a director on the BWS Federal Credit Union Board of Directors, and a judge at the State Science Fair.

In November, BWS employees of the year, civil engineer IV Carolyn "Cat" Sawai and civil engineer VI Jason Takaki were nominated to the 2003 City Department Employee of the Year competition.

Sawai, who started at the BWS as a civil engineer I in 1991, works in the Water Systems Planning Section of the Water Resources Division. She helps to create and maintain the computerized hydraulic model that evaluates existing water systems and is used to determine the effect of adding or removing waterlines, production facilities, and water related equipment, on the overall water system.

Thanks to her solid grasp of "the big picture" Cat is involved with projects that support and enhance the Department's optimization efforts, some of which she does on her own time.

These activities include heading up the Windward Leak Detection program, increasing communication between, co-editing the COMXtra newsletter, and improving the training and preparation of future engineers.

In addition, Sawai is on the Women's Pipe Tapping team that took second place at the national competition for two years in a row in 2003 and 2004.

She's a generous Aloha United Way supporter, participates in charity runs, is an active member of the American Water Works Association (AWWA) where she organizes the annual food booth fundraiser for Water for People, and has helped coordinate some Big Brother/Big Sister events.

Jason Takaki, who started with the BWS in 1992 as a civil engineer III, heads the Support Section of the Engineering Division where he supervises nine engineers and support technicians.

He oversees preparation of the annual Research and Facility Improvement Program (RFIP) budget and prioritizing of pipeline replacement and facilities repair projects that impact the overall condition of the water system in the future.

Takaki coordinates construction projects with other utilities and government agencies, arranges and gathers the plans and specifications for projects for competitive bidding, and maintains the water system technical and materials standards. He also maintains the water system's as-built records and oversees the aesthetic appearance of all BWS facilities.

In addition, Takaki earned his Master's degree in Business Administration while working full-time at the BWS. Active in the AWWA–Hawaii Section, he served one term as Secretary.

Both Cat and Jason attended the AWWA national conference in Orlando, Florida, in June.

Community Relations Office (CRO). The CRO educates BWS customers about Oahu's water supply through programs that promote personal stewardship of this finite natural resource. CRO also facilitates positive interaction between the Department, the community and the news media.

The office maintained its regular schedule of outreach activities, with some minor changes:

"Laau lapaau" (the art of healing through plants) was a new topic offered at the 15th Annual Unthirsty Plant Sale, sponsored by the BWS and the Friends of Halawa Xeriscape Garden, which was held in August.

In September, the BWS printed and distributed 8,000 Teacher's Water Conservation Calendars and stickers. Artwork illustrated the theme, "No Effort is Too Small to Use Water Wisely."

The 14th Annual Detect-A-Leak Week program, observed from March 7 to 13, urged water users to check for property leaks. Sheraton Waikiki Hotel, the Chamber of Commerce of Hawaii, and the Sierra Club supported the program.

The 2004 Water Conservation Week Poster Contest drew more than 2,700 entries from 79 public and private school students island-wide in grades kindergarten through six with its theme of "Conserving Water for Life." Winning and honorable mention entries were displayed at City Hall's Lane Gallery from May 1 to 16.

In April, the BWS coordinated a workshop for Neighborhood Board members to educate them about water and enable them to become better advocates for their constituents. About 50 residents, representing most of Oahu's Neighborhood Boards, attended the workshop.

In July, BWS launched a public information water conservation campaign that incorporated the use of television, radio, print, and other media. The campaign's goal is to reduce consumption by all water users by 10 percent.

Compliance Office. The Compliance Office was created this past fiscal year to provide legal counsel and advice to the BWS, its officers and employees. It also ensures compliance with federal, state and local laws, the recognition of best practices, and the limitation of exposures and liabilities of the BWS. The Office of Risk Management, under the Compliance Office, assesses the BWS's risk exposure, determines the appropriate risk-financing program, and manages claims filed against the Department.

Human Resources Office (HR). The HR, with its staff of eight permanent employees, is responsible for administering and managing the human resources program for 538 regular, full-time employees.

During FY 2004, the BWS averaged 538 regular, full-time employees; 39 new employees were hired, and 14 retired. At the end of the fiscal year, June 30, 2004, there were a total of 538 regular, full-time employees in the BWS.

Total workers' compensation cases decreased by 39 percent from the same time last year with $750,774 in expenditures.

During FY 2004, the HR staff assisted the Maintenance Division in implementing its Multi-Skilled Worker (MSW) Experimental Modernization Project by negotiating supplemental union agreements that modified working conditions and salaries paid. The experimental program was implemented in March 2004 and is well underway.

In addition to regular human resources program administration, the BWS HR coordinated the Blood Bank and Heart Walk Drives as part of our overall support of the community.

Training classes, workshops, conferences, seminars, and career development events continue to be well attended in areas such as job-related skills and supervisory management; retirement and financial planning; and drug abuse, workplace violence, and sexual harassment awareness prevention classes.

HR also coordinated the Department's programs for the Employees of the Year Recognition and Service Awards. During the fiscal year, 11 employees received 25-year service awards and seven received 35-year service awards. By year's end, 122 employees had acquired 25 or more years of government service.

The Driver Improvement Coordinator continued training in the safe operation of vehicles and equipment, with emphasis placed on the specialized training of the MSW team. Twelve members of the MSW Team have been trained and licensed in Type "A" Commercial Driver's License (CDL). As part of the Drug and Alcohol Program, random tests continue to be performed in conformance with federal CDL requirements.

The Safety Officer reports enhanced safety procedures to address the dangers faced by workers when working in and around electrically energized water pipes. These new safety procedures have been developed through the efforts of the employees working in pipefitting, the Safety Office, and line supervisors, with technical assistance from Hawaiian Electric Company.

Security Office. During the past fiscal year, the Security Office focused on the Department's high-priority initiative to protect the water supply from potential terrorist acts and respond to other emergencies.

The Department formed a security council that, in partnership with the Security Office, has developed comprehensive strategies to protect the water system and limit negative effects that could stem from a serious incident.

The Security Office has been working with various BWS Divisions to review, rewrite, and rehearse the Department's plans for emergency response, evacuation, and infrastructure protection. The office has joined forces with the Honolulu Police and Fire Departments and the City and State Civil Defense in framing prompt and effective responses to various crises.

BUSINESS DEVELOPMENT

The Business Development Division researches and pursues opportunities to expand and market the Department's water utility business.

In FY 2004, the Department performed a technical assessment of the water chlorination equipment and procedures for the Commonwealth Utilities Corporation Water Division in Saipan. It also helped American Samoa Power Authority set up a test bench for calibrating water meters. These efforts are part of the Department's continuing work to market technical assistance in the Asia Pacific region, and increase BWS's presence and build lasting business relationships in the region.

The Department also continued its work on strategic initiatives to expand its service area by submitting proposals to own and operate military water systems on Oahu. These actions are a direct response to Department of Defense initiatives to privatize military water and wastewater systems nationwide. In the past year, the Department began discussions with the Army, Air Force, and Navy representatives.

CUSTOMER CARE

The Customer Care Division is responsible for handling the majority of the Department's contacts with consumers.

The Department added 2,182 services during the year. There are 164,310 active services in the system, which includes 162,310 domestic services and 2,000 fire services.

The **Investigations Section** handled various assignments including 11,561 of abnormally high water bills. The staff also handled 1,228 leaks and 12,413 general jobs, including requests for locating of water mains.

The **Customer Service and Records Section** personnel received an average of 4,514 calls each month from customers requesting various services and information.

Service Engineering Section's personnel reviewed 11,238 building permits, processed 2,345 water service applications, and reviewed 212 construction plans.

The **Collection and Credit Section** visited 20,925 delinquent customers. The Cashiering Unit collected $112,826,235.58 in water bill payments and $101,903,879.69 in sewer payments for the year. As of June 30, 2004, there were 39,187 customers on Automatic Bill Payment, representing 24.7 percent of BWS customers.

During the past fiscal year, **Plans Review Section** reviewed and approved various water system improvements for large subdivisions such as Ewa by Gentry, Mililani Mauka, Ocean Pointe, and Makakilo subdivisions; large meter installations for commercial and industrial developments throughout the island; and various road improvements from City, State, and private utility companies.

The **Project Review Section** reviewed projects and water master plans for Mililani Mauka, Ocean Pointe, Kakaako, and Ko Olina.

The **Cross-Connection Control Unit** processed 1,203 building permit applications, requiring 110 backflow prevention assemblies to be installed.

In addition, multiple field inspections addressed consumers' concerns regarding the BWS's Cross Connection Control and Backflow Prevention Annual Testing requirements

The Unit's Annual Testing Program mailed 3,574 first-notice test forms and 1,503 second notices. An average of 298 test forms were mailed per month for the past fiscal year.

The **Revenue and Customer Account Section** continued to conduct the Department's water billing operations and its related functions, which include meter reading, pre-auditing water billing data, and maintaining accounts receivable records. The Section also reviews financial and statistical reports, is responsible for mailing department correspondence, and maintains the City Department of Environmental Services' sewer accounts-receivable records.

As of June 2003, when installation of electronic meter reading devices was completed, residential meters are being read automatically.

The **Meter Shop** personnel completed 976 service reports to verify and repair the automatic reading meters, and also obtained follow-up meter readings. The field crews assigned to the Meter Shop provided maintenance services to 1,135 large meters (meters larger than two inches), and repaired 79 large meters.

ENGINEERING

The Engineering Division ensures that all improvements to Oahu's municipal water system are designed and constructed in compliance with the Department's Water System Standards.

Engineering personnel reviewed plans and specifications and managed water system improvement projects performed for the Department by consultants. Engineers also performed the in-house design of plans and specifications for water main replacements and facility repair and renovation projects. BWS inspectors supervised the construction of these projects to ensure the improvements conform to water system standards.

One of the major functions of Engineering Division is the implementation of the Department's Capital Improvement Program (CIP) and Research and Facility Improvement Program (RFIP). The CIP includes the design and construction of new production, storage, and treatment facilities and new water mains. The RFIP includes the repair, maintenance, and upgrade of aging water mains and facilities. Through Engineering, the Department awarded a total of nearly $49 million in construction contracts and over $20 million in consultant contracts as of June 30, 2004. The following summarizes projects awarded and construction completed by the Department in FY 2004:

Construction was recently completed on monitor wells in Laie, Kaluanui, and Kahuku. A new construction contract was awarded to drill a monitor well in the Haleiwa area. These deep wells help the BWS monitor the condition of the fresh water lens. The data from these wells will help BWS in the management of Oahu's groundwater resources.

To meet the increasing demands on the potable water system, BWS continues to explore and promote the use of recycled water as an alternative water source. Recycled water transmission mains were recently installed in Kapolei. New construction contracts were awarded to install recycled water mains in Kapolei and upgrade the recycled water system in the Honouliuli area.

A construction contract was awarded for the Nanakuli 242' Reservoir, a new 2.0 million gallon (MG) reservoir, to increase the storage capacity in the Leeward Oahu water system. Construction was completed on the Makaha 242' Reservoir No. 2, a new 2.0 MG reservoir, and the Kailua 272' Reservoir, a new 4.0 MG reservoir. Situated at strategic locations, these reservoirs will ensure a reliable supply of water and maintain adequate pressures within the water distribution system.

Aging and corroding water mains are systematically replaced throughout the municipal water system to reduce main breaks, improve system reliability, and ensure sufficient pressure during periods of peak demand. Fire hydrants are also installed to provide adequate fire protection. A transmission main project was completed along Kamehameha Highway in Sunset Beach and distribution mains were installed in Kalihi, Kaneohe, Manoa, Newtown, Sunset Beach, Waianae, Waiau, and Waimanalo. New water main construction contracts were awarded for transmission main installations in Aiea, Kalihi, Kapahulu, Keaahala Road in Kaneohe, and Farrington Highway in Nanakuli; and for distribution mains in Aiea, Aina Haina, Haleiwa, Kalihi, Kaneohe, Kapahulu, Manoa, Waianae, Waimalu, Waimanalo, and Waipahu.

Construction contracts were awarded for the renovation of the mechanical and/or electrical systems for Kaimuki Pump Station, Kaonohi Booster No. 1, Koko Head Booster Station, Manoa Reservoir and Booster Station, Punaluu Wells II, Waialae Iki Booster No. 2, Waihee Line Booster, and Waimanalo Well III. Renovation projects were completed for Luluku Wells, Kaluanui Well, Kalauao Springs Non-Potable Water Pump Station, and Kamaile Wells. These projects ensured the dependable service and operational efficiency of the Department's facilities.

Engineering continued its program to identify and improve the integrity and appearance of water facilities showing signs of deterioration. Construction contracts were awarded to repair, re-roof, renovate, and/or improve landscaping and irrigation systems at the Kunia 665' Reservoir, Waihee 265' Reservoir, and the Waimalu Wells I. Construction projects were recently completed at Kaahumanu Wells, Kaamilo 497' Reservoir, Mariner's Ridge 815' Reservoir, and Pearl City 285' Reservoir.

FIELD

The Field Division works to ensure continuous water flow to the Department's 164,000 services. Responsibilities include repairing line leaks; installing, replacing, and enlarging water service lines; performing scheduled preventive maintenance of fire hydrants, waterline valves, and facility grounds and buildings; and 24-hour response to trouble calls and service requests including investigation of leaks, water service closure for repairs, and turn-ons. Other support services include masonry, carpentry, and welding work.

A major Division initiative undertaken this fiscal year was the Multi-Skilled Worker (MSW) Pilot. The Pilot program to change work methods and improve productivity was launched on March 16, 2004 under the EMP.

It is an effort to streamline operations to cut costs and improve customer service. The multi-skilled worker concept combines the pipefitting trade with other support trades: carpentry, masonry, welding, and heavy equipment operating.

The Pilot area extends from Nuuanu Stream to Kamehameha Highway near Waipio, with its baseyard located at the "old" Manana Yard site. There are 28 team members in the Pilot: one Pilot Manager, two Planner Schedulers, and 25 Multi-Skilled Workers.

It is scheduled to operate for a year and, with favorable results, will be rolled out to other geographical areas of the Field Division. Along with the Pilot, a CMMS is also being piloted. CMMS will convert the existing manual work order system to an electronic one to facilitate job tracking and provide real time cost data.

There were 400 main breaks the past year, which is slightly lower (1.25 percent) than the average number (405 per year) recorded for the preceding ten-year period. The Metropolitan (5.9 percent) and

Men at work. Field crews in the Multi-Skilled Worker pilot program undergo extensive training to learn each other's job skills – such as pipefitting, carpentry, masonry, and operating construction equipment – to become proficient in each trade. The goal of the program is to streamline operations, improve productivity and improve customer service.

Central (10 percent) areas recorded less breaks, while the Windward (6.6 percent) and the Waianae (7.8 percent) areas recorded slightly more breaks.

The Department was once again well represented in the National AWWA Pipe Tapping Contest held in Orlando, Florida, with a men's and women's team. The 2001 National Championship women's team made up of employees — pipe person Anna Tanaka, tappers Carolyn Sawai and Danielle Ornellas, and coach Gary Fernandez — placed second in the competition with a time of 1:55.37. The Louisville Water Company team from Louisville, Kentucky, had the winning time of 1:53.00.

The men's team made up of employees — pipe person Andrew Freitas, tappers Aaron Asato and Everett Arquero, and coach Glenn Ah Yat — also did well with a time of 1:30.41. The men's title went to the team from Birmingham, Alabama with a time of 1:15.96.

The **Distribution Branch**, which consists of three Sections — Maintenance, Construction, and Service and Meters — covers metropolitan Honolulu from Makapuu Point to Halawa Valley.

Maintenance Section crews repaired 13 main breaks on mountain pipelines and fire hydrant laterals. The welder completed 358 general welding projects. Valve crews inspected and maintained 7,907 valves and 661 air valves, repaired or replaced 416 main valves and 9 air valves, and raised 51 manhole frames and covers to street grade.

In conjunction with work done by contractors, the valve crews conducted 82 valve checks and water closure surveys and made four live taps: one 12-inch tap and three 6-inch taps.

Hydrant crews inspected and maintained 6,016 hydrants; repainted 6,016 hydrants; repaired 340 hydrants of which 80 were damaged by motorists; plotted 43 new or relocated hydrants; and replaced four hydrants in the Metropolitan Honolulu area.

Metropolitan grounds keeping crews continue to provide excellent care to the 102 BWS facilities in the metropolitan area.

Construction Section crews repaired 185 main breaks on pipelines 4-inches and larger in diameter and 1,565 service leaks. The number of both main breaks and service leaks are expected to decline over time as the BWS continues programs to replace old galvanized services and cast iron mains.

Masonry crews maintained and repaired BWS facilities and provided masonry support to other field Units; made 154 road cuts for service renewals and main break road patches; and repaired sections of 212 sidewalks, 56 gutters, and 61 driveways.

Carpenters repaired vent screens, booster housing screens, windows, doors, and roofs at various sites throughout the island. They also performed other regular duties involving the repair, upgrade, and maintenance of BWS facilities and installed shoring in conjunction with main breaks repairs.

Significant pipe repairs completed by the Construction Section included:

July 22, 2003. Work started at 1:47 p.m. near Kamehameha Highway under the H-1 on-ramp heading west to the airport viaduct to repair a 42-inch main break. BWS crews were able to restore water service by welding a steel plate on the concrete cylinder main on July 23, 2003, by 1:00 a.m. the following morning.

September 8, 2003. Work started at 1:46 p.m. to repair a 12-inch main on Liliha Street. Crews spliced nearly 50 feet of pipe to repair a horizontal split and punctures on the main. Due to extensive damage to the road, Liliha Street was closed between Bates Street and Judd Street for nearly 24 hours. Grace Pacific Corporation repaired the road.

January 18, 2004. Work started at 2:50 a.m. and was completed by 7:00 a.m. to clamp a 12-inch circular main break on Ala Moana Boulevard between Ena Road and Hobron Lane.

March 3, 2004. Work started at 7:25 a.m. and was completed by 1:10 p.m. to repair a puncture on a 12-inch main break on Kapiolani Boulevard (west-bound) near Date Street. The crew replaced an 8-foot section of the pipe and Grace Pacific Corporation repaired the road.

June 26, 2004. Work started at 8:30 a.m. to fix a blowout on a 12-inch main on Kapiolani Boulevard between Keeaumoku Street and Kaheka Street. The crew clamped a puncture on the main and Grace Pacific Corporation repaired the road. Repair forced closure of the eastbound lanes due to extensive pavement damage.

Service and Meters Section comprises the Service Connections and Building Maintenance Units. Service Connections Unit crews installed 120 new services, repaired 25 service leaks, relocated 26 services, resized 52 services, and replaced 269 defective meters.

The Service Connections Unit also completed 4,473 field service reports to verify and repair leaks, adjust and replace meter boxes, remove dirt and roots from meter boxes, and obtain follow-up meter readings.

The Building Maintenance Unit performed custodial and building maintenance services for the Beretania Complex, Kalihi Corporation Yard, and Fred Ohrt Museum. The Unit's building maintenance repairer fixed various plumbing fixtures island-wide, painted over graffiti in the metropolitan area, and made miscellaneous repairs to facilities.

Suburban Field Services (SFS) pipefitting crews — operating from corporation yards at Manana, Waianae, and Wahiawa — repaired 144 main breaks, 646 service leaks, one air relief valve, installed 1,090 new services and one meter bypass, renewed 235 feet of service mains and 58 old and leaking galvanized services with copper pipe, and placed 175 additional fire hydrants in service.

They also cut off three abandoned services at the main; relocated 32 services/meters; enlarged 38 services/meters; ordered on/off 157 and turned on/off 1,361 services; inspected and maintained 5,045 fire hydrants, 6,058 gate valves, and 726 air relief valves; and raised 62 manhole frames and covers to grade.

Crews responded to 6,326 trouble calls, followed up on 3,161 meter/meter box and service-related problems (field service reports), and replaced 93 defective meters.

Main breaks increased by 7.6 percent and service leaks decreased by 17.2 percent. Installation of new services decreased by 34.2 percent, service renewals decreased by 60.8 percent, and replacement of defective meters decreased by 77.5 percent.

Significant pipe repairs completed by SFS personnel included:

Patches welded on a 24-inch concrete cylinder main break in June 2004 at Farrington Highway and Piliokahi Street.

Patches welded on a 24-inch concrete cylinder main break on Old Farrington Highway. This section of main is scheduled for replacement soon. Traffic was not disrupted, since this portion of Farrington Highway is no longer in use.

Other significant work done by SFS personnel included:

Grading and paving of a large, unimproved area adjoining the existing Navy warehouse to relocate the waste storage away from residential areas and provide for a large sump to wash down dump truck beds and dump spoil from a vacuum excavator budgeted for purchase in FY 2005.

Clearing of overgrowth and trimming of trees in preparation for Department of Health Sanitary Surveys.

Corrective work for Automatic Meter Reading (AMR) deficiencies from 1,732 jobs in FY 2003 to 3,161 jobs in FY 2004.

Continued maintenance of 127 SFS facilities during the regular workday and on planned overtime.

Clearing overgrowth from facility access roads with the hedge/verge brush clearing equipment and reducing expenditure of funds to contract this type of work.

Painting over graffiti expeditiously to minimize its effect.

Repairing damage and replacing landscaping caused by main breaks.

Windward Section crews repaired 58 main breaks on pipelines 4 inches and larger in diameter and 34 service lateral leaks as compared to 63 main breaks and 34 lateral leaks last year. Main breaks were 6.6 percent higher than the past 10-year moving average while lateral leaks were 72 percent lower. The Windward district normally has about 54 main breaks and 122 service lateral leaks per year.

The Section continued work on its service renewal program and replaced one galvanized lateral with corrosion-resistant copper pipe. Pipe crews also enlarged 23 copper services, installed 98 new services, replaced 92 malfunctioning meters, and responded to 864 trouble calls and 508 meter-related field service reports.

Valve and hydrant maintenance crews met or exceeded their goals, servicing 2,655 valves and 3,400 hydrants to ensure the reliability of the system for isolating mains during emergencies and for fire fighting capability.

Grounds crews kept pace with the work in the Windward area and maintained all facilities as scheduled.

FINANCE

The Finance Division provides financial support for the Board of Water Supply. In FY 2004, the Division underwent major restructuring. Functions now include: General Accounting, Payroll, Accounts Payable, Planning and Analysis, Inventory, Fixed Assets, Treasury, and Purchasing. As a result of the restructuring, Finance staff took over some functions that were previously handled by the City and County of Honolulu.

In FY 2004, the Division concentrated on implementing the Networked Automated Ledger for Utilities (NALU) system.

The existing manual and computerized accounting systems were converted to a completely integrated computerized system using the JD Edwards accounting software. NALU went live in November 2003.

One of the major benefits of the new system is that financial statements are produced within weeks of the close of the month, rather than three months after the close of the month under the previous system.

The Finance Division took the lead role in the Board's $100.0 million water revenue bond issue in January 2004.

INFORMATION TECHNOLOGY (IT)

The IT Division provides complete computer, phone, and network related services to the Department. Last year, this Division:

Redesigned the water bill to provide more information to BWS consumers. The Division continues to provide billing and customer information services to the Department of Environmental Services (wastewater); Board of Water Supply, County of Maui; and the Department of Water, County of Kauai.

Implemented the Networked Automated Ledger for Utilities (NALU) system, the new J.D. Edwards financial package. This suite of software now handles all of the Department's Purchasing, Payroll, Job Costing, Inventory, HR, Cash Management, General Ledger, Accounts Payable, Fixed Assets, and Budget record keeping. The Applications staff was instrumental in converting data, configuring the software, writing reports, optimizing the database tables, administering the system, writing work rules, etc.

Completed Phase II of the Honolulu ONline Utilities (HONU) system, a web site that links BWS's asset and customer information, and makes it available to clients on a map. This web site won a Special Achievement in GIS Award (SAG) from ESRI in the previous fiscal year.

Procured, configured, and implemented the new Maximo Computerized Maintenance Management System (CMMS). The GISMO system (its name is a derivative of the software name and IT's integrated GIS system) will handle all the corrective and preventive maintenance work orders from dispatch to completion. It will facilitate better resource usage, capture total job cost, track parts and materials, and provide management and front line supervisors with more information on which to base their operational decisions. GISMO is currently being rolled out to the Multi Skilled Worker Pilot force, with rollout to all other yards and maintenance personnel in future phases.

Completed numerous projects and implementations in support of other Divisions that included upgrading IT network and servers, preparing for disaster recovery, rolling out new applications, working on bar coding and handheld GPS technology in the field, outsourcing printing and mailing services, etc.

The IT group continues to support client units, assisting them in all projects with technical components, procuring and installing new PCs and hardware, Help Desk services, IP Phone support, and providing consulting services wherever needed.

OPERATIONS

The Operations Division continues to monitor and efficiently operate the Department's diverse water system, pumping 146.5 million gallons of water daily.

The Operations Division is composed of the Plant Operations Division, Water Quality, Automotive Division, and the Mechanical/Electrical Engineering Section.

The **Plant Operations Division** consists of the Pumps and Telecommunications Section.

The **Pumps Section** placed new granular activated carbon (GAC) treatment plants at Waialua Wells and Waipio Heights Wells III in service this fiscal year. This brings the total number of GAC contactors to 68. These GAC treatment plants are in Districts 1 (covering Leeward Oahu from Waipahu to Makaha) and 2 (covering from Mililani to the North Shore and through Windward Oahu), where approximately 30 percent of their manpower is spent on water treatment activities

Pumps Section continued to replace existing equipment with more technologically advanced equipment to streamline operations. Staff implemented a programmable logic controller (PLC) and solid state starters in this year's RFIP projects.

The **Telecommunications Section** continued to maintain the telemetry system in support of the BWS's SCADA system, as well as the mobile radio system. This Section is continuing to install security cameras at more BWS facilities.

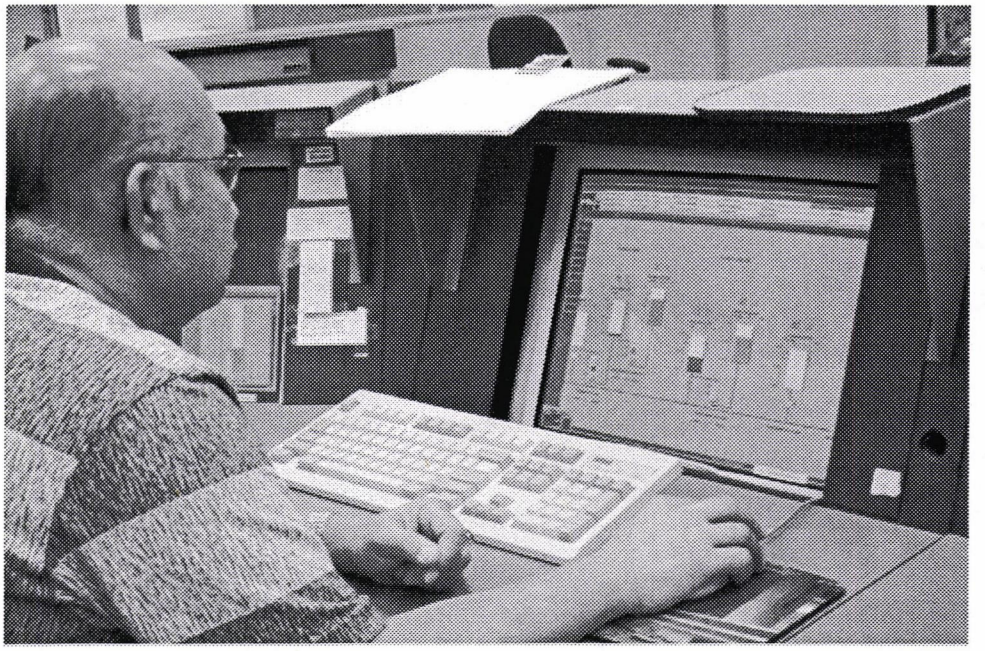
The **Water Quality Section** consists of the Chemical and Microbiological Laboratories.

The **Chemical Laboratory** analyzed 3,315 samples, requiring 9,337 tests during the fiscal year. This included responding to 469 water quality complaints and analyzing 124 seepage investigation samples. Special projects during the past fiscal year included completing radionuclides, asbestos, and Phase II/V sampling for all sources, and completing another cycle of the lead/copper survey.

During the fiscal year, the **Microbiological Laboratory** examined 9,507 water samples for coliform bacteria. Of this total, 6,532 were for regulatory compliance, 1,593 were for new main disinfection, 269 were in response to water

quality complaints, and 1,113 were special investigation and project samples.

During FY 2004, personnel in the **Automotive Division** provided maintenance and repair services for a fleet of 313



Watchful eye. The round-the-clock Control Center staff monitors the Department's water system through the Supervisory Control and Data Acquisition (SCADA) system.

motor vehicles, 67 field construction equipment, and 33 trailers at its repair facility in Pearl City. In addition, plans and specifications were prepared for the procurement of 21 new vehicles of various types, two new compact excavators, two new skid-steers, two new solar-powered traffic message boards, a new forklift, a new light tower, a new 300-gallon water wagon, a new wood chipper, a new vacuum excavation trailer unit, and two new flatbed trailers.

In October of FY 2004, the Division implemented an automated fuel card program through Tesoro Petroleum. This fueling program provides 24-hours-a-day, seven-days-a-week fueling availability at all Tesoro locations on Oahu. Fueling data is downloaded via a website and interfaced with the Department's fleet management system to track fueling history, performance, and costs.

The Automotive staff completed its third year working with the computerized fleet management system. Increased usage of the system has assisted staff in researching fleet repair histories, warranties, and inventories on-line. Complemented with the recent integration of the Tesoro fuel card and Gasboy fuel key automated fueling systems, much of the office operations for fuel management have been streamlined.

The **Mechanical/Electrical Engineering Section** staff completed the Luluku Wells Replacement and Kamaile Wells Replacement construction projects in FY 2004. Construction contracts were awarded for renovation work at Kaimuki Pump Station, Waialae Iki Booster No.2, Koko Head Booster, Waihee Line Booster, Kaonohi Wells and Booster No. 1, and Manoa Booster.

During the year, Operations worked with the Finance Division to implement NALU, the Board's new financial accounting system, and participated in the development of the Operations Division's CMMS.

WATER RESOURCES

The Water Resources Division conducts the planning and outreach needed to provide current and future customers with high-quality service at reasonable costs, while protecting the long-term viability of Oahu's water resources and enhancing the environment.

The **Water Systems Planning Section** evaluated and analyzed options to serve the Hickam Air Force Base, as part of the Air Force's utilities privatization initiative; developed an extended period simulation (dynamic) hydraulic model for the metropolitan 180' system and provided hydraulic evaluations of various RFIP and CIP projects.

Section staff also developed dynamic hydraulic models for other water systems; converted the existing Water Use Zone coding and maps to the new Geographical Consumption coding system; performed preliminary engineering/site selection/environmental assessment studies for reservoirs in the Diamond Head, Kaneohe, Kalama Valley, Waiawa, Kalauao, and Halawa areas; and worked on the acquisition of the Waimano Training School and Hospital water system from the State, the Kalaeloa water system (portions of the water system that served the former Barbers Point

Naval Air Station) from the Navy, and the City of Kapolei nonpotable water system from the Estate of James Campbell.

They also assessed unaccounted-for-water in the Windward area, and performed hydraulic analysis for the Beretania Line Booster suction and discharge transmission mains.

In addition to the above projects, Section staff played a major role in the "Water For Life Summit." Staff from the Water Resources and Operations Divisions worked together to help the Department achieve resource sustainability by determining the availability of the groundwater supply; the sustainable level of groundwater withdrawal (i.e. the maximum amount of groundwater withdrawal that would not have a detrimental impact on supplies) from the Department's perspective; and how groundwater availability and sustainable water withdrawal relates to pumpage and demand.

To assess how the department would plan for the future, scenario planning was used to develop several possible future situations, such as low demand and high groundwater availability, and high demand and low groundwater availability. Using these scenarios, the summit team could then develop plans that addressed each situation. Work continues on the summit, as staff now looks into the financial implications of the scenarios.

The **Long-Range Planning Unit** prepares the Department's Six-Year and Annual CIP and long-range plans for projected water system requirements, and coordinates proposed Development Plan Map Amendments with the City Planning Department. During FY 2004, its staff worked on these projects:

Creating Watershed Management Partnerships with public, private, and government entities, to restore and preserve water resources and the environmental quality of BWS watershed areas through cooperative alliances.

Kakaako Seawater District Cooling to facilitate the design and construction of BWS seawater wells in providing cooling system water for the John A. Burns School of Medicine and other future potential water customers in the Kakaako area.

Obtaining funding for various BWS CIP and RFIP projects by applying for grants from the United States Environmental Protection Agency and Bureau of Reclamation, and low interest loans from the State Safe Drinking Water Revolving Fund.

Guiding the design for Kalawahine 180' Reservoir.

Coordinating the re-interment of archaeological human remains for BWS construction projects with the Iwi Kupuna Council.

Developing contract scopes of work for: Waianae and Koolauloa Watershed Management Plans, Waianae Recycled Water Facility Feasibility Study, Central Oahu Watershed Study, and Central Oahu Regional Park Recycled Water System Design.

Studies worked on during the year included: population and water demand projections, Deep Ocean Water Application Facility, Waianae 242' Reservoir No. 2 Preliminary Engineering Study and EIS, Barbers Point 215' Nonpotable Reservoir No. 2 Preliminary Engineering Study and EA, various CIP project feasibility and water availability studies, and Ewa district nonpotable water planning.

Analyzing population and water demand projections for future CIP facilities development requirements to coincide with the 2000 Federal Census, State DBEDT M-K projections, and the City Planning Department's projected distribution of population up to the year 2025.

Performing a feasibility study for a proposed Deep Ocean Water Facility (DOWAF) to assess a preferred site location and mix of products. The DOWAF will use cold deep ocean water for high technology processes such as electricity production with a potable water by-product, chilled water for air conditioning, irrigation and enhanced crop growth for diversified agriculture, and ocean water for aquaculture farming. Locations in Kalaeloa, Waianae, and Metropolitan Honolulu are being assessed.

The ongoing Waianae 242' Reservoir No. 2 Preliminary Engineering Study and Environmental Impact Study (EIS) will select a preferred site for a new 4.0 MG reservoir to provide storage capacity to meet BWS system standards for the Waianae district, which has been gradually upgraded since the BWS acquisition of the old Waianae Suburban Water and Plantation systems.

The ongoing Barbers Point 214' Nonpotable Reservoir No. 2 Preliminary Engineering Study and EIS will select a preferred site for a new 6.0 MG reservoir to provide storage capacity for the Honouliuli Recycled Water System.

Assessing costs, water system benefits and integration, and development parameters using CIP feasibility studies to identify the need and priority for scheduling projects.

Assessing surplus water in existing systems for the entire island with water availability studies. Average day and maximum day demands for each source will be compared with design capacities, permitted use, sustainable yield, and operating capacities.

For conserving groundwater aquifer supply, the unit worked on the Ewa Nonpotable Water Master Plan to develop additional recycled R-1 and RO quality water in Ewa. The master plan will improve current Honouliuli Recycled Water Facility system operations, identify future users and required infrastructure, and provide integration with the Ko Olina-West Beach nonpotable system.

Assessing other future recycled water development for Waianae, Wahiawa, and Windward districts, to develop treated wastewater for nonpotable uses.

The **Land Section** acquires water rights, land, and land interests by purchase, condemnation, lease, easement, executive order, etc. This Section also disposes surplus real property and manages approximately 13,221.284 acres of land under the control of the Department.

The Section's FY 2004 transactions include the acquisition of 13 water pipeline and water meter easements and the processing of 87 miscellaneous documents.

The **Hydrology-Geology Section** provides technical support to develop and monitor municipal groundwater sources on Oahu. The Section collects, evaluates, and interprets data on rainfall, water levels, water quality, geophysical logs, and pumpage trends.

The staff conducted regular, scheduled island-wide collection of water level data, meter readings, and water samples from 17 rain gages, 30 observation wells and piezometers, 28 artesian wells, 10 springs, one stream gauge, and three weirs/flumes. They prepared reports for internal agency use and regulatory requirements under varying schedules. They conducted 72 geophysical logs for specific conductance and temperature profiling, and conducted one neutron log to determine formation yield characteristics.

Section staff carried out the project management of BWS research, desalination, and district cooling well construction. One deep monitor well was completed in Laie, with work continuing on the Kakaako district cooling and Kalaeloa desalination wells. The preparation of contract documents and construction for upcoming projects is ongoing. Construction for an additional deep monitor well in Halawa and a caprock injection well in Kalaeloa will begin in the current fiscal year.

Transfer of responsibility among the Section staff for management of the BWS radiation safety program under Nuclear Regulatory Agency (NRC) auspices is being carried out smoothly. One staff member received training as a radiation safety officer, to prepare for the transfer and maintain continuity in the safety program. Section staff oversees the radiation protection program of its well logging operations in compliance with those NRC regulations.

Other Section activities were as follows:

Participated in watershed partnership programs, such as the Koolau Mountains Watershed Partnership and the Mohala I Ka Wai group (Waianae and Makaha watersheds).

Presentation of BWS updates at neighborhood board meetings.

Completed upgrading of all BWS rain gages to digital tipping bucket types with event loggers. Remote data acquisition systems were purchased for upgrading of the monitor well network and will be installed in FY 2005. Two additional remote data acquisition systems were budgeted and will also be installed in the current fiscal year to obtain additional meteorological data.

A contract for a three-dimensional model based on the Feflow code is currently underway and Todd Engineering is testing the numeric model. The applicability of a three-dimension model in simulating Honolulu groundwater conditions is being addressed by this contract. A cooperative study with the United States Geological Survey on a numerical model describing the effects of alluvial valley deposits on groundwater movement is ongoing.

Section staff also conducted internal studies on the chloride trends at the Honouliuli Wells and at Kalauao Springs.

The **Water Conservation Unit** coordinates and assists with conservation projects and activities, conducts water conservation and consumption studies and analyses, and researches and investigates water conservation appliances and devices for use in single- and multi-family dwellings and in business and industry.

The BWS, in conjunction with the City, is offering $100 rebates for the installation of ultra-low flush toilets. The program was approved June 10, 1998, by the Mayor and applies only to residential retrofits. The program has been extended to June 30, 2008.