

Section VI

Water Fund

Program Description

Concord's water system was established in 1872. The system consists of eight separate water pumping/treatment stations and a high-pressure water distribution system. There are presently 5,416 customers served with potable water and fire protection from this supply, representing approximately 95% of Concord, as well as a small section of Route 2A in Acton.

In 1974 the Annual Town Meeting established a separate Water Fund to ensure that the operation, maintenance, and capital improvement of the water system would be a financially viable enterprise. As such, all expenses and expenditures incurred for the system are covered entirely by user fees. The Water/Sewer Division of Concord Public Works is responsible for managing the day-to-day operations of the water infrastructure, which has total plant assets of over \$16,700,000.

FY2006 Program Highlights

Station Rehabilitation Activities

The final phase of station rehabilitation activities was completed at the White Pond Well located off Varick Street. Improvements included an overhaul of the electrical system and the introduction of a new variable-frequency drive and logic controller. This equipment is now protected from water-conditioning chemicals within a newly-created electrical utility room. The logic controller provides an interconnection of this station with the Division's system-wide supervisory and control data acquisition system (SCADA). New lighting and ventilation systems were also installed.

Iron & Manganese Treatment

Tata & Howard Inc. (Marlborough, Massachusetts) has completed the detailed design of a new facility to be located at the Deaconess Well site located off Old Road to Nine Acre Corner. Construction is expected to start in the spring of 2006.

The original 2004 Town Meeting appropriation was intended to fund the Deaconess Treatment facility and the future Brewster Well based, in part, on the economic benefits of using a shared design and single equipment procurement. As noted in last year's Water Fund update, the design and construction of the proposed Brewster Well and Treatment Facility were placed on hold due to evolving water supply permitting policies. Therefore, the current design incorporates a joint Deaconess Well/White Pond Well Treatment Facility so that the treatment benefits envisioned in 2004 are retained.

New and Replacement Water Mains

In conjunction with the Phase 1 Sewer Project, the Division is in the process of replacing 4,195 linear feet of water main over the course of the current year. The majority of this work involves the replacement of pipe installed in the mid-1900s, which, based on material classification and condition, has served its useful life.

Specific sections of main replaced or scheduled to be replaced with cement-lined ductile iron (CLDI) pipe are as follows: Dalton Road, 980 feet; Philip Farm Road, 950 feet; and Kenny Lane, 1,450 feet. Approximately 515 feet of water main along Virginia Road needed to be replaced between the intersection of Old Bedford Road and just beyond Philip Farm Road, and approximately 300 feet of water main was replaced in various locations along Old Bedford Road.

Water Conservation Program

Efforts to reduce excessive outdoor watering continued to be a major focus. To support this goal the Division has secured grants from the Massachusetts Department of Environmental Protection and the Concord Garden Club. These funds were used to support a pilot program designed to test weather-based "smart" irrigation controllers; to help promote the "Healthy Lawns for Healthy Families" initiative organized in collaboration with water department staff in neighboring Acton, Chelmsford, Littleton, and Westford; and to develop informational materials.

Water Testing

Concord's drinking water quality once again met or surpassed state or federally regulated standards. The U.S. Environmental Protection Agency released two new drinking water programs entitled the "Stage 2 Disinfectants/Disinfection By-Products Rule" and the "Long-Term 2 Enhanced Surface Water Treatment Rule." The Division had been tracking the development of both programs to assess potential applicability and impact in anticipation of their promulgation in December 2005. Baseline water quality monitoring confirmed that neither rule would pose operational or regulatory water quality challenges for Concord.

Lead and copper testing, required once every three years, was also conducted in FY2006. The program is administered in accordance with federally established sampling protocols and analytical methodologies. Results continued to show lead and copper levels throughout the Town's distribution system were well below state and federal action standards. In part, these findings reflect the effectiveness of the Division's ongoing corrosion control treatment activities.

FY2007 Capital Plan

SUPPLY/CAPACITY

Source Protection: \$10,000

Miscellaneous equipment/materials for ongoing implementation of water resource protection program.

IMPROVEMENTS

Station Structures: \$55,000

Annual capital outlay for improvements and replacement of station structures. Recently completed investigation of Nagog Dam structure resulted in a recommendation to replace/overhaul level controlling system, along with minor rehabilitation of cement structure. This work will be scheduled for the following year.

Station Equipment: \$20,000

Annual capital outlay for improvements and replacement of station equipment used to control, monitor, pump, store, and treat water, including motors, pumps, motor control panels, and chemical feed systems.

TREATMENT

Nagog Treatment Plant: \$95,000

As a result of successful resource protection and source management efforts, CPW has continued to maintain the existing filtration waiver. Monies continue to be included in the current budget plan, in the event the waiver is tripped, to initiate the evaluation and piloting of treatment technologies.

Iron & Manganese Removal: \$3,000,000

Treatment optimization efforts have demonstrated that full-scale removal of iron and manganese is required to satisfactorily address quality goals identified within the Deaconess and White Pond wells. The funds requested will cover treatment plant construction costs, engineering services, and the water main feed required to connect the White Pond well to the Deaconess well.

DISTRIBUTION SYSTEM

New and Replacement Water Mains: \$100,000

Annual capital outlay for improvements and extension to the distribution system. The program is intended to ensure that aging and deteriorating mains are replaced in a methodical and prudent manner. The Water Division will continue to coordinate system upgrades with other Town Departments to ensure that Division needs are considered in light of other public work improvement efforts (such as the Roads Program and CMLP initiatives). The plan of work will be integrated into plans associated with the installation of the new main line feed connecting the White Pond well to the new Deaconess Treatment Facility.

Meter Replacement Program: \$117,000

Water fund portion of costs associated with system-wide meter replacement efforts. The effort is being expanded in coordination with CMLP to allow for inclusion of radio-read technology and more progressive meter reading capabilities.

Hydrants: \$22,000

Cost of annual hydrant inspection and replacement activities to ensure that all hydrants operate properly. The budget includes costs for approximately 16 new hydrants.

Building Service Lines: \$12,000

Costs associated with the replacement/installation of approximately 10-15 new water services (street to property line) within the distribution system. Sites have been prioritized in conjunction with the Roads Program.

Massachusetts Highway Bridge Reconstruction: \$75,000

Installation of 12-inch water mains on Pine Street Bridge and Heath's Bridge. The installation activities have been incorporated into bid documents drafted by the Massachusetts Highway Department and committed to by the Town of Concord in 1995 and 2005, respectively. The project will result in improved system hydraulics and reliability of service.

GENERAL PLANT

Keyes Road Facility: \$25,000

Capital outlay for improvements to Water/Sewer Administration and Garage facilities.

Miscellaneous Field Equipment and Tools: \$5,000

Miscellaneous equipment not included in 5-year capital equipment/vehicle plan.

Geographic Information System: \$16,000

Water Fund contribution to Town-wide GIS initiative.

Vehicles: \$76,400

Replacement of vehicles or service equipment in accordance with CPW criteria utilizing industry-accepted useful life measures. The Water/Sewer fleet consists of 15 vehicles and miscellaneous service equipment, such as compressor and vacuum equipment.

Town of Concord, Massachusetts

WATER FUND	FUND 61
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OPERATING REVENUES (\$)

	FY2004 <u>Actual</u>	FY2005 <u>Actual</u>	FY2006 <u>Rev. Budget</u>	FY2007 <u>Estimate</u>
Water User Fees	2,982,153	3,297,042	3,358,000	3,390,000
Service Charges	82,357	41,665	59,000	59,000
Liens & Tax Titles	29,918	17,623	25,000	25,000
Miscellaneous	1,185	0	2,000	2,000
Operating Revenues Totals	3,095,613	3,356,330	3,444,000	3,476,000

OPERATING EXPENSES (\$)

	FY2004 <u>Actual</u>	FY2005 <u>Actual</u>	FY2006 <u>Rev. Budget</u>	FY2007 <u>Estimate</u>
Personal Services	720,663	748,308	833,997	852,347
Purchased Services	377,260	346,940	502,818	509,673
Supplies & Materials	194,974	231,963	249,796	302,997
Other Charges & Expenses	56,571	76,087	62,512	67,360
Depreciation Expense	426,223	473,583	550,000	640,000
Capital Reserve Charge	0	0	142,000	138,000
Audit Adjustment	(4,366)	0	0	0
Subtotals	1,771,325	1,876,881	2,341,123	2,510,377
 <u>General Fund Services:</u>				
Management & Engineering Svcs.	171,475	182,766	176,828	180,030
Financial & Administrative Svcs.	185,596	187,764	191,426	189,845
Natural Resource Protection	61,868	64,715	67,088	67,447
Subtotals	418,939	435,245	435,342	437,322
Operating Expenses Totals	2,190,264	2,312,126	2,776,465	2,947,699

Town of Concord, Massachusetts

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AUTHORIZED POSITIONS (\$)

Code	Position Title	Grade	Fiscal Year 2006		Fiscal Year 2007	
			# Positions	\$ Amount	# Positions	\$ Amount
5111	W/S Superintendent	MP-10	0.60	49,983	0.60	50,032
	Operations Engin.	MP-7	0.20	11,936	0.20	11,952
	Asst. to Supt.	MP-5	0.80	52,279	0.80	52,279
	Environ. Analyst	MP-3	0.80	35,841	0.80	35,841
	Admin. Asst.	ACL-5	0.80	35,972	0.80	36,661
	Public Works Supv.	LA-7	1.60	90,654	1.60	92,389
	Crew Leader	LA-5	1.60	81,529	1.60	83,087
	Treatment Syst. Op.	LA-4	1.60	63,888	1.60	66,242
	System Maintainer	LA-3	4.00	148,374	4.00	151,391
	IS Support:					
	Technical Admin.	MP-8		2,702		2,702
	Info. Systems Asst.	MP-2		1,810		1,810
	Subtotals		12.00	574,968	12.00	584,386
	Standby Pay		890 hrs.	21,500	890 hrs.	23,371
5112	Water Cons. Coord.	MP-3	0.75	35,060	0.75	36,988
5120	Summer Crew	\$15/hr.	480 hrs.	7,200	480 hrs.	7,200
	GIS Intern	\$10/hr.	640 hrs.	6,400	640 hrs.	6,400
	Clerk of the Works	\$35/hr.	416 hrs.	14,560	96 hrs.	3,360
5130	Overtime		1,000	31,270	1,000 hrs.	32,090
5131	Police Details		525 hrs.	20,094	525 hrs.	21,000
517X	Group Insurance:					
	Health, Life, Dental			61,850		69,030
	Retirement			43,520		46,440
	Soc. Sec. & Med. Tax			9,161		10,730
51XX	Salary Reserve:					
	Regular Salary			0		25,000
	Overtime Salary			0		900
	Budgeted Charges					
	to Snow Account		680 hrs.	(13,600)	680 hrs.	(14,548)
	Vacancy Savings			8,271		0
	Salary Totals			820,254		852,347

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WATER FUND	FUND 61
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DEBT SERVICE (\$)

	<u>FY2004 Actual</u>	<u>FY2005 Actual</u>	<u>FY2006 Budget</u>	<u>FY2007 Estimate</u>
Long Term Debt Repayment Schedule:				
Principal	555,000	420,000	405,000	505,000
Interest	124,243	100,010	82,478	103,623
Debt Issuance Expenses	0	0	8,333	30,000
Totals	<u>679,243</u>	<u>520,010</u>	<u>495,811</u>	<u>638,623</u>

PAYMENTS TO THE GENERAL FUND (\$)

	<u>FY2004 Actual</u>	<u>FY2005 Actual</u>	<u>FY2006 Rev. Budget</u>	<u>FY2007 Estimate</u>
Management & Engineering Svcs.	171,475	182,766	176,828	180,030
Financial & Administrative Svcs.	185,596	187,764	191,426	189,845
Natural Resource Protection	61,868	64,715	67,088	67,447
Totals	<u>418,939</u>	<u>435,245</u>	<u>435,342</u>	<u>437,322</u>

Town of Concord, Massachusetts

WATER FUND	FUND 61
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NET INCOME (\$)

	FY2004 <u>Actual</u>	FY2005 <u>Actual</u>	FY2006 <u>Rev. Budget</u>	FY2007 <u>Estimate</u>
Statement of Net Income:				
Operating Revenues	3,095,613	3,356,330	3,444,000	3,476,000
Less Operating Expenses	<u>(2,190,264)</u>	<u>(2,312,126)</u>	<u>(2,776,465)</u>	<u>(2,947,699)</u>
Operating Income	905,349	1,044,204	667,535	528,301
Add Investment Income	<u>55,321</u>	<u>65,095</u>	<u>100,000</u>	<u>50,000</u>
Gross Income	960,670	1,109,299	767,535	578,301
Less:				
Interest Expense	(124,243)	(101,070)	(82,478)	(103,623)
Debt Issuance Expense	0	0	(8,333)	(30,000)
Transfer for Retirement Contribution	(33,271)	*	*	*
Audit Adjustment	<u>79</u>	<u>0</u>	<u>0</u>	<u>0</u>
Net Income	<u>803,235</u>	<u>1,008,229</u>	<u>676,724</u>	<u>444,678</u>
* Treated as part of Operating Expense.				

AVAILABLE RESOURCES (\$)

Resources Available from Current Operations for Replacement & Renewal of Plant:				
	FY2004 <u>Actual</u>	FY2005 <u>Actual</u>	FY2006 <u>Rev. Budget</u>	FY2007 <u>Estimate</u>
From:				
Depreciation Expense	426,223	473,583	550,000	640,000
Capital Reserve Charge	0	0	142,000	138,000
Net Income	<u>803,235</u>	<u>1,008,229</u>	<u>676,724</u>	<u>444,678</u>
Total Operations	1,229,458	1,481,812	1,368,724	1,222,678
Less:				
Debt Principal Repayment	(555,000)	(420,000)	(405,000)	(505,000)
Net Available for Capital Purposes:	674,458	1,061,812	963,724	717,678

Town of Concord, Massachusetts

WATER FUND	FUND 61
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CAPITAL SPENDING PLAN (\$)

	FY2004 <u>Actual</u>	FY2005 <u>Actual</u>	FY2006 <u>Rev. Budget</u>	FY2007 <u>Estimate</u>
Uses of Resources:				
<u>Vehicle Purchase / Replacement:</u>				
Unit #3: 1997 Sedan (Lum.)/SUV Esc.	0	0	24,000	0
Unit #A1: 1995 Sedan (Crown Vic.)	16,154	0	0	0
Unit #81: 1996 1-ton Pickup (3500)	18,972	0	0	0
Unit #82 1999 1-Ton Pickup (3500)	0	0	0	20,320
Unit #83 1999 Rack (3500, Comp. Truck)	0	0	0	16,080
Unit #87 1999 1-ton Dump (3500)	0	0	0	40,000
Unit #89: 1996 Pickup (2500)	18,972	0	0	0
Unit #88: 1996 Pickup (Enclosed Bed)	0	0	67,000	0
Unit #92: 1990 Backhoe Loader	0	48,184	0	0
Unit #99 2005 Pickup (Ext. Cap Colorado	0	0	16,000	0
<u>Supply/Capacity:</u>				
Source Protection	30,000	14,877	10,000	10,000
New Source Permitting, Design, Constr.	300,000	5,045	0	0
Water Supply Exploration - Test Wells	0	0	0	0
<u>Improvements:</u>				
Station Structures	150,000	6,327	55,000	55,000
Station Equipment	100,000	54,114	20,000	20,000
SCADA Upgrade	25,000	8,819	0	0
<u>Treatment:</u>				
Nagog Ozone Plant Enhancements	19,000	0	25,000	95,000
Iron & Manganese Removal	50,000	111,527	888,473	3,000,000
Treatment Optimization Program	74,000	2,261	18,500	0
<u>Distribution System:</u>				
Mains Replacement Program	600,000	687,599	1,050,000	100,000
Meter Replacement Program	32,000	30,090	80,000	117,000
Meter Replacement - Accessories				
Hydrant Replacement/Additions	20,000	15,466	21,000	22,000
Building Service Lines	12,000	0	12,000	12,000
Pine Street Bridge Main	0	0	0	75,000

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Town of Concord, Massachusetts

WATER FUND	FUND 61
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CAPITAL SPENDING PLAN (\$) (cont'd)

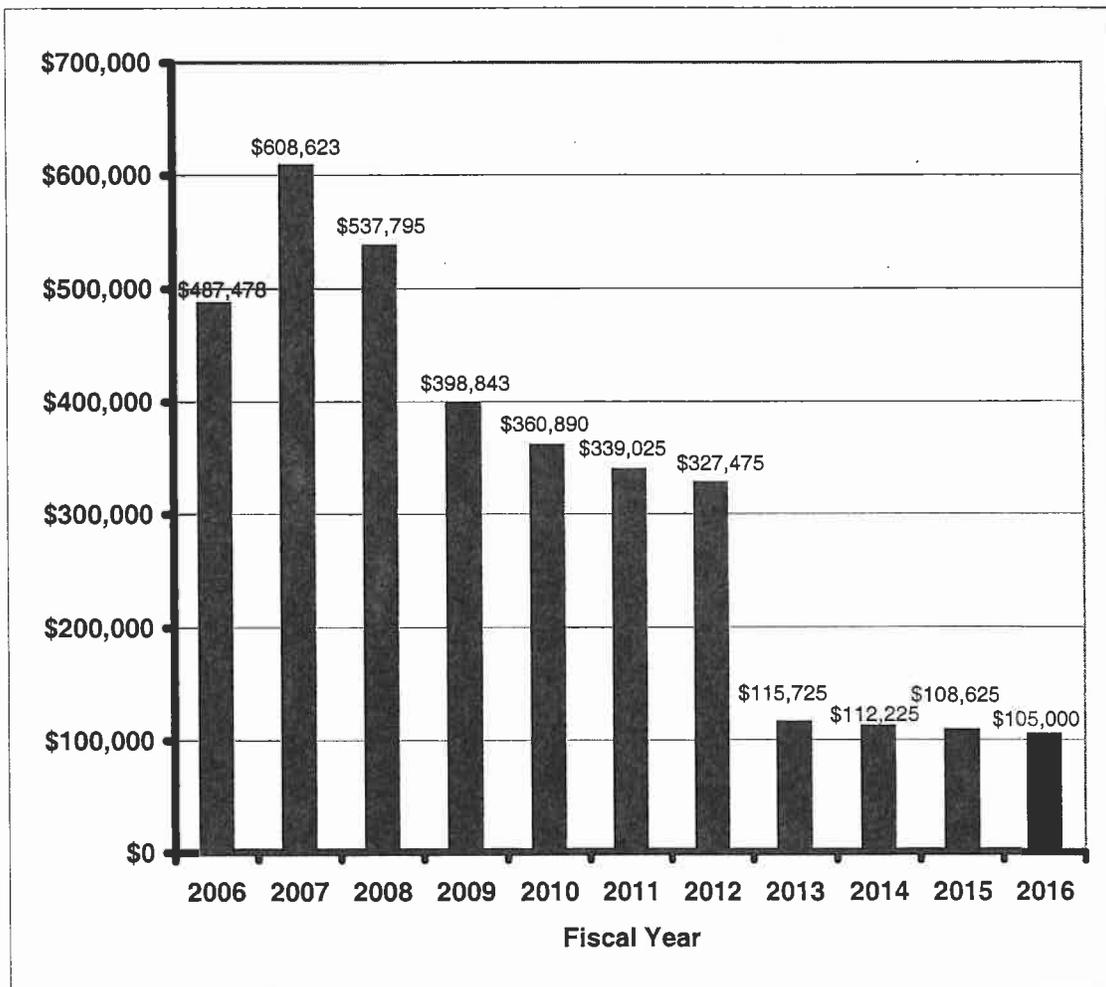
	<u>FY2004 Actual</u>	<u>FY2005 Actual</u>	<u>FY2006 Rev. Budget</u>	<u>FY2007 Estimate</u>
Uses of Resources (continued):				
<u>General Plant Improvements:</u>				
Keyes Road Facility	20,000	0	80,000	25,000
Miscellaneous Small Equipment	5,000	8,380	5,000	5,000
<u>Miscellaneous Capital Items:</u>				
Computer Software & Hardware - GIS	0	3,002	10,000	16,000
GRAND TOTAL	1,491,098	995,689	2,381,973	3,628,400

USE OF BORROWED FUNDS (\$)

	<u>FY2004 Actual</u>	<u>FY2005 Actual</u>	<u>FY2006 Rev. Budget</u>	<u>FY2007 Estimate</u>
<u>Capital Projects:</u>				
Deaconess Iron & Mang. Removal	0	111,527	888,473	3,000,000

Water Debt Service (\$)

Fiscal Year	Principal	Interest	Totals
2006	\$405,000	\$82,478	\$487,478
2007	\$505,000	\$103,623	\$608,623
2008	\$455,000	\$82,795	\$537,795
2009	\$335,000	\$63,843	\$398,843
2010	\$310,000	\$50,890	\$360,890
2011	\$300,000	\$39,025	\$339,025
2012	\$300,000	\$27,475	\$327,475
2013	\$100,000	\$15,725	\$115,725
2014	\$100,000	\$12,225	\$112,225
2015	\$100,000	\$8,625	\$108,625
2016	\$100,000	\$5,000	\$105,000
Totals	\$2,605,000	\$409,226	\$3,014,226



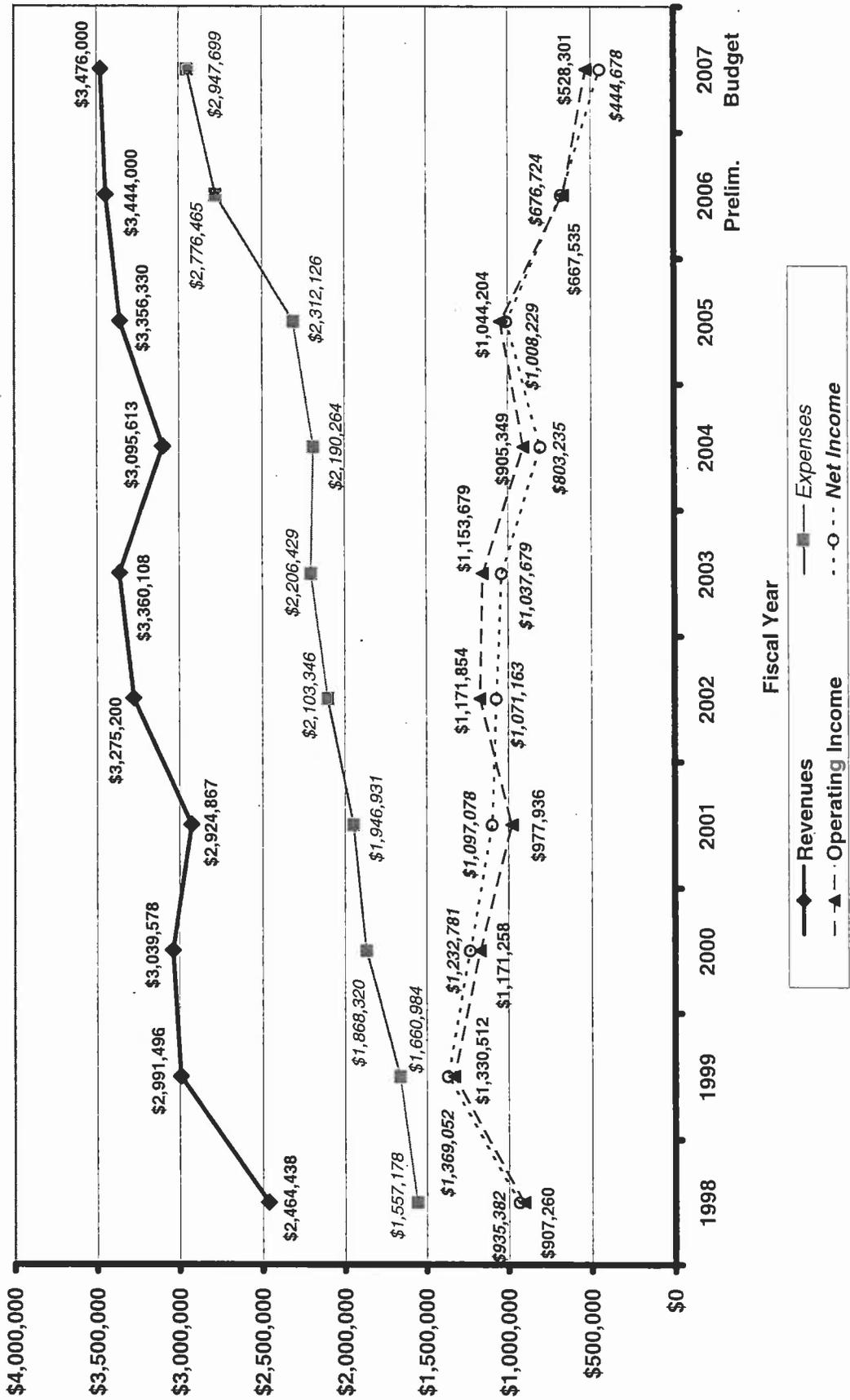
**DETAIL OF GENERAL FUND SERVICES
PROVIDED TO WATER FUND (\$)**

	<u>FY2004 Actual</u>	<u>FY2005 Actual</u>	<u>FY2006 Rev. Budget</u>	<u>FY2007 Estimate</u>
Management & Engineering Services:				
Highway Maintenance	13,349	13,672	13,702	12,728
133/135 Keyes Road Facilities	44,433	48,050	41,777	48,754
Public Works Engineering	48,266	54,433	54,963	55,206
Public Works Administration	<u>65,427</u>	<u>66,611</u>	<u>66,386</u>	<u>63,342</u>
Subtotals	171,475	182,766	176,828	180,030
 Financial & Administrative Services:				
Town Manager	40,837	41,756	43,860	43,433
Town Accountant:				
General Services	44,492	43,861	41,937	40,416
Audit Services	5,160	5,160	5,400	5,640
Treasurer-Collector	38,855	39,518	39,881	39,711
Finance Administration	41,892	43,056	45,198	45,489
Personnel Administration	8,958	8,881	9,460	9,394
Town House Facilities	<u>5,402</u>	<u>5,532</u>	<u>5,690</u>	<u>5,762</u>
Subtotals	185,596	187,764	191,426	189,845
 Natural Resource Protection:				
Planning	27,429	28,799	29,751	29,898
Natural Resource Protection	16,901	17,796	18,336	18,574
Health	<u>17,538</u>	<u>18,120</u>	<u>19,001</u>	<u>18,975</u>
Subtotals	61,868	64,715	67,088	67,447
Totals	418,939	435,245	435,342	437,322

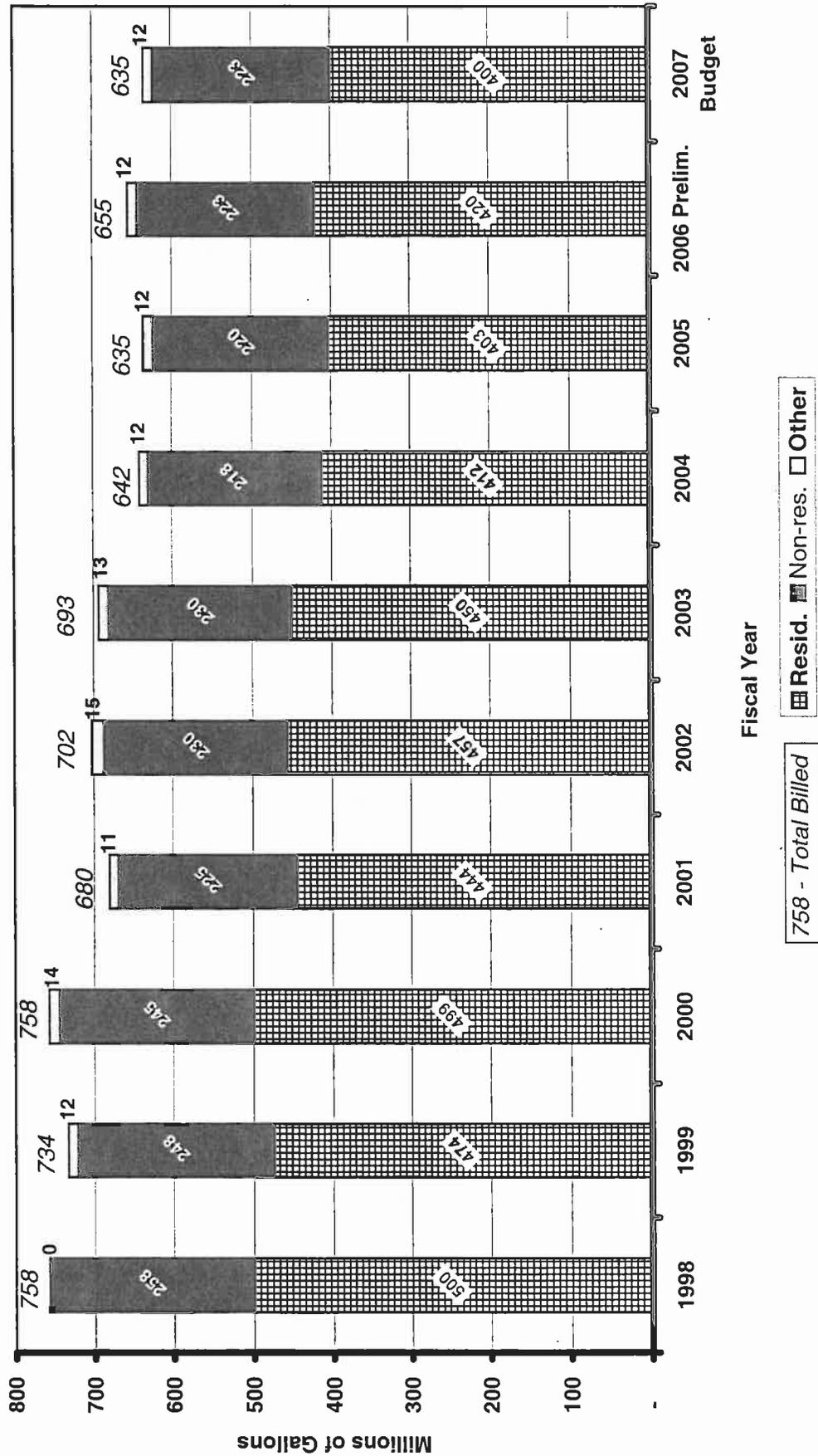
Water Fund
Water Billed, Revenues, Expenses,
Operating Income, & Net Income
FY1998 - FY2007

<u>Fiscal Year</u>	<u>Water Billed</u> (Millions of Gallons)			<u>Operating Revenues</u>	<u>Less Operating Expenses</u>	<u>= Operating Income</u>	<u>Net Income</u>
	<u>Resid.</u>	<u>Non-res.</u>	<u>Other</u>				
1998	500	258	0	\$2,464,438	\$1,557,178	\$907,260	\$935,382
1999	474	248	12	\$2,991,496	\$1,660,984	\$1,330,512	\$1,369,052
2000	499	245	14	\$3,039,578	\$1,868,320	\$1,171,258	\$1,232,781
2001	444	225	11	\$2,924,867	\$1,946,931	\$977,936	\$1,097,078
2002	457	230	15	\$3,275,200	\$2,103,346	\$1,171,854	\$1,071,163
2003	450	230	13	\$3,360,108	\$2,206,429	\$1,153,679	\$1,037,679
2004	412	218	12	\$3,095,613	\$2,190,264	\$905,349	\$803,235
2005	403	220	12	\$3,356,330	\$2,312,126	\$1,044,204	\$1,008,229
2006 Prelim.	420	223	12	\$3,444,000	\$2,776,465	\$667,535	\$676,724
2007 Budget	400	223	12	\$3,476,000	\$2,947,699	\$528,301	\$444,678

Water Fund
Operating Revenues, Expenses, & Income;
Net Income (\$)
FY1998 - FY2007



**Water Fund
Water Billed by Customer Class
(Millions of Gallons)
FY1998 - FY2007**



Water Rates
(Per 100 Cubic Feet)

W-06	Class of Customer	Current	Proposed	% Chg.
1&2	Residential Service (1 and 2)			
	1st Step: (all year)	\$ 3.27	\$ 3.44 **	5.2%
	Conservation Step*: (2,500 - 4,800 cf)	\$ 5.89	\$ 6.29	6.8%
	Conservation Step*: (over 4,800 cf)	\$ 7.69	\$ 8.24	7.2%
	*May 1st through October 31st for consumption over 2,400 cubic feet bimonthly			
3	General Service			
	1st Step: (all year)	\$ 3.27	\$ 3.44	5.2%
	2nd Step: (all year) (over 5,000 cf bimonthly)	\$ 3.98	\$ 4.22	6.0%
4	Municipal Service			
	1st Step: (all year)	\$ 3.22	\$ 3.38	5.0%
	Interruptible Outdoor Irrigation use			
5	Second Meters Service			
	A. Seasonal Meters/Dedicated Outdoor Irrigation use			
	All consumption	\$ 5.89	\$ 6.29	6.8%
	B. Non-Irrigation, Non-sewered	\$ 3.98	\$ 4.22	6.0%

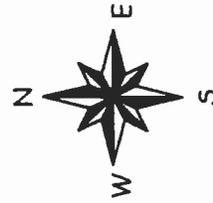
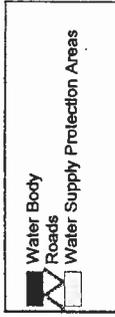
** It is proposed that, starting June 1, 2006, residential customers eligible for state circuit-breaker and/or Clause 41A property tax deferrals or Clause 41C exemptions receive a 30% discount on Step 1 water consumption up to a maximum of 2,400 cubic feet in a bimonthly billing period.

Sample Impacts	Current Annual	Proposed Annual	Annual Change	Monthly Change	% Chg.
1a Average Residential Customer (2,000 cubic feet bimonthly) <i>Approximately two-thirds of residential customers normally use less than the Conservation step threshold.</i>	\$ 392	\$ 413	\$ 20.40	\$ 1.70	5.2%
1b Large Summertime Residential Customer (4,000 cubic feet bimonthly during summer; 2,500 cubic feet bimonthly rest of year)	\$ 763	\$ 808	\$ 44.19	\$ 3.68	5.8%
1c Larger Summertime Residential Customer (6,000 cubic feet bimonthly during summer; 2,500 cubic feet bimonthly rest of year)	\$ 1,182	\$ 1,255	\$ 73.59	\$ 6.13	6.2%
3a Small Commercial Customer (4,000 cubic feet bimonthly) <i>Approximately two-thirds of commercial/institutional/Gov't customers normally use less than than the 2nd step threshold.</i>	\$ 785	\$ 826	\$ 40.80	\$ 3.40	5.2%
3b Large Commercial Customer (500,000 cubic feet bimonthly)	\$ 119,187	\$ 126,366	#####	\$ 598.25	6.0%
5a Small Municipal Customer (4,700 cubic feet bimonthly)	\$ 908	\$ 953	\$ 45.12	\$ 3.76	5.0%
5b Large Municipal Customer (60,000 cubic feet bimonthly)	\$ 11,592	\$ 12,168	\$ 576.00	\$ 48.00	5.0%

Town of Concord, Massachusetts



Concord Water Supply



This map was created by
Concord Public Works.
The information is provided as a
reasonably accurate point of reference
but is not guaranteed and is not
to be used for conveyances.
The Town of Concord shall not
be held responsible for the
accuracy or misuse of this data.

