

Section III

FY03

Enterprise Budget Detail

Water Fund

Water Fund

Program Description

Concord's Water system provides potable water supply and fire protection services to over 90% of residential households, as well as municipal, institutional, and commercial establishments within the Town of Concord. In addition, the system serves over 50 customers located along Rt. 2A in Acton. Six active groundwater wells and one surface water supply (Nagog Pond) are drawn upon to meet system demands. Supplies are interconnected via a common distribution system, which includes two storage reservoirs (with a combined capacity of 7.5 million gallons), 121 miles of distribution mains and approximately 5,400 individual service connections.

Considerable effort and money continues to be invested into water service reliability and quality. Reliability is enhanced through targeted infrastructure maintenance and replacement activities. Quality improvements are evolving from lower cost operational improvements made over the past 5 years to more capital-intensive investments proposed over the course of the next several years.

FY03 Program Highlights

Brewster Well - New Source Approval Process. In January 2001, a Special Town Meeting voted to acquire approximately 27 acres of land at the end of Ball's Hill Road from the Benson family. Nine acres were subsequently sold off resulting in a net land acquisition cost of 2 million dollars. This project reaffirmed a long-standing community vision to secure additional water supply. It was also a key element in the Water Program's ten-year capital plan. In FY03, CPW began to engage in an extensive regulatory screening and approval process required under the State of Massachusetts New Source Approval Process.

Station Rehabilitation Activities. Both the Jennie Dugan and Second Division pumping facilities, originally constructed in the mid-1960's, underwent a complete rehabilitation of all mechanical, electrical, and chemical feed systems. Inclusion of premium efficiency motors and optimization of pumping assemblies will result in improved performance and reliability.

SCADA System Upgrade. Phase I, including the engineering, design, and installation of equipment required to convert an antiquated telemetry-based control/monitoring system to a modern supervisory control and data acquisition (SCADA) system has been successfully completed. SCADA technology will allow more frequent monitoring of pumping stations improving data collection and analysis. With this new system, stations can also be controlled remotely.

Water Conservation. To continue to promote water conservation, especially in the area of seasonal, outdoor water use, CPW strengthened its outreach and education programs. Larger water users were targeted for voluntary residential water audits with particular attention placed on proper operation of in-ground irrigation systems.

Water Quality. Water quality improvement activities continue to gain a significant amount of attention. Specific developments were made towards the installation of a full-scale iron and manganese treatment system planned for the Deaconess Well. Also, chemical feed

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improvements made within several pumping stations were also completed to further support the water quality optimization program.

Nagog Pond and UV Technology. Continuation of an American Water Works Research Foundation (AWWARF) supported ultraviolet (UV) treatment pilot study. This initiative is being performed in collaboration with the MWRA, Southern Nevada Water Authority, Portland Water Bureau and the EPA and is undertaken to test the effectiveness of ultra violet (UV) irradiation technology for disinfecting an unfiltered surface water supply. Due to successful resource protection efforts, CPW has continued to defer the federal mandate for the design/build of a surface water filtration plant, which would cost an estimated \$3-5 million.

Water Main Improvement Program. In accordance with its annual water main replacement/improvement plan, approximately 2,850 feet of unlined, cast-iron 10-inch water main (vintage -1912) located on the Concord Academy side of Main Street (from the intersection of Thoreau Street to Monument Square) was cleaned and lined along with approximately 750 feet of unlined, cast-iron 8-inch water main located along Bedford Street (from Monument Square to Court Lane).

FY04 Capital Plan

In keeping with long-term improvement plans, the FY04 Capital plan includes a total outlay of approximately \$1.4 million earmarked for the following:

PROTECTION

Source Protection \$30,000

Miscellaneous equipment/materials for ongoing implementation of water resource protection program. The needs that are identified are for additional public education and improved forestry management activities to supplement existing protection program.

DEVELOPMENT

New Source \$100,000

Ongoing design and New Source permitting and approval processes associated with development of the Brewster Well.

IMPROVEMENTS

Station Structures \$75,000

Annual capital outlay for improvements and replacement of station structures. Bulk chemical storage tanks to be inspected and repaired/replaced as needed. Robinson Well pumping station to be painted.

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Station Equipment \$200,000

Annual capital outlay for improvements and replacement of station equipment used to control, monitor, pump, store, and treat water. The equipment includes motors, pumps, motor control panels, and chemical feed systems. Complete overhaul planned for White Pond pumping station with major electrical system upgrade and pump replacement planned for Rt. 2A pumping station.

SCADA \$75,000

Completion of conversion from antiquated telemetry-based control/monitoring system to modern supervisory control and data acquisition (SCADA) system. SCADA will allow pumping stations to be monitored more frequently improving data collection and analysis. With this new system, stations can be controlled remotely.

TREATMENT

Nagog Treatment Plant \$50,000

Continuation of AWWARF collaborative ultraviolet (UV) treatment pilot study. Due to successful resource protection efforts, CPW has continued to defer federal mandate for design/build of surface water filtration plant, which would cost an estimated \$3-5 million.

Iron & Manganese Treatment \$350,000

Treatment optimization efforts have demonstrated that full-scale removal of iron and manganese (I&M) is required to satisfactorily address quality problem identified within the Deaconess well. Monies planned for FY04 are for the design of the I&M treatment system.

Treatment Optimization Program \$15,000

Ongoing optimization program, initiated in FY98, used to assess and identify low-cost operational and treatment modification options for improved water quality within the distribution system.

DISTRIBUTION SYSTEM

New and Replacement Mains \$300,000

Annual capital outlay for improvements to and extension of the water distribution system. Program is designed to insure that aging deteriorating mains are replaced or rehabilitated in a methodical and prudent manner. The Water Division continues to coordinate system upgrades with the Engineering Division to insure its needs are incorporated into larger public works improvement efforts (such as the Roads Program).

Meter Replacement Program \$21,000

Water fund portion of equipment costs associated with the system-wide meter replacement efforts.

Hydrant \$20,000

Annual hydrant inspection and replacement activities to insure that all hydrants operate properly. The budget includes costs for approximately 16 new hydrants.

Building Services \$12,000

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

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Pine Street Bridge Water Main \$55,000

Installation of a 12-inch water main within a reconstructed Pine Street Bridge. Project schedule to be dictated by Massachusetts Bridge Reconstruction Program.

GENERAL PLANT

135 Keyes Rd. Facility \$20,000

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

Miscellaneous Equipment \$5,000

Vehicles \$40,000

Water/Sewer Fleet consists of 15 vehicles and miscellaneous equipment/accessories such as a compressor and a vacuum which are replaced using CPW criteria based on industry-accepted useful life measures.

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WATER FUND	FUND # 61
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OPERATING REVENUES

	FY01 Actual	FY02 Actual	FY03 Revised Budget	FY04 Estimate
Water User Fees	2,872,209	3,104,171	3,375,000	3,490,000
Service Charges	27,079	138,211	75,000	75,000
Liens & Tax Titles	22,711	28,039	40,000	40,000
Sale of Tax Possession	0	3,745	0	0
Miscellaneous	2,868	1,034	2,000	2,000
Total Operating Revenues	2,924,867	3,275,200	3,492,000	3,607,000

OPERATING EXPENSES

	FY01 Actual	FY02 Actual	FY03 Revised Budget	FY04 Estimate
Personal Services	652,521	703,423	737,288	791,847
Purchased Services	385,720	394,214	442,553	478,399
Contract - Consulting Engineer	23,543	0	0	0
Supplies & materials	203,987	206,965	291,460	255,810
Other charges & expenses	52,869	55,306	46,632	48,378
Depreciation expense	308,937	355,470	367,646	420,152
Capital reserve charge	--	--	157,000	152,000
Reclassification to inventory	(41,499)	692	--	--
Subtotal	1,586,078	1,716,070	2,042,579	2,146,586
 <u>General Fund Services:</u>				
Management & Engineering Svcs.	154,836	160,903	170,186	170,635
Financial & Administrative Svcs.	153,504	169,200	175,059	185,562
Natural Resource Protection	52,513	57,173	61,605	63,829
Salary Reserve	--	--	--	13,170
Subtotal	360,853	387,276	406,850	433,196
Total Operating Expenses	1,946,931	2,103,346	2,449,429	2,579,782

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WATER FUND	FUND # 61
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AUTHORIZED POSITIONS

Code	Position Title	Grade	Fiscal Year 2003		Fiscal Year 2004	
			# Positions	\$ Amount	# Positions	\$ Amount
5111	W/S Superintendent	MP-10	0.8	58,968	0.6	45,298
	Operations Engineer	MP-7	0.2	10,318	0.2	10,318
	Asst. to Supt.	MP-5	0.8	47,386	0.8	47,402
	Environ. Analyst	MP-3	0.8	32,742	0.8	32,629
	Admin. Asst.	ACL-5	0.8	32,082	0.8	32,599
	Public Works Supv.	LA-7	1.6	85,133	1.6	85,017
	Crew Leader	LA-5	0.8	37,238	0.8	38,048
	Treatment Sys. Oper.	LA-4	1.6	63,776	1.6	64,561
	System Maintainer	LA-3	4.8	165,761	4.8	168,351
	IS Support:					
	Tech. Admin.	MP-8	0.04	2,413	0.04	2,414
	Info. Sys. Asst.	MP-2	<u>0.04</u>	<u>1,721</u>	<u>0.04</u>	<u>1,721</u>
			12.28	537,538	12.08	528,358
	Standby pay		890 hrs.	19,651	890 hrs.	19,913
5112	Water Conservation Coordinator	MP-3	0.625	24,055	0.75	33,674
5120	Temporary/Seasonal:	Misc.				
	Summer Crew	15/hr.	480 hrs.	7,200	480 hrs.	7,200
	GIS Intern	10/hr.	333 hrs.	3,330	333 hrs.	3,330
	Clerk of the Works	35/hr.	832 hrs.	21,840	416 hrs.	14,560
5130	Overtime		2000 hrs.	57,456	2000 hrs.	58,120
5131	Police Details		525 hrs.	20,094	525 hrs.	20,094
517X	Group Insurance --					
	Health, Life, Dental			42,581		46,000
	Retirement			32,365		33,271
	Social Security & Medicare Tax			10,500		12,000
51XX	Salary Reserve --					
	regular pay			--		25,900
	overtime pay			--		2,589
	Budgeted charges to Snow acct.		209 hrs.	(4,051)	680 hrs.	(13,162)
	Estimated vacancy savings			<u>(35,271)</u>		<u>--</u>
				<u>737,288</u>		<u>791,847</u>

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WATER FUND	FUND # 61
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DEBT SERVICE

	<u>FY01 Actual</u>	<u>FY02 Actual</u>	<u>FY03 Budget</u>	<u>FY04 Estimate</u>
Long Term Debt --				
Repayment Schedule - Principal	465,000	430,000	615,000	555,000
Interest	116,090	94,808	151,280	124,243
Debt Issuance Expenses	0	16,545	0	0
Short Term Notes: BAN Interest	0	204,000	0	0
TOTAL	581,090	745,353	766,280	679,243

NET INCOME

	<u>FY01 Actual</u>	<u>FY02 Actual</u>	<u>FY03 Revised Budget</u>	<u>FY04 Estimate</u>
Statement of Net Income:				
Operating Revenues	2,924,867	3,275,200	3,492,000	3,607,000
Operating Expenses	1,946,931	2,103,346	2,449,429	2,579,782
Operating Income	977,936	1,171,854	1,042,571	1,027,218
Investment Income	196,118	164,038	82,000	46,000
Premium on Notes	39,114	0	0	0
Premium on Sale of Bond	0	34,079	0	0
Gross Income	1,213,168	1,369,971	1,124,571	1,073,218
less: Interest Expense	(116,090)	(298,808)	(151,280)	(124,243)
Net Income	1,097,078	1,071,163	973,291	948,975

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WATER FUND	FUND # 61
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AVAILABLE RESOURCES

Resources available from current operations for replacement & renewal of plant:

	FY01 Actual	FY02 Actual	FY03 Revised Budget	FY04 Estimate
from:				
Depreciation expense	308,937	355,470	367,646	420,152
Capital reserve charge	--	--	157,000	152,000
Net Income	1,097,078	1,071,163	973,291	948,975
Total Operations	1,406,015	1,426,633	1,497,937	1,521,127
less:				
Debt Principal repayment	465,000	430,000	615,000	555,000
Net Available for capital purposes	941,015	996,633	882,937	966,127

CONCORD PUBLIC WORKS

DATE: September 4, 2003

MEMORANDUM

To: Douglas Meagher, Acting Town Manager

Via: Anthony T. Logalbo, Finance Director
Via: Marie Cosgrove, Budget and Purchasing Administrator
Via: William B. Edgerton, Director CPW

From: Alan Cathcart, Water/Sewer Division Superintendent

Subject: Nagog Pond Treatment, Feasibility Study—RFQ #125
Supplemental Information

In response to questions raised regarding the budget plan associated with the tasks outlined within Black & Veatch Proposal for RFQ #125, I submit the following Table. As the timetable for many of these tasks are driven by regulatory variables and water quality improvement interests for improved customer satisfaction, the projected schedule is presented for general planning purposes only. The Five-Year Capital Improvement Plan which incorporates the tasks detailed below is provided for comparison.

Table 1 – Tasks

Task No.	Task Description	FY04	FY05	FY06	FY07-08	TOTAL
1	Review Existing Information	\$4,438	\$4,438	\$4,438	\$4,438	\$17,753
2	Field Inspection	\$7,109	\$7,109	\$7,109	\$7,109	\$54,207
3	Nagog Pond	\$50,000	\$14,233			\$64,233
4	Nagog Pond Ozone Facility Operation	\$25,000	\$3,436			\$28,436
5	Water Quality Monitoring	\$36,937	\$36,937	\$36,937	\$36,937	\$147,748
6	Evaluation of Treatment Alternatives	\$23,968	\$47,937	\$95,874	\$23,968	\$191,748
	Rapid Asset Management	\$15,050	\$15,050			\$30,100
7	Vulnerability Assessment EOP	\$23,907	\$23,907			\$47,814
8	Iron and Manganese Peer Review.	\$11,900	\$11,900			\$22,902
9	Technical assistance	\$21,805	\$21,805	\$21,805	\$21,805	\$87,221
	Subtotal	\$162,502	\$186,752	\$166,163	\$94,257	\$692,160
	Water Fund CIP	\$895,000	\$4,635,000	\$5,586,000	\$220,000	



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WATER FUND	FUND # 61
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CAPITAL SPENDING PLAN

Uses of Resources:	<u>FY01 Actual</u>	<u>FY02 Actual</u>	<u>FY03 Revised Budget</u>	<u>FY04 Estimate</u>
<u>Vehicle Purchase / Replacement</u>				
Unit#80: 1989 sedan -> pickup truck trade-in	15,582 (400)			
Unit#85: 1994 pickup (2500)		17,642		
Unit#90a: 10-ton dump -> 5-ton dump		47,510		
Unit#90b: 10-ton dump -> pickup (1500)		15,912		
Unit#93: 1989 tractor -> skid-steer loader			33,594	
Unit #1: 1995 sedan			16,000	
Unit#81: 1996 1-ton pickup (3500)				18,640
Unit#89: 1996 pickup (2500)				21,600
<u>Supply/Capacity</u>				
Source protection	27,882	1,840	10,000	30,000
New source permitting, design, construction	0	0	150,000	100,000
Water supply exploration - test wells	256	4,814	10,000	0
<u>Improvements</u>				
Station structures	0	39,629	75,000	75,000
Station equipment	9,210	53,711	200,000	200,000
SCADA upgrade	12,648	143,275	50,000	75,000
<u>Treatment</u>				
Nagog ozone plant enhancements	0	71,583	25,000	50,000
Treatment optimization program	0	296	5,000	15,000
Iron & manganese removal	0	0	50,000	350,000
<u>Distribution System</u>				
Meter replacement program	86,169	17,587	45,000	21,000
Hydrant replacement/additions	10,321	9,431	10,000	20,000
Building service lines	5,340	0	25,000	12,000
Mains replacement program	361,427	228,774	250,000	300,000
Pine Street Bridge Main	0	0	0	55,000

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Town of Concord, Massachusetts

WATER FUND	FUND # 61
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CAPITAL SPENDING PLAN (cont.)

	<u>FY01 Actual</u>	<u>FY02 Actual</u>	<u>FY03 Revised Budget</u>	<u>FY04 Estimate</u>
Uses of Resources - continued:				
<u>General Plant Improvements</u>				
Keyes Road Facility	2,649	0	5,000	20,000
GIS support	59,211	7,685	0	0
Miscellaneous small equipment	0	1,708	5,000	5,000
<u>Miscellaneous Capital Items</u>				
Computer software & hardware	6,346	2,785	53,857	0
<u>Capital Projects</u>				
Robinson Well Development	16,031	0	0	0
Hugh Cargill / White Pond Wells	157,932	220,881	0	0
Keyes Rd. - CPW Facility	0	31,813	0	0
Benson Land (Lot B -survey/test wells)	125,394	15,751	0	0
GRAND TOTAL	<u>895,998</u>	<u>932,627</u>	<u>1,018,451</u>	<u>1,368,240</u>

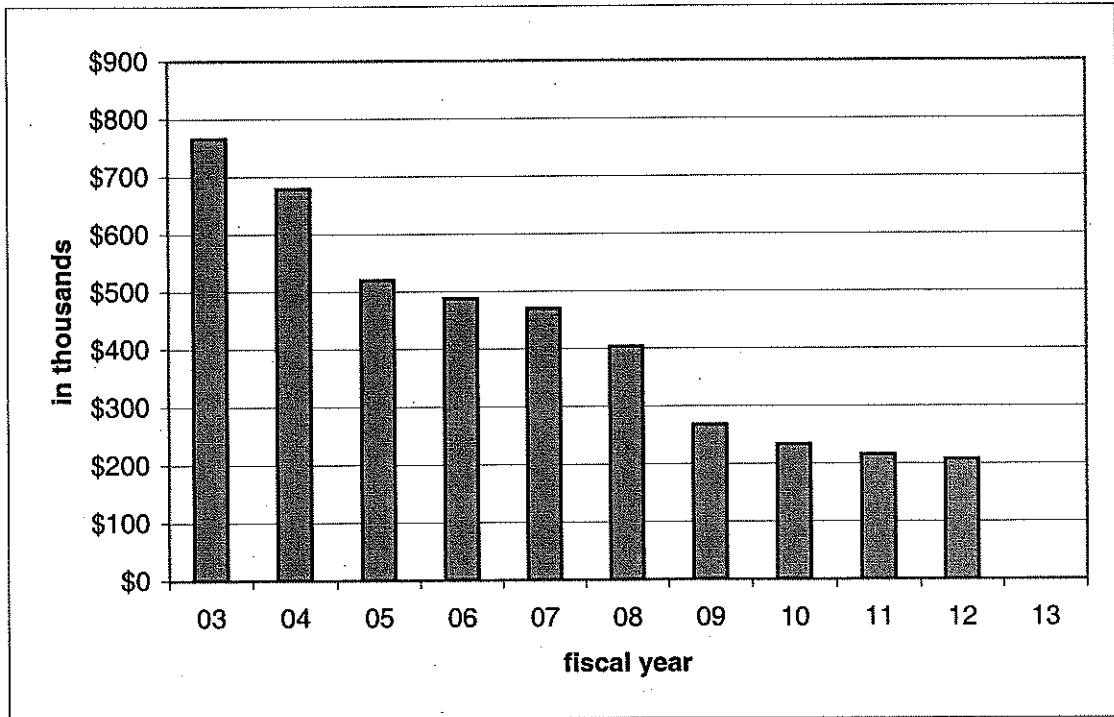
USE OF BORROWED FUNDS

	<u>FY01 Actual</u>	<u>FY02 Actual</u>	<u>FY03 Revised Budget</u>	<u>FY04 Estimate</u>
<u>Capital Projects</u>				
Nagog Disinfection Facility	7,010	0	0	0
Hugh Cargill/Satellite Wells	136,471	42,330	256	0
New Source Acquisition - Benson Land	<u>5,100,000</u>	<u>(3,100,000) *</u>	0	0
	5,243,481	(3,057,670)	256	0
*Sale of Benson Lot B				

Town of Concord, Massachusetts

Water Debt Service

Fiscal Year	Principal	Interest	Total
2003	615,000	151,280	766,280
2004	555,000	124,243	679,243
2005	420,000	100,010	520,010
2006	405,000	82,478	487,478
2007	405,000	65,523	470,523
2008	355,000	48,320	403,320
2009	235,000	33,118	268,118
2010	210,000	23,915	233,915
2011	200,000	15,800	215,800
2012	200,000	8,000	208,000
2013	0	0	0
Totals	\$3,600,000	\$652,687	\$4,252,687



Town of Concord, Massachusetts

**DETAIL OF GENERAL FUND SERVICES
PROVIDED TO WATER FUND**

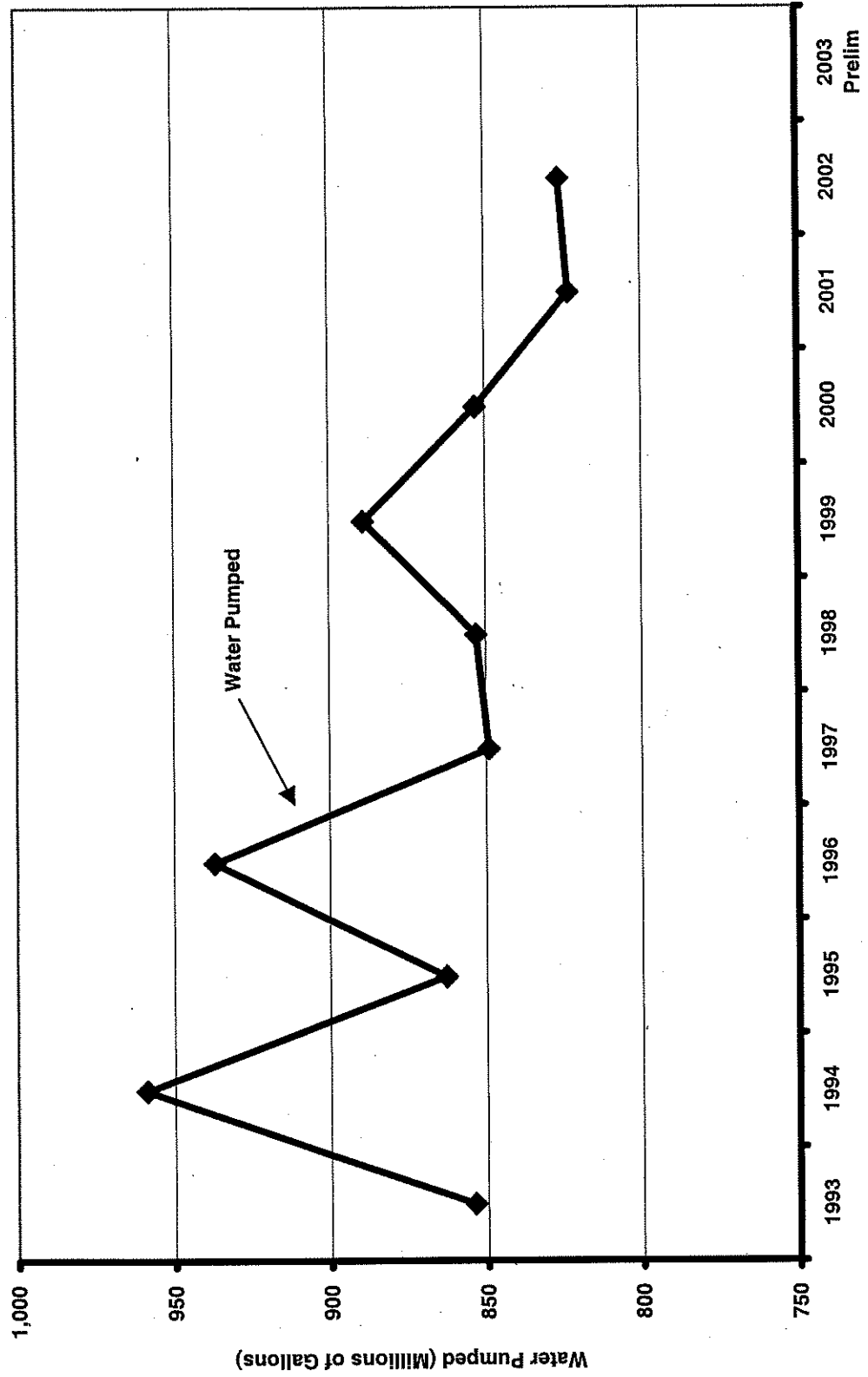
	<u>FY01 Actual</u>	<u>FY02 Actual</u>	<u>FY03 Revised Budget</u>	<u>FY04 Estimate</u>
Management & Engineering Services				
Public Works Administration	60,017	63,209	65,063	64,858
Public Works Engineering	43,836	47,470	47,838	48,266
Highway Maintenance	11,941	12,534	13,068	13,215
133/135 Keyes Road Facilities	<u>39,042</u>	<u>37,690</u>	<u>44,217</u>	<u>44,296</u>
	154,836	160,903	170,186	170,635
Financial & Administrative Services				
Town Manager	36,672	38,657	40,578	40,582
Town Accountant				
General Services	41,439	47,862	45,682	44,492
Audit Services	1,600	3,225	5,160	5,160
Finance Administration	28,955	30,125	31,659	42,171
Treasurer-Collector	33,464	36,181	38,238	38,527
Personnel Administration	7,805	8,425	8,580	9,255
Town House Facilities	<u>3,569</u>	<u>4,725</u>	<u>5,162</u>	<u>5,375</u>
	153,504	169,200	175,059	185,562
Natural Resource Protection				
Planning	23,919	25,785	27,252	27,369
Natural Resources	14,010	16,111	17,081	17,588
Health	<u>14,584</u>	<u>15,277</u>	<u>17,272</u>	<u>18,872</u>
	52,513	57,173	61,605	63,829
Salary Reserve				
Averages 4.0% of salaries (\$329,246)	<u>--</u>	<u>--</u>	<u>--</u>	<u>13,170</u>
	<u>360,853</u>	<u>387,276</u>	<u>406,850</u>	<u>433,196</u>

Water Fund
Water Pumped, Revenue, Expense, Operating Income, and Net Income
(FY93 - FY04)

<u>Fiscal Year</u>	<u>Water Pumped (Millions of Gallons)</u>	<u>Operating Revenue</u>	<u>Operating Expense</u>	<u>Operating Income</u>	<u>Net Income</u>
1993	854	\$1,553,000	\$1,265,000	\$288,000	\$260,000
1994	959	\$1,689,000	\$1,280,000	\$409,000	\$369,000
1995	863	\$1,820,000	\$1,372,000	\$448,000	\$478,000
1996	937	\$2,228,819	\$1,297,607	\$931,212	\$957,252
1997	849	\$2,233,752	\$1,408,950	\$824,802	\$819,159
1998	853	\$2,464,438	\$1,557,178	\$907,260	\$935,382
1999	889	\$2,991,496	\$1,660,984	\$1,330,512	\$1,369,052
2000	853	\$3,039,578	\$1,868,320	\$1,171,258	\$1,232,781
2001	823	\$2,924,867	\$1,946,931	\$977,936	\$1,097,078
2002	826	\$3,275,200	\$2,103,346	\$1,171,854	\$1,071,163
2003 Prelim		\$3,492,000	\$2,449,429	\$1,042,571	\$973,291
2004 Budget		\$3,493,000	\$2,579,782	\$913,218	\$858,975

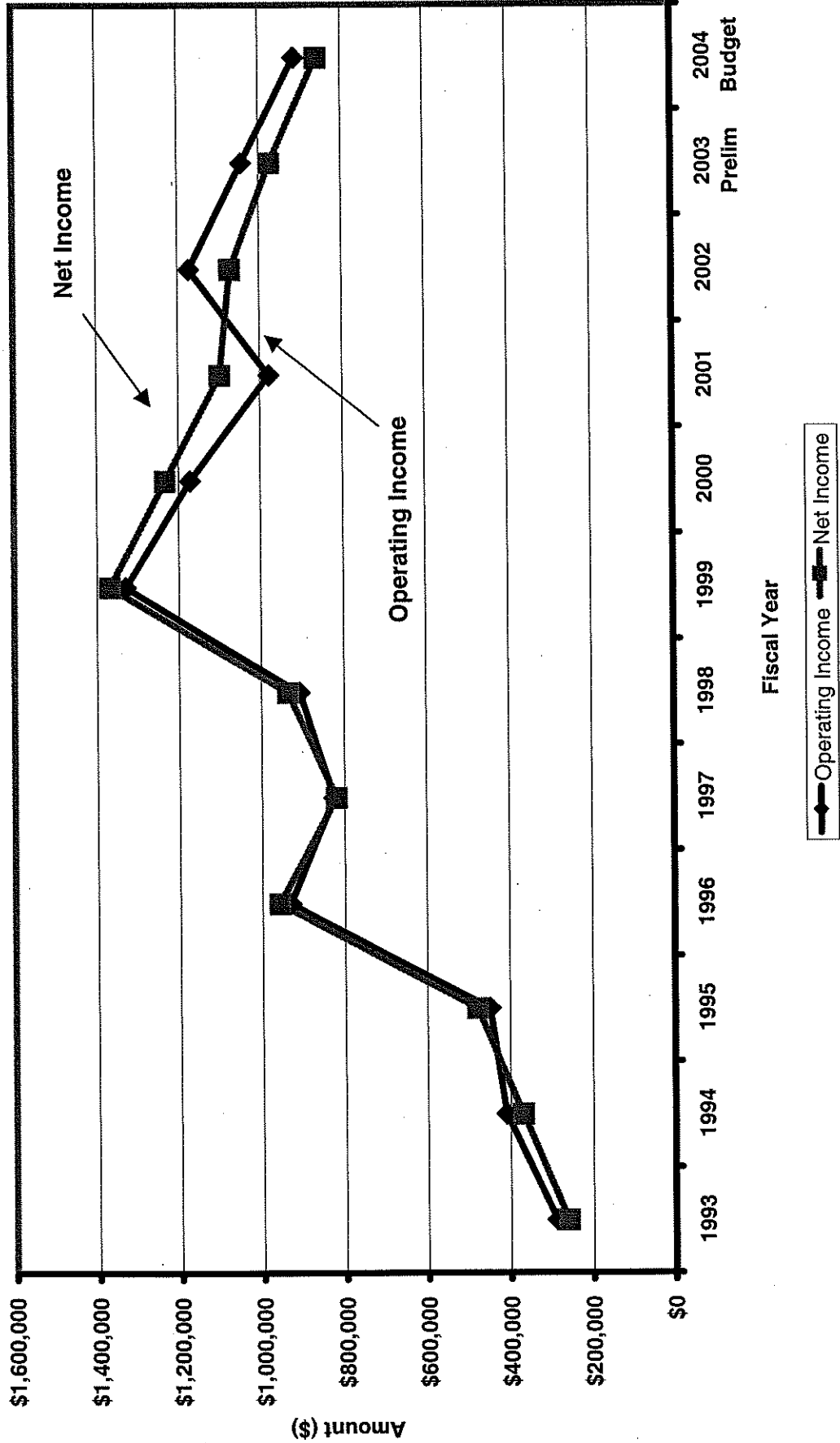
Town of Concord, Massachusetts

Water Fund
Millions of Gallons Pumped



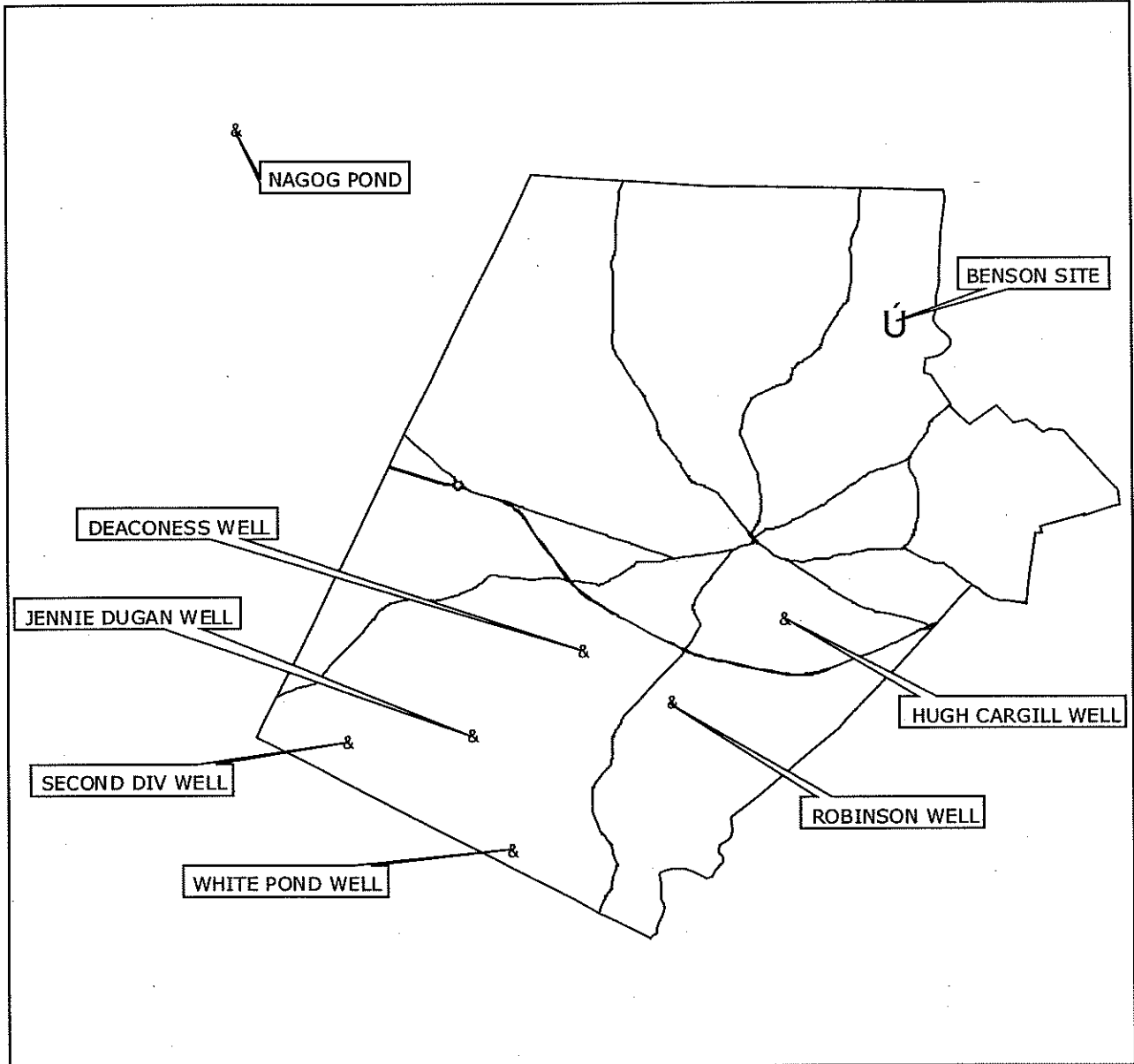
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Water Fund
Operating and Net Income





Town of Concord, Massachusetts

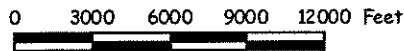


Legend

- & Active Supply
- U Future Supply
- ∨ Roads

Public Water Supplies

March 27, 2002



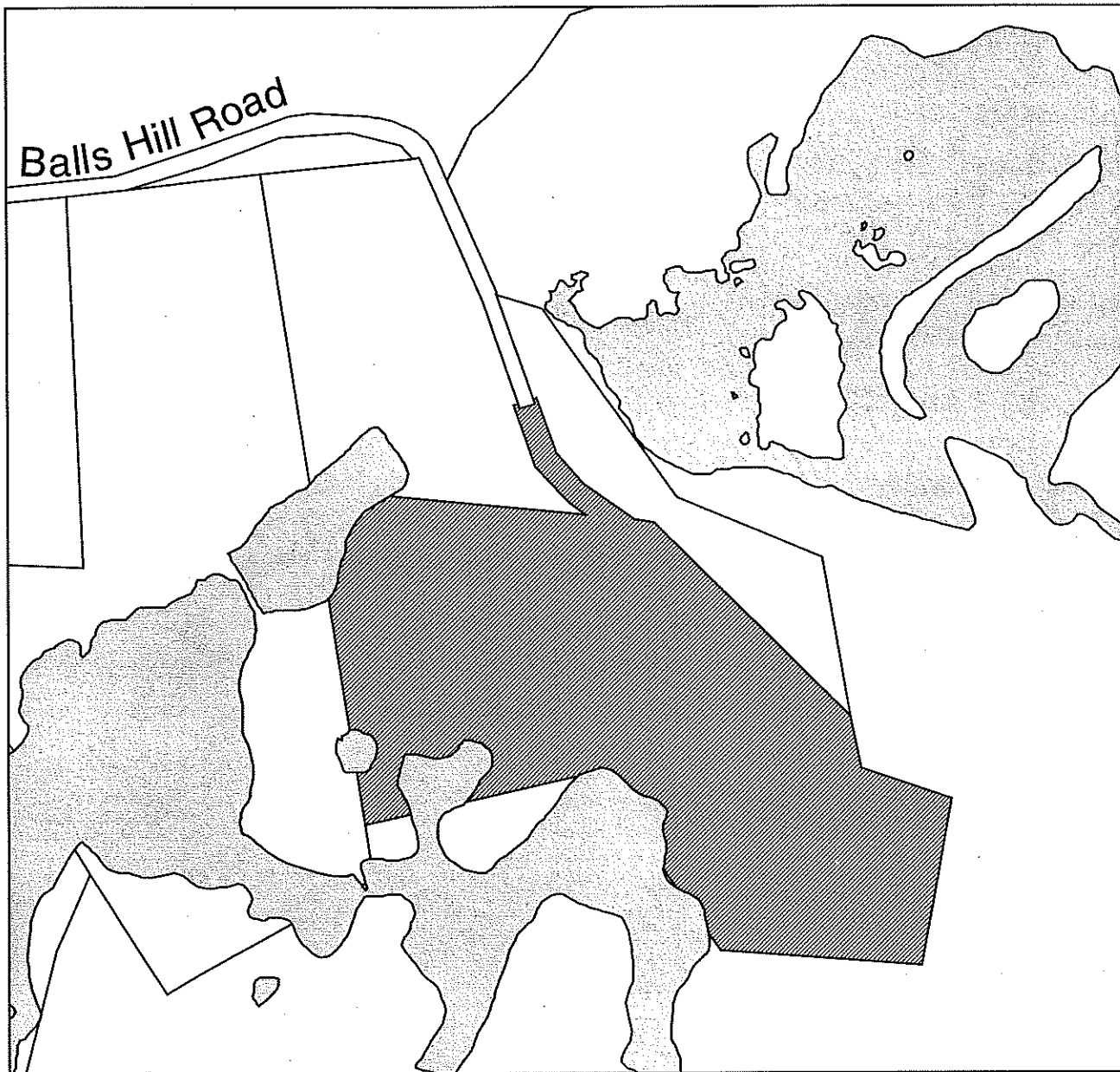
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but is not guaranteed and is not
to be used for conveyances.
The Town of Concord shall not
be held responsible for the
accuracy or misuse of this data.




Town of Concord, Massachusetts



Balls Hill Road



Legend

-  Ponds
-  Town Property
-  Private Property

Benson Site Future Water Supply

March 27, 2002

0 100 200 300 400 500 600 700 Feet



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