

**WATER
-Summary**

ACTUAL FY12	PROJECTED FY13		BUDGET FY14
\$6,509,045	\$5,597,865	ADMINISTRATION	\$5,497,160
\$5,325,155	\$5,658,950	SOURCE OF SUPPLY	\$5,665,755
<u>\$2,515,375</u>	<u>\$2,723,690</u>	TRANSMISSION & DISTRIBUTION	<u>\$3,075,785</u>
<u>\$14,349,575</u>	<u>\$13,980,505</u>		<u>\$14,238,700</u>

PURPOSE & OVERVIEW: The Cambridge Water Department (CWD) is a municipally owned and operated water utility servicing approximately 105,000 residents.

The CWD operates under the general direction of the City Manager. The Cambridge Water Board is comprised of five members appointed by the City Manager, who serve in an advisory capacity to the City Manager and the Managing Director of the Water Department. The CWD is regulated by Federal and State drinking water codes and is comprised of three divisions: Administration, Source of Supply, and Transmission & Distribution. The mission of the Department is to provide a safe, adequate and uninterrupted water supply of the highest quality to the citizens of Cambridge.

The CWD continues to implement its long-term capital strategic plan to ensure integrity and functionality of the Cambridge water system. The systems that comprise the Water Department are: the watershed and its related facilities such as gatehouses, dams, spillways and valves; the Stony Brook conduit and associated valving; the Fresh Pond Reservoir; the treatment plant; the Payson Park finished water reservoir; the Payson transmission lines and associated valving; the distribution system; and three Massachusetts Water Resource Authority (MWRA) emergency interconnects.

There will be continued emphasis on: improving customer service, saving energy through continued conservation efforts (i.e. GreenSense Program), mechanical upgrades (i.e. variable frequency drives (VFDs) on pumps), process modifications (i.e. storage, pump, disinfection and filter operations) and renewable energy sources (i.e. solar panels); revitalizing the water distribution system; continuing upgrades and restoration improvements to the Fresh Pond Reservation guided by the Master Plan; the Stony Brook Conduit; Payson Park force and supply lines; and treatment plant process optimization, to improve the water quality delivered to our customers. Opportunities to perform water main infrastructure improvements in partnership with the Department of Public Works performing utility work, such as sewer separation and Chapter 90 roadway work, will be pursued to optimize cost and minimize disruptions to the public.

FY13 MAJOR DEPARTMENTAL ACCOMPLISHMENTS:

- Completed the implementation of the boiler, lighting and process energy saving measures. Continue the implementation of the variable frequency drives (VFDs) on the raw water pumps and the solar panels on the building roof. These efforts are in concert with the City, to help achieve the Green Communities Act goal.
- Continued the peak electrical demand management plan to conserve electricity and reduce the demand charges to the City. Signed a "Demand Response" contract to reduce electrical demand during emergency "electrical grid" situations.
- Purchased 53.6 acres of watershed land to continue the protection of Hobbs and Stony Brook Reservoirs.
- Coordinated the 6th annual Fresh Pond Reservation Day in June.
- Produced over 4.7 billion gallons of high quality potable water to serve the City of Cambridge's needs.
- Continued the treatment facility process equipment maintenance and replacement program.
- Continue to provide school programs, tours, open houses and Friends of Fresh Pond Reservation events to educate the public about the Cambridge Water System and the Walter J. Sullivan Water Purification Facility. As part of the public education effort, the staff has presented information about the Water Department to local colleges and universities and international groups.
- Completed/continued cooperative infrastructure projects on: Portland Street, Cambridge Park Drive, Discovery Park, Contracts 13, 14, 15 and 17 Sewer Separation, CAM 004 and Western Avenue.
- Completed the repairs on two portions of the Stony Brook Conduit in Watertown.
- In conjunction with the Fire Department, maintained a Class 1 Fire rating for the City of Cambridge.
- Conducted the annual leak detection of the distribution system and found and repaired 10 leaks.
- Completed all of the backflow prevention device testing and re-testing for inventoried devices and continued surveying facilities for cross connections throughout the city.
- Distributed the 2012 annual "Consumer Confidence Report" on drinking water quality via direct mail and the Department website.
- Responded to and repaired all water main or service leaks in the water distribution system.
- Updated the long range capital plan for the water system.
- Rehabilitated over 10,000 feet of water mains; replaced lead water services and replaced or repaired 100 valves; eliminated over 10,000 feet of parallel old cast iron pipe; and maintained a 99.9% in-service rating for fire hydrants.
- Performed required regulatory water quality analytical testing and watershed monitoring, which resulted in over 61,000 tests. Maintained certifications of the Laboratory for a variety of drinking water parameters.

- Completed the upgrade of the Department's website to allow for easy access and maintenance of vital information.
- Completed Black's Nook site improvements, Phase IV of the Glacken Slope Restoration, repairs to the Hobbs Brook Reservoir Dam (damaged in the rain storm in May 2010) and the design development phase of the Kingsley Park Restoration Project.
- Implemented an Interim Signage Plan and refined the permitting process for use of the Reservation based on the Fresh Pond Master Plan and the Shared Use Recommendations. Completed two years of visitor use data utilizing electronic counters.
- Updated the Hazardous Materials Response Atlas, the Emergency Action Plan (EAP) and the Operations and Maintenance Plans for the Hobbs and Stony Brook Reservoirs.
- Through the Fresh Pond Reservation and Volunteer Stewardship Programs, coordinated over 900 hours of volunteer work.
- Continued to review, monitor and inspect major development projects in the watershed.

FINANCING PLAN	DETAIL	SUMMARY
CHARGES FOR SERVICES		\$14,238,700
Water Usage Charge	\$13,338,700	
Misc Water Charges	\$105,000	
Cross Connection Fee	\$495,000	
Retained Earnings/Water Fund	\$300,000	
TOTAL FY14 BUDGETED REVENUE		\$14,238,700

STATUTORY ANALYSIS	SUMMARY
SALARIES & WAGES	\$6,446,320
OTHER ORDINARY MAINTENANCE	\$3,982,800
TRAVEL & TRAINING	\$86,580
EXTRAORDINARY EXPENDITURES	\$3,723,000
TOTAL FY14 BUDGETED EXPENDITURES	\$14,238,700

FULL TIME BUDGETED EMPLOYEES	FY12	FY13	FY14
	55	55	55

**WATER
-Administration**

ACTUAL FY12	PROJECTED FY13		BUDGET FY14
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\$1,571,660	\$1,517,525
\$407,410	\$397,535
<u>\$4,529,975</u>	<u>\$3,682,805</u>
\$6,509,045	\$5,597,865

**ADMINISTRATIVE
ENGINEERING & CROSS
CONNECTION
DEBT SERVICE**

\$1,535,960
\$413,200
\$3,548,000
\$5,497,160

PURPOSE & OVERVIEW: The Administration Division is responsible for performing administrative, personnel, financial, metering, cross connection and customer relations functions. The Division also assists in the quarterly processing of water bills for the 15,000 metered accounts in the City as well as all other billing for the Department. The Division is also responsible for the Automated Meter Reading (AMR) "high read" notification system, making inspections for leaks, faulty registrations, damaged meters, non-compliant water connections and other customer services.

FY14 GOALS:

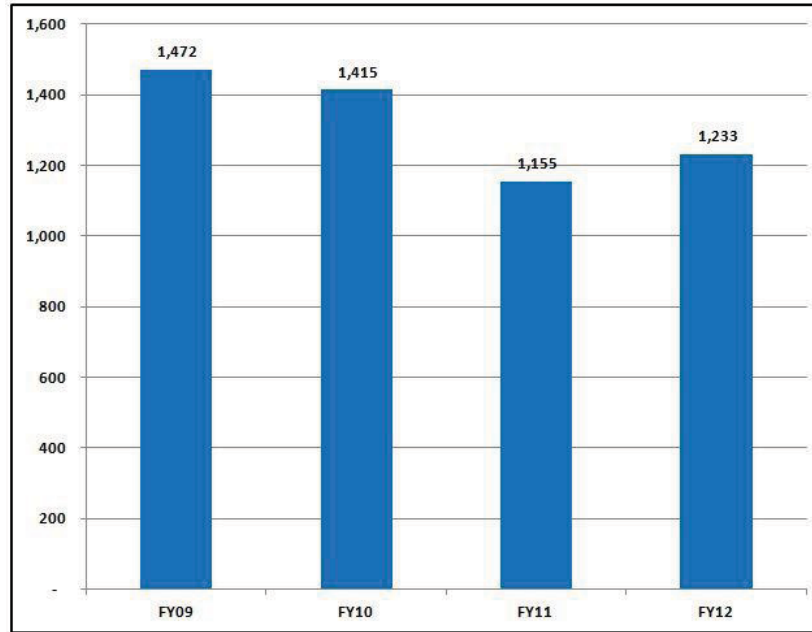
- *GOAL 1: Improve customer relations through development of programs that educate the public and disseminate information, including routine webpage updates, conduct general tours, open houses, school and community activities.*

- *GOAL 2: Improve metering, meter reading efficiency and customer service. This includes replacing older meters in the system on a scheduled basis.*

PERFORMANCE MEASURES	FY12 ACTUAL	FY13 BUDGET	FY13 PROJECTED	FY14 PROPOSED
1. Meters replaced	342	500	500	500

Figure 1: Number of Notices to Customers Who Have High Water Use

The following chart shows the number of notices issued by Water Department to customers with high water use.



Note: Automatic Reading Program (AMR) was not in service in FY08

- **GOAL 3:** *Provide professional growth and development opportunities for all employees with an emphasis on meeting regulatory training requirements and implementing uniform work practices.*

PERFORMANCE MEASURES	FY12 ACTUAL	FY13 BUDGET	FY13 PROJECTED	FY14 PROPOSED
1. Percentage of staff receiving required Department of Environmental Protection training	100%	100%	100%	100%
2. Department training hours obtained	550	550	550	550

- **GOAL 4:** *Maintain the cross connection program in order to protect public health by performing 100% of the required Department of Environmental Protection (DEP) requirements.*
- **GOAL 5:** *Maintain long range capital plans.*

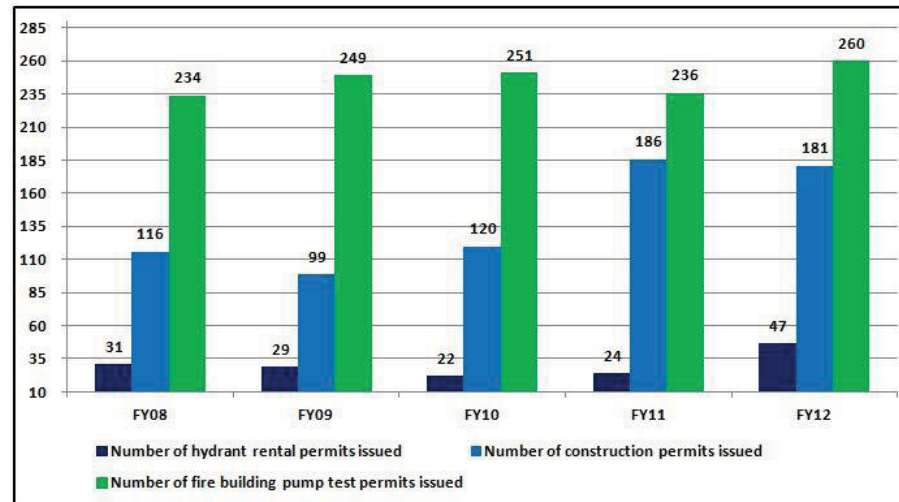
ENGINEERING & PROGRAM DEVELOPMENT

PURPOSE & OVERVIEW: The Engineering Division is responsible for providing technical services to support the Department and for developing and implementing new and existing programs; planning and overseeing capital improvements; maintaining maps/records; and coordinating water projects with other City departments.

FY14 GOALS:

- **GOAL 1:** *Ensure that safe drinking water is maintained during various construction, fire safety and industrial process activities by reviewing all water related plans and specifications, followed by issuing water construction permits in a timely manner, pursuant to citywide permit guidelines.*

Figure 2: The following chart provides information on permits issued by the Engineering Division



- **GOAL 2:** *Maintain all water system GIS maps. This includes: as-built drawings for new and replaced water mains, domestic and fire services 4" or larger, hydrants, valves and other appurtenances.*
- **GOAL 3:** *Utilize the Distribution System Hydraulic Model program to evaluate distribution system impacts relating to new and/or rehabilitative construction work, so that mitigating measures can be proposed.*

**WATER
-Source of Supply**

ACTUAL FY12	PROJECTED FY13		BUDGET FY14
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\$1,050,785	\$1,142,230
\$4,234,005	\$4,470,620
<u>\$40,365</u>	<u>\$46,100</u>
\$5,325,155	\$5,658,950

**WATERSHED
WATER TREATMENT OPERATION
DEP ASSESSMENT**

\$1,193,050
\$4,426,605
<u>\$46,100</u>
\$5,665,755

PURPOSE & OVERVIEW: The Watershed Division is responsible for the management and operation of the City's four reservoirs located in Cambridge, Belmont, Lexington, Waltham, Lincoln and Weston. The Hobbs

Brook and Stony Brook reservoirs are the primary source of water for our system. The total capacity of the two up-country reservoirs is 3,445 million gallons. The water is transferred to the terminal reservoir, Fresh Pond, via the Stony Brook Conduit. The Fresh Pond Reservoir has an additional 1,308 million gallons of water storage. The watersheds serving the three reservoirs total 24 square miles. The Division works to develop and implement intricate watershed protection and hazardous materials response plans, seeking partnerships where appropriate; conducts environmental and raw water quality monitoring; manages the grounds at the Fresh Pond Reservation (Cambridge's largest open space) and at the up-country reservoirs; implements the Fresh Pond Master Plan recommendations; performs and documents site activities; and works with all the stakeholders in the watersheds to ensure long-term protection of the City's drinking water supply.

FY14 GOALS:

- *GOAL 1: Develop, implement and maintain Watershed Protection Plans to protect the City's source water supply.*

PERFORMANCE MEASURES	FY12 ACTUAL	FY13 BUDGET	FY13 PROJECTED	FY14 PROPOSED
1. Develop/implement a Community Watershed Program for City owned watershed land in Lexington and Lincoln	50%	75%	75%	100%
2. Develop a de-icing management plan for watershed communities and businesses	50%	75%	75%	100%

- *GOAL 2: Manage watershed and reservoir improvements to ensure safe and continuous delivery of water to the treatment facility.*

PERFORMANCE MEASURES	FY12 ACTUAL	FY13 BUDGET	FY13 PROJECTED	FY14 PROPOSED
1. Implement the Winter Street Dam Embankment and Spillway Repairs	30%	90%	75%	100%
2. Develop a sustainable landscape maintenance Best Management Practices plan for Fresh Pond Reservation	50%	75%	75%	100%
3. Implement Hobbs Brook Reservoir Trapelo Road and Winter Street Gatehouse Restoration	30%	100%	85%	100%
4. Implement last phase of the restoration plantings at Glacken Slope	50%	n/a	75%	100%

- *GOAL 3: Maintain the source area - Water Quality Monitoring Program.*

WATER TREATMENT OPERATIONS

PURPOSE & OVERVIEW: The Water Treatment Operations Division is primarily responsible for the operation of the Walter J. Sullivan Water Purification Facility at Fresh Pond. In addition to managing the treatment facility, this Division maintains a certified water quality laboratory to support all divisions of the Department. This laboratory provides analytical services for the watershed monitoring program, plant process control, regulatory compliance, distribution system monitoring and a variety of customer support needs (e.g. homeowners, schools and businesses).

In order to reduce energy usage and help achieve Green Communities Act goals, the Water Treatment Operations Division has initiated implementation of several energy saving projects, within the Water Treatment Plant processes.

FY14 GOALS:

- *GOAL 1: Optimize, operate, maintain and perform all necessary preventive maintenance programs for the Water Treatment Facility. Perform 100% of the required transmission and distribution tests.*

Figure 3: Water treatment plant tests and water quality tests performed through lab

The following chart provides information on tests processed through the lab at the Water Department.

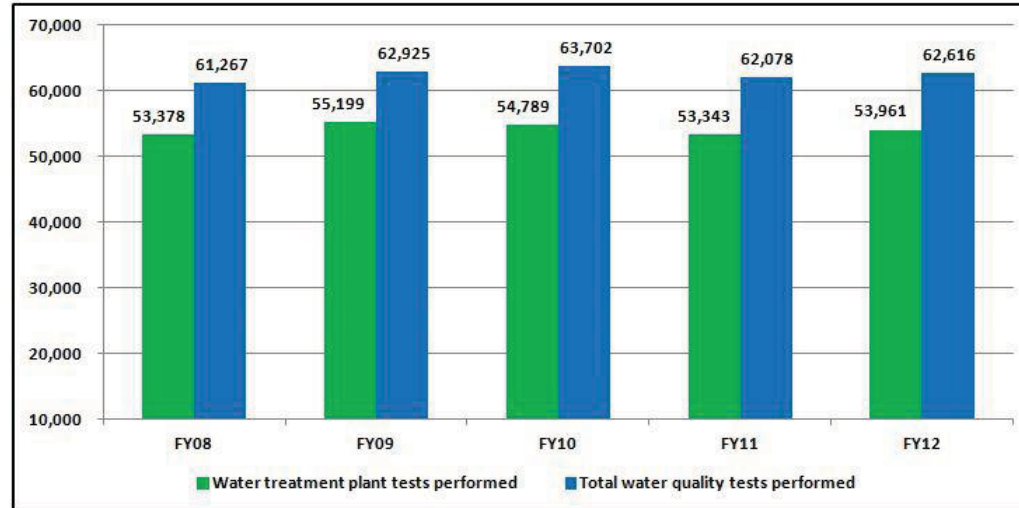
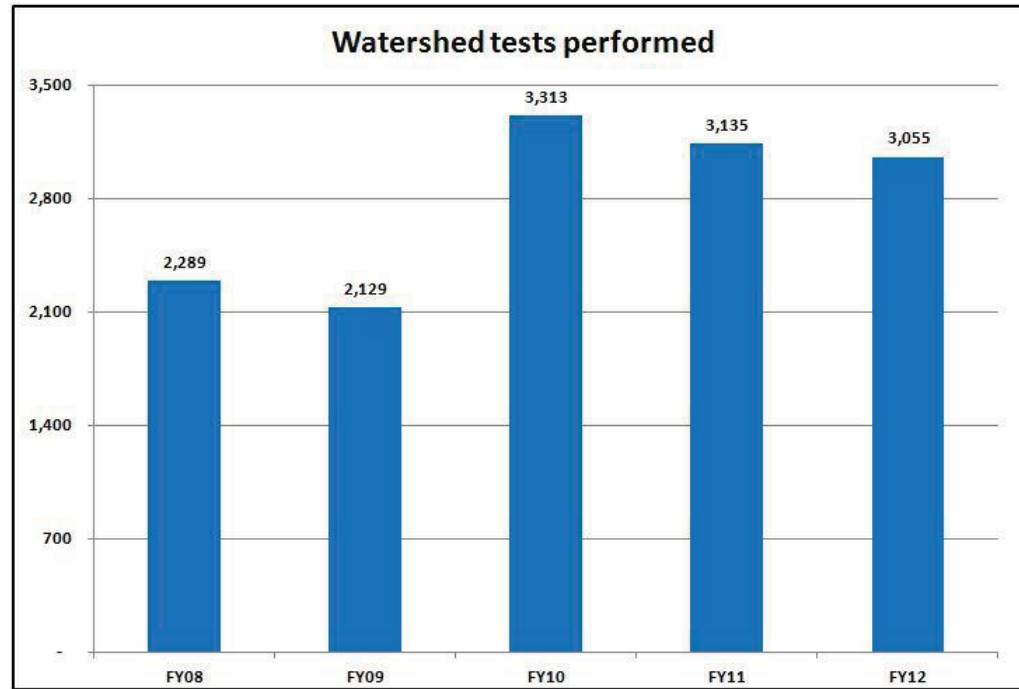


Figure 4: Watershed tests performed through lab

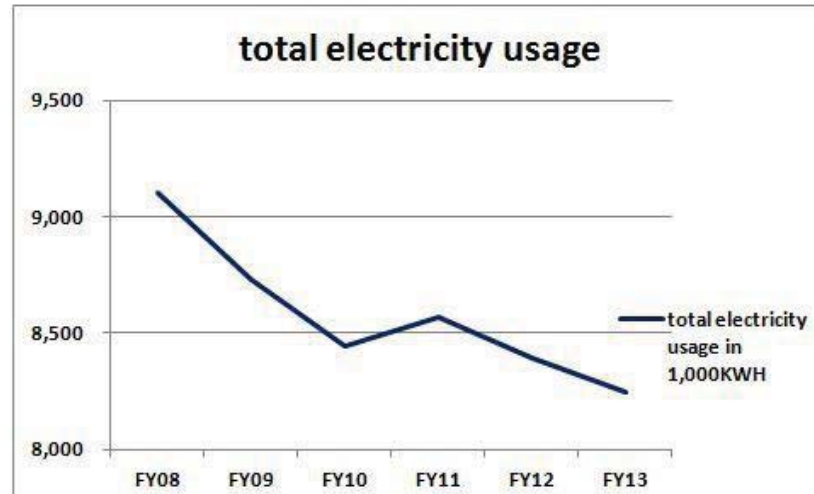
The following chart provides information on watershed tests processed through the lab at the Water Department.



- *GOAL 2: Provide analytical services through the operation of a certified water quality laboratory.*
- *GOAL 3: Perform 100% of the required Department of Environmental Protection (DEP) analytical testing.*

Figure 5: Treatment Plant Energy Usage

The following chart shows electricity usage at the Water Treatment Plant for the period FY08 - FY13.



- *GOAL 4: Update and maintain quality and process controls.*
- *GOAL 5: Perform 100% of the annual certification performance testing.*

DEP ASSESSMENT

PURPOSE & OVERVIEW: The City is assessed by the Massachusetts Department of Environmental Protection (DEP) for the cost of administering the Safe Drinking Water Act (SDWA) in Massachusetts. This assessment is collected from all users of public water systems. The assessment makes up the difference between costs of administering the SDWA and the funds available through federal grant and state appropriations. The rate for FY13 is \$8.50 per million gallons of water usage. The assessment is based on prior year consumption. The major benefit to public water suppliers from this assessment will be to enhance services provided by DEP (e.g., enhanced education and outreach programs, streamlining of existing programs, reduced permit review time and additional one-on-one assistance).

ACTUAL FY12	PROJECTED FY13		BUDGET FY14
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**WATER
-Transmission & Distribution**

\$2,515,375
\$2,515,375

\$2,723,690
\$2,723,690

TRANSMISSION & DISTRIBUTION

\$3,075,785
\$3,075,785

PURPOSE & OVERVIEW: The Transmission and Distribution Division is primarily responsible for the maintenance of

the piping systems. The transmission system, which connects the up-country reservoirs to Fresh Pond, consists of 10.5 miles of pipe ranging in size from 30 to 63 inches in diameter. The distribution system, which connects the purified water to all of the users, consists of approximately 180 miles of pipe, 14,060 services, 4,450 valves, 1,840 fire hydrants and 18,300 valve and service boxes. This Division regularly performs new water main installation, leak detection and preventative maintenance, provides effective emergency response for leaks and low pressure situations, and provides assistance and support to customers and other City departments. A partnership is maintained with the Fire Department to ensure the high degree of reliability of fire hydrants throughout the city.

FY14 GOALS:

- *GOAL 1: Rehabilitate the water distribution system.*

Figure 6a: Rehabilitation of Water Distribution System in Linear Feet

	FY08	FY09	FY10	FY11	FY12	FY13 Projected
Linear feet of installed, cleaned and lined, and/or replaced water main	1,890	1,850	3,045	9,715	11,470	10,000
Linear feet of eliminated parallel old 6" cast iron pipe	1,940	4,450	3,220	14,407	11,350	10,000
Number of lead services eliminated	109	122	64	76	63	100

- *GOAL 2: Ensure the highest degree of fire protection reliability and functionality through hydrant maintenance, including conducting 100% of required fire hydrant tests throughout the city.*

PERFORMANCE MEASURES	FY12 ACTUAL	FY13 BUDGET	FY13 PROJECTED	FY14 PROPOSED
1. Number of fire hydrants replaced	27	20	20	30

- *GOAL 3: Maintain a percentage rate of 99.9% of in-service hydrants.*
- *GOAL 4: Expand and enhance the operation and maintenance of the water infrastructure to minimize the duration of water outages as a result of water main breaks and/or planned shutdowns to facilitate construction activities.*

6b: Valve Replacement and Repairs

	FY08	FY09	FY10	FY11	FY12	FY13 Projected
Valves replaced/repaired	37	27	45	67	119	100

Figure 7: Water mark-outs performed

The following chart provides information on water mark-outs performed by the Water Department.

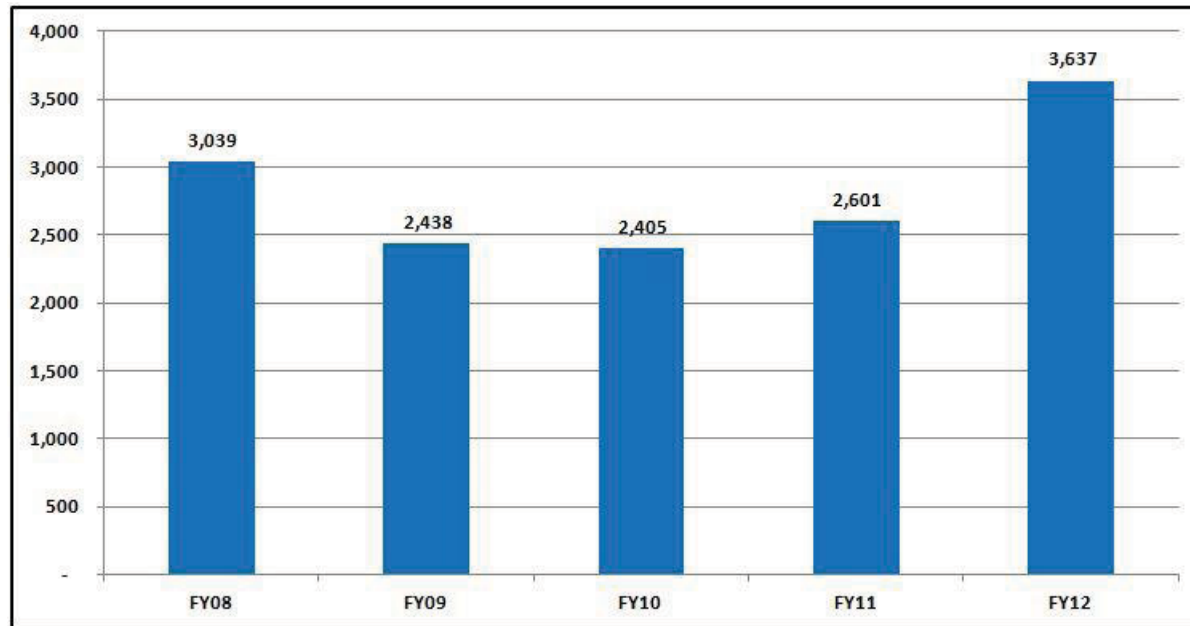


Figure 8: Inspections performed

The following chart provides information on inspections performed by the Water Department.

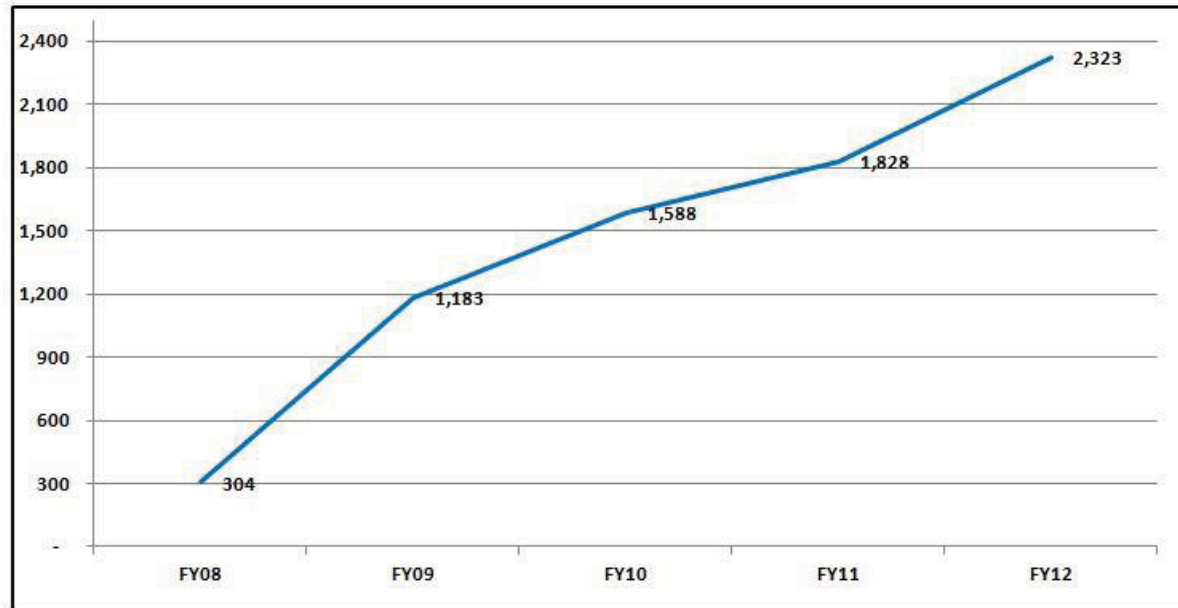


Figure 9: Water leaks repaired & work orders completed

The following chart provides information on leaks repaired and work orders completed by the Water Department.

