

For more information, please contact MWRA at (617) 242-5323, or visit www.mwra.com.

WATER QUALITY UPDATE An Analysis of May 2005 Sampling Data

MASSACHUSETTS WATER RESOURCES AUTHORITY
100 First Avenue, Charlestown Navy Yard, Boston, MA 02129



MWRA WATER QUALITY UPDATE

May 2005 Highlights

- **In May and June, the Walnut Hill Water Treatment Plant was operated to demonstrate that all systems are working properly.** The water used during this time period does not enter the distribution system for customer use. Once this testing is completed, the treatment plant will begin supplying fully treated water to the system, currently anticipated for July. See page 11 for more information and an advisory sent to sensitive users in early June.
- **As part of the Lead and Copper Rule (LCR), MWRA is required to meet certain targets for pH and alkalinity.** The second quarterly sampling event of community distribution locations occurred on May 3. All samples met the criteria. See Page 6.
- **Lead and Copper samples were collected from 440 higher-risk homes in March and April 2005.** The 90th percentile result for lead was 13.2 mg/L, below the Action Level of 15 mg/L. The three most recent rounds and 6 of the past 8 have been below the Action Level. See page 10.
- **DBP levels are elevated for May and will remain so through June.** Contributing factors are higher UV254 levels and the higher chlorine doses and high flows needed to support Walnut Hill Water Treatment Plant testing. The transfer of Quabbin Reservoir water to the Wachusett Reservoir was initiated on May 20 to lower the UV254 levels. See page 8.
- **One hundred and twenty-five no water complaints were reported from Waltham on May 23** when a local contractor caused a water main break by Route 128 and Winter Street. The contractor was able to repair the water main on the morning of May 24.
- **For your convenience, and to help save money and paper, you can now receive the monthly *Water Quality Update* on-line instead of via post.** Each month, we will send you an e-mail with [the highlights and the link to the *Water Quality Update*](#) online on our web-page. Please send an e-mail to Joshua.Das@mwra.state.ma.us if you are interested.

Let us know what you think (617) 242-5323

Release Date: June 20, 2005

Water Quality Update

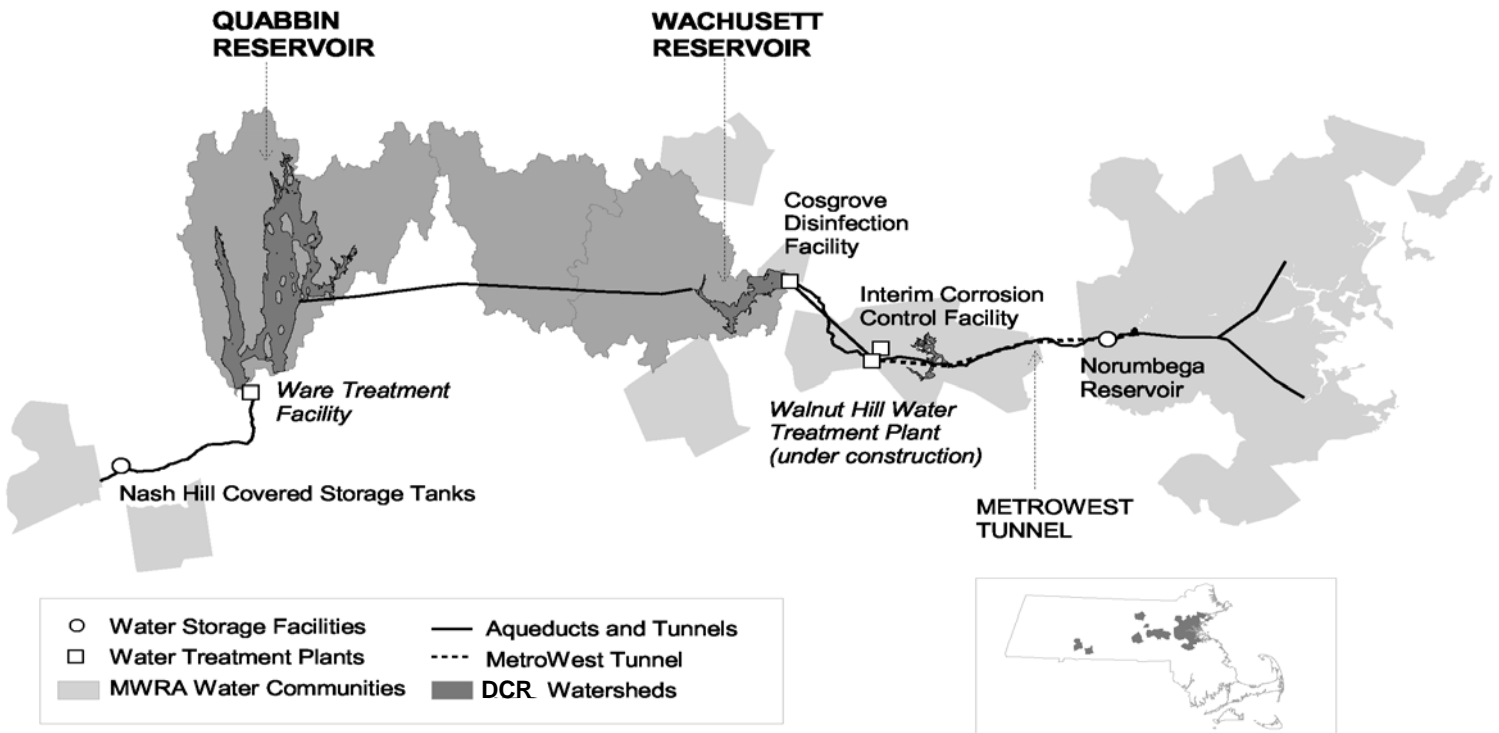
This is a monthly report containing information about the quality of water supplied by MWRA. It provides a more detailed review of water quality than the annual water quality report that is mailed each June to customers in our service area. The report is available at www.mwra.com.

The Water System

MWRA provides about 250 million gallons of water each day to 46 cities and towns in Massachusetts. Each municipality is responsible for distributing the water within its own community. More than two million people are served by the MWRA water supply system.

Quabbin Reservoir is the primary source of water for our system and one of the country's largest water supply impoundments, with a capacity of 412 billion gallons. Quabbin water represents source water for the Chicopee Valley Aqueduct (CVA) system. Water is transferred from Quabbin Reservoir to the 65 billion gallon Wachusett Reservoir in Clinton via the Quabbin Aqueduct. Wachusett water represents source water for MetroWest and Metropolitan Boston communities. The watershed areas of the Quabbin and Wachusett Reservoirs total 401 square miles. The Department of Conservation and Recreation (DCR), which manages the watersheds, and MWRA are committed to protection of the water supply through aggressive watershed protection as the first line of defense against water contamination. Three-quarters of the watersheds are protected lands and over 80% are either forest or wetlands.

The map below indicates the location of reservoirs, treatment facilities, and service communities.



Indicators of Water Quality

Tests are conducted on water sampled at the source reservoirs (source or raw water) and also on water after treatment (treated water). MWRA routinely uses six general indicators of water quality: microbial, corrosiveness, disinfection by-products, turbidity and algae, disinfectant residual, and mineral analysis. Testing frequencies vary by parameter.

The Federal Safe Drinking Water Act (SDWA) sets standards for source and treated water quality. The standards relate to coliform, turbidity, watershed protection, disinfection and disinfection by-products, over 120 potential chemical contaminants, and waterborne disease outbreaks. MWRA monitors for these parameters on schedules ranging from daily to annually.

Customer communities must also meet certain standards under the SDWA concerning distribution of treated drinking water. The Total Coliform Rule (TCR) helps to alert communities to possible microbial contamination as well as the adequacy of residual disinfection within the local distribution system. MWRA tests over 1500 samples per month. Under the SDWA, a violation of the TCR occurs when greater than 5% of the samples in a community are positive for total coliform during a month.

Source Water – Microbial Results

May 2005

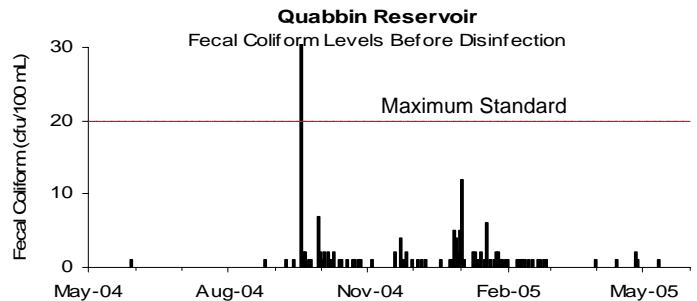
Source Water - Microbial Results

Total coliform bacteria are monitored in both source and treated water to provide an indication of overall bacteriological activity. Most coliforms are harmless. Fecal coliform, a subclass of the coliform group, are identified by their growth at temperatures comparable to those in the intestinal tract of mammals. They act as indicators of possible fecal contamination. The Surface Water Treatment Rule for unfiltered supplies requires that no more than 10% of source water samples prior to disinfection over any six-month period have more than 20 fecal coliforms per 100ml.

Sample Site: Quabbin Reservoir

Quabbin Reservoir water is sampled at the Ware Disinfection Facility (WDF) raw water tap before entering the CVA system as of July 13, 2004. Prior data was sampled at Winsor Dam. MWRA met the six-month running average standard for fecal coliform continuously at this location over the last year.

One of the 31 samples was positive during May. The sample did not exceed a count of 20 cfu/100ml.



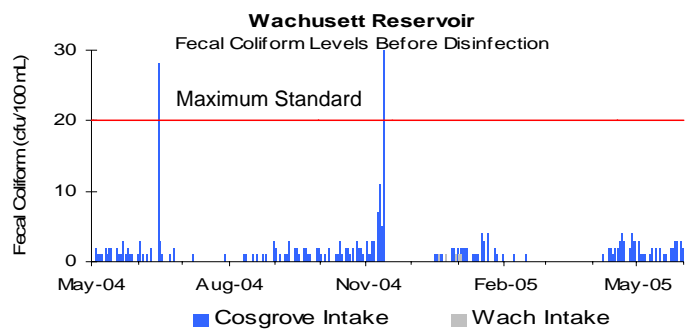
Sample Site: Wachusett Reservoir

Wachusett Reservoir water is sampled before it enters the MetroWest and Metropolitan Boston systems at the Cosgrove Intake.

Fecal coliform levels tend to increase during the winter because, when water bodies near Wachusett ice over, waterfowl seek open water. Many roost at Wachusett, which tends to freeze later in the year than smaller ponds nearby.

Eighteen of the 22 samples were positive during May. None of the the samples exceeded a count of 20 cfu/100ml and all were in the low single digits.

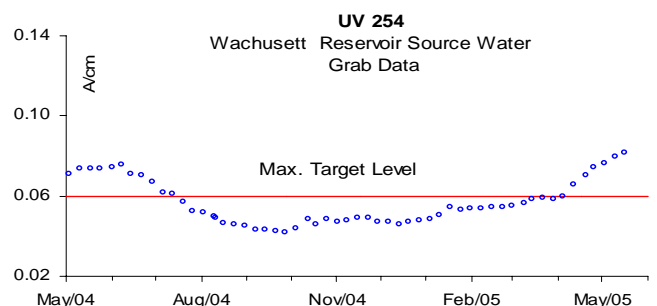
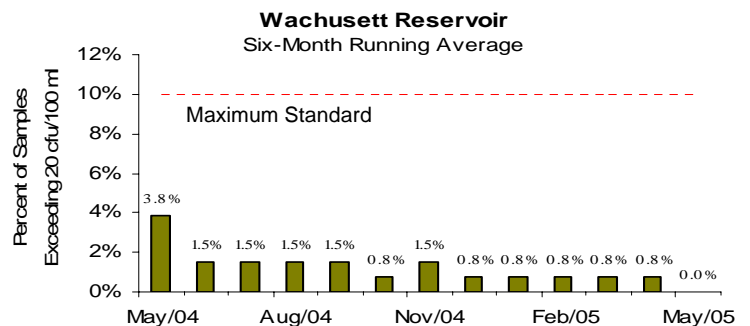
For the current six-month period, 0.0% of the samples have exceeded a count of 20 cfu/100ml.



UV

UV-254 is a surrogate measure of reactive organic matter and is a good predictor for DBP levels. Levels are currently around 0.081 A/cm.

The transfer of the Quabbin Reservoir water to the Wachusett Reservoir was initiated on May 20, 2005, and this will help to lower UV at the intake in approximately six weeks.

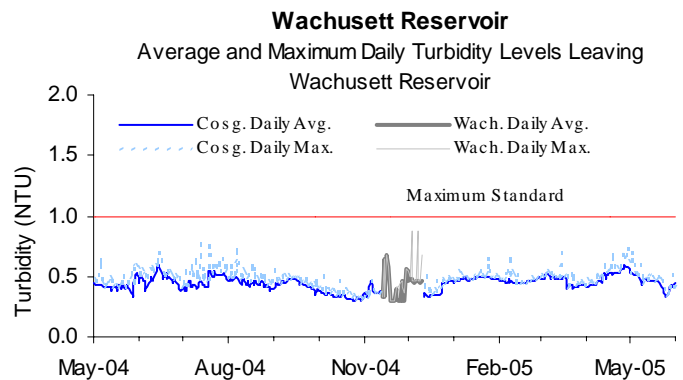
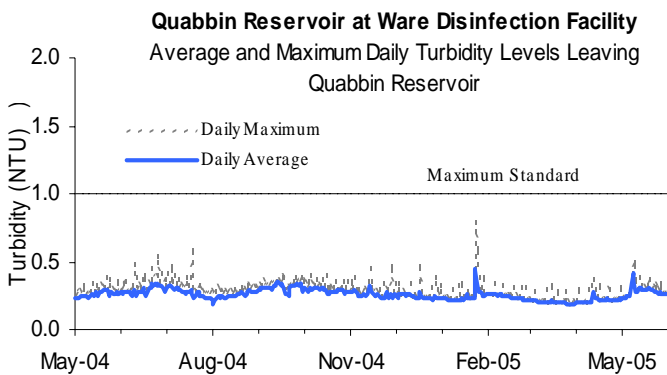


Source Water – Turbidity and Algae Results May 2005

Source Water – Turbidity Results

Turbidity is a measure of suspended and colloidal particles including clay, silt, organic and inorganic matter, algae and microorganisms. The effects of turbidity depend on the nature of the matter that causes the turbidity. High levels of particulate matter may have a higher chlorine demand or may protect bacteria from the disinfectant effects of chlorine, thereby interfering with the disinfectant residual throughout the distribution system.

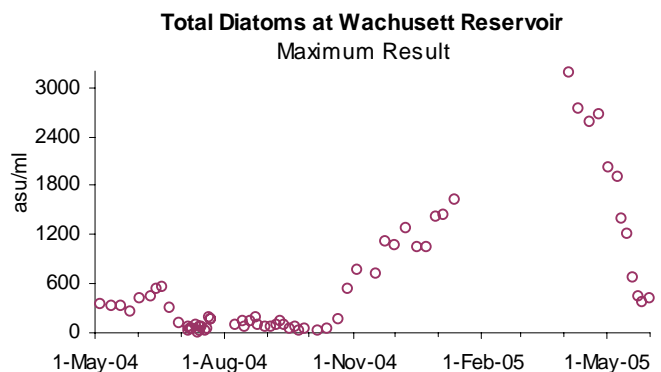
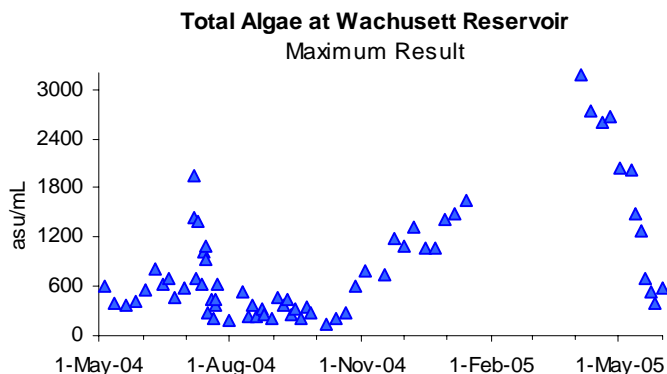
Samples for turbidity from Quabbin Reservoir are collected at the Ware Disinfection Facility before chlorination. Samples from Wachusett Reservoir were taken at Wachusett Intake before chlorination from November 1, 2003 to March 16, 2004, October 26, 2004 and November 13, 2004 to December 10, 2004. Otherwise, samples were taken at the Cosgrove Intake before chlorination. The Massachusetts Department of Environmental Protection standard for source water turbidity for unfiltered water supply systems is a maximum of 1.0 NTU; the EPA standard is a maximum of 5.0 NTU. Maximum turbidity results at Quabbin and Wachusett were within DEP standards for the month.



Source Water – Algae Results

Algal levels in reservoirs are monitored by DCR and MWRA. These results, along with taste and odor complaints, are used to make decisions on source water treatment for algae control. Most taste and odor complaints at the tap are due to algae, which originate in source reservoirs, typically in trace amounts. Occasionally, a particular species grows rapidly, increasing its concentration in water. When *Synura*, *Anabaena*, or other nuisance algae blooms, MWRA may treat the reservoir with copper sulfate, an algicide.

Of the 183 water quality complaints received during May from local water departments, thirty-eight concerned taste and odor that may be due to the diatom *Asterionella*. The diatom levels are on the decline.



Treated Water – Disinfection Results

May 2005

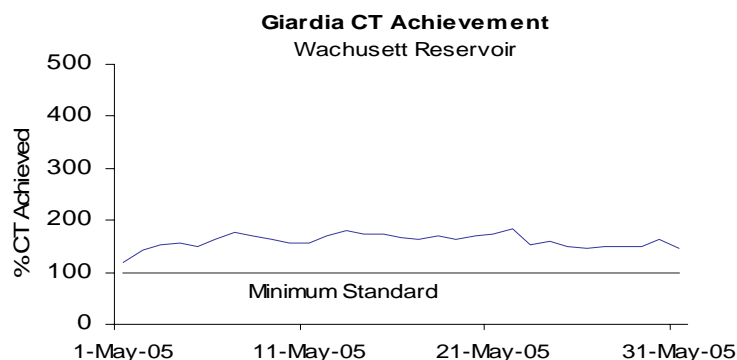
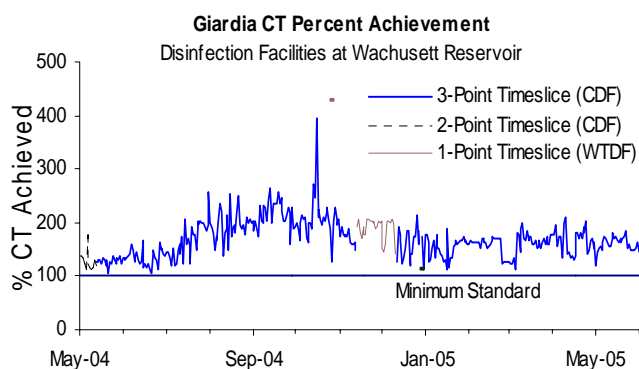
Treated Water - Primary Disinfection

MWRA provides disinfection adequate to achieve EPA's requirement of 99.9% inactivation of *Giardia* cysts and 99.99% inactivation of viruses in drinking water using a calculation based on three sample points that DEP approved in June, 1999. Depending on the number of sample points that are providing accurate information, CT may be reported on one, two or three points.

CT achievement for *Giardia* assures CT achievement for viruses, which have a lower CT requirement. The concentration (C) of the disinfectant in the water over time (T) yields a measure of the effectiveness of disinfection, CT. The required CT varies with disinfectant type, water temperature, pH, and other factors. MWRA calculates daily CT inactivation rates at maximum flow, as specified by EPA regulations.

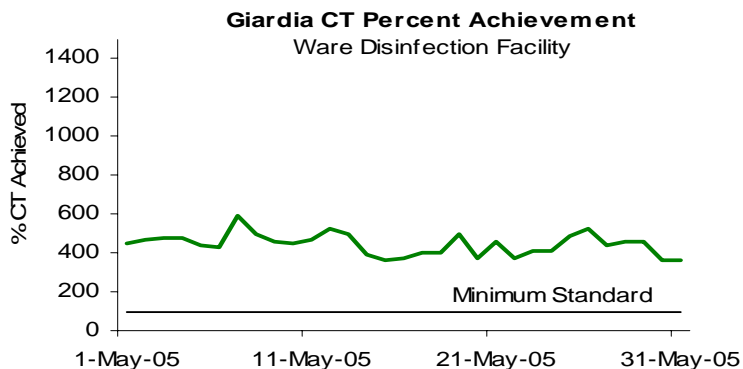
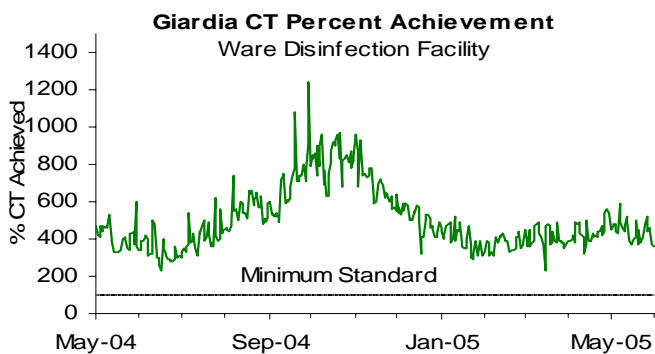
Wachusett Reservoir - MetroBoston Supply:

Chlorine dose at the Cosgrove Disinfection Facility (CDF) varied between 2.0 to 2.5 mg/L. Chlorine doses have been higher during May (and June) to support higher flows for testing of the Walnut Hill Water Treatment Plant. CT was met each day in May, as well as every day for the last year.



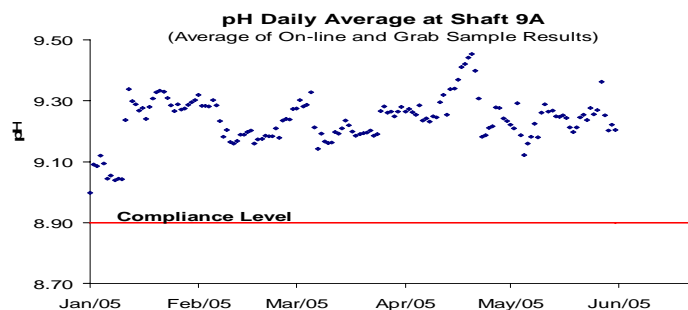
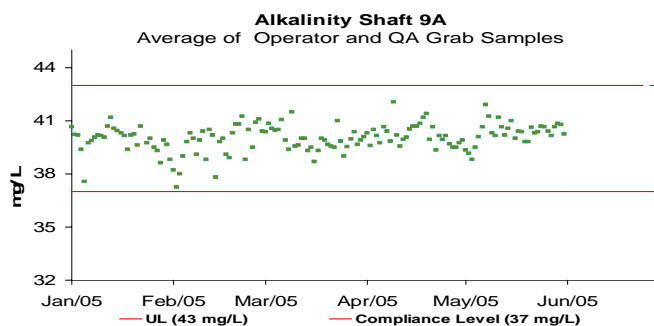
Quabbin Reservoir at Ware Disinfection Facility (CVA Supply):

Chlorine dose remained at 1.3 mg/L. CT was met each day in May, as well as every day for the last year.



Treated Water – pH and Alkalinity Compliance

MWRA adjusts the alkalinity and pH of Wachusett water to reduce its corrosivity in order to minimize the leaching of lead and copper from service lines and home plumbing systems into the water. MWRA's target for distribution system pH is 9.1 and alkalinity is 40 mg/l. Beginning January 1, 2005, as per DEP requirements, samples from Shaft 9A have a minimum compliance level of 8.9 for pH and 37 mg/L for alkalinity. Samples from 27 community taps have a minimum compliance level of 8.8 for pH and 37 mg/L for alkalinity. For no more than nine days in a six-month period may results be below these levels. Quality Assurance and operator staff test pH and alkalinity daily at Shaft 9A. Community samples are collected on a quarterly basis. The second quarter community samples were collected May 3, 2005. In May, no sample results were below these levels.



Community Requirements

Minimum Level for *pH* = 8.8

Minimum Level for *Alkalinity* = 37 mg/L

Sample Date : May 3, 2005 Community Address	PARAMETER	
	pH ¹	Alkalinity
Arlington Fire Station, 1 Broadway	9.0	39
Belmont Fire Station, 54 Leonard St.	9.1	37
Boston Fire Station, 1940 Centre Street	9.0	39
Boston, 59 Fenway, Texaco Station	9.0	39
Boston, 9 Gallivan Boulevard, Dorchester	9.2	39
Boston, 200 Cambridge St.	9.1	38
Boston, Logan Airport Hotel, 85 Terminal Rd.	8.8	38
Brookline Fire Station, 338 Washington St.	9.2	37
Everett Fire Station, 243 Ferry St.	9.1	39
Lexington Fire Station, 45 Bedford St.	9.1	38
Malden Fire Station, 1 Sprague St.	9.1	39
Marblehead Fire Station, 1 Ocean Ave.	9.0	38
Medford Fire Station, 13 Medford St.	9.0	39
Medford, Chelsea Medical Ctr, 151 Everett Ave.	9.1	39
Melrose Fire Station, 576 Main St.	9.2	39
Milton Fire Station, 525 Adams St.	9.1	38
Nahant Fire Station, 67 Flash Rd.	8.8	39
Newton Fire Station, 241 Church St.	9.2	38
Norwood Fire Station, 135 Nahantan St.	9.0	39
Quincy, DPW, 55 Sea St.	9.1	38
Revere, 220 Beach Parkway (DCR Parks)	8.9	38
Saugus Police Station, 6 Taylor St.	8.8	39
Stoneham, 16 Wilson Rd.	9.1	38
Swampscott Fire Station, 76 Burrill St.	8.8	39
Waltham Mobil Gas Station, 1033 Trapelo Rd.	9.1	39
Watertown Fire Station, 99 Main St.	9.0	38
Winthrop Fire Station, 40 Pauline St.	8.8	39

1. Average of duplicate results

Bacteria & Chlorine Residual Results for Communities in MWRA Testing Program May 2005

While all communities collect bacteria samples for the Total Coliform Rule (TCR), 37 systems (including Deer Island and Westboro State Hospital) use the MWRA's Laboratory for TCR compliance testing. These systems collect samples for bacteriological analysis and measure water temperature and chlorine residual at the time of collection. The other 9 MWRA customer communities (including Lynn's GE plant) have their samples tested elsewhere and these towns should be contacted directly for their monthly results.

There are 141 sampling locations for which MWRA is required to report TCR results. These locations include a subset of the community TCR locations as well as sites along the MWRA transmission system, water storage tanks and pumping stations.

The Safe Drinking Water Act (SDWA) requires that no more than 5% of all samples may be total coliform positive in a month (or that no more than one sample be positive when less than 40 samples are collected each month). Public notification is required if this standard is exceeded.

Escherichia coli (*E.coli*) is a specific coliform species that is almost always present in fecal material and whose presence indicates likely bacterial contamination of fecal origin. If *E. coli* are detected in a drinking water sample, this is considered evidence of a critical public health concern. Additional testing is conducted immediately and joint corrective action by DEP, MWRA, and the community is undertaken. Public notification is required if follow-up tests confirm the presence of *E. coli* or total coliform. MWRA considers a disinfectant residual of 0.2 mg/L a minimum target level at all points in the distribution system.

Highlights

None of the 1,800 community samples (0.0%) system-wide tested positive for confirmed total coliform during the month of May. Two of the 664 MWRA samples (0.30%) tested positive for confirmed total coliform. No samples tested positive for *E. coli*. All thirty-seven systems that submitted chlorine residual data maintained an average disinfectant residual of at least 0.2 mg/L. 1.8% of the system samples had a disinfectant residual lower than 0.2 mg/L.

TCR results by Community

Town	Samples Tested for Coliform (a)	Total Coliform # (%) Positive	E.coli % Positive	Public Notification Required?	May 2005 Minimum Chlorine Residual (mg/L)	May 2004 Minimum Chlorine Residual (mg/L)	May 2005 Average Chlorine Residual (mg/L)
ARLINGTON	54	0 (0%)			0.06	0.05	0.91
BELMONT	40	0 (0%)			0.13	0.50	0.91
BOSTON	238	0 (0%)			0.05	0.64	1.27
BROOKLINE	85	0 (0%)			1.02	1.17	1.50
CHELSEA	40	0 (0%)			0.58	0.61	1.21
DEER ISLAND	20	0 (0%)			0.89	1.09	1.30
EVERETT	40	0 (0%)			0.41	0.45	0.66
FRAMINGHAM (c)	72	0 (0%)			0.19	0.42	1.20
LEXINGTON	45	0 (0%)			0.75	0.80	1.33
LYNNFIELD	6	0 (0%)			0.70	0.55	1.05
MALDEN	75	0 (0%)			0.76	0.74	0.87
MARBLEHEAD	24	0 (0%)			0.29	0.26	1.19
MARLBOROUGH (b)(c)	55	0 (0%)			0.10	0.49	1.00
MEDFORD	68	0 (0%)			0.51	0.35	1.20
MELROSE	36	0 (0%)			0.03	0.03	0.76
MILTON	40	0 (0%)			0.17	0.06	1.00
NAHANT	10	0 (0%)			0.25	0.38	1.02
NEEDHAM (b)	41	0 (0%)			0.07	0.05	0.28
NEWTON	88	0 (0%)			0.18	0.44	1.44
NORTHBOROUGH	16	0 (0%)			0.94	0.90	1.65
NORWOOD	36	0 (0%)			0.10	0.21	0.98
QUINCY	109	0 (0%)			0.11	0.14	1.19
REVERE	52	0 (0%)			0.97	0.58	1.30
SAUGUS	40	0 (0%)			1.15	1.19	1.40
SOMERVILLE	80	0 (0%)			0.11	0.00	1.29
SOUTHBOROUGH (c)	10	0 (0%)			0.10	0.17	0.92
STONEHAM	28	0 (0%)			0.51	0.17	1.21
SWAMPSCOTT	18	0 (0%)			0.95	1.04	1.36
WAKEFIELD (b)	44	0 (0%)			0.43	0.27	0.92
WALTHAM	68	0 (0%)			0.04	0.19	1.09
WATERTOWN	40	0 (0%)			0.12	0.48	1.10
WELLESLEY (b)	37	0 (0%)			0.13	0.11	0.47
WESTBORO HOSPITAL	5	0 (0%)			0.33	0.22	0.52
WESTON (c)	16	0 (0%)			1.23	0.17	1.52
WINCHESTER (b)	25	0 (0%)			0.10	0.05	0.53
WINTHROP	24	0 (0%)			0.56	0.43	1.23
WOBBURN (b)	75	0 (0%)			0.07	0.21	0.72
Total:	1800	0 (0%)					
MASS. WATER RESOURCES AUTHORITY (d)	664	2 (0.3%)		no	0.05	0.00	1.25

(a) The number of samples collected depends on the population served and the number of repeat samples required.

(b) These communities are partially supplied, and may mix their chlorinated supply with MWRA chloraminated supply.

(c) These communities locally chloraminate.

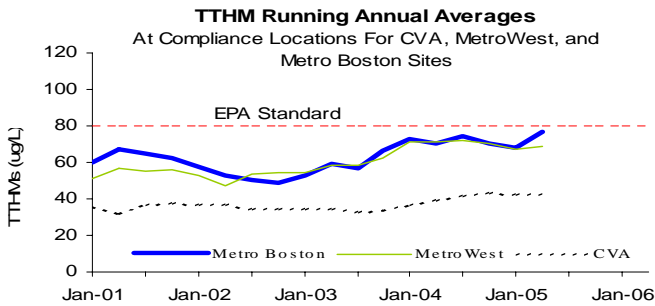
(d) MWRA sampling program includes a subset of community TCR sites as well as sites along the transmission system, tanks and pumping stations. Some MWRA TCR sites which are entry points to the community had low chlorine reasons:

Treated Water - Disinfection By-Product (DBP) Levels in Communities May 2005

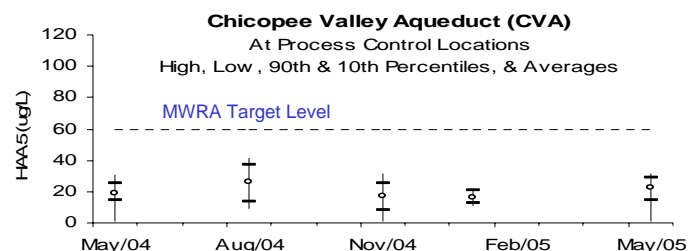
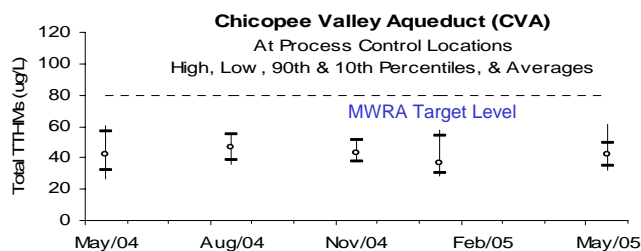
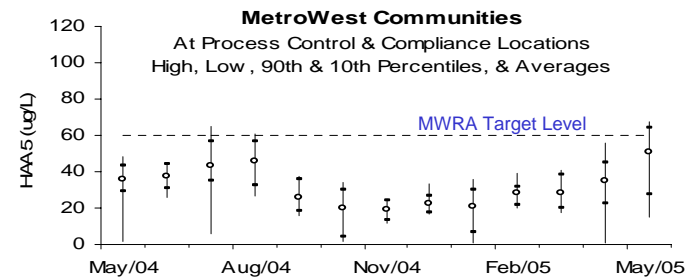
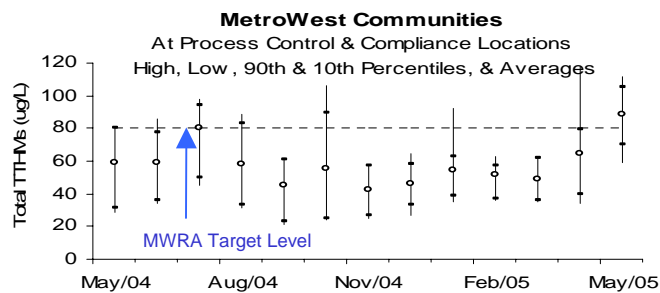
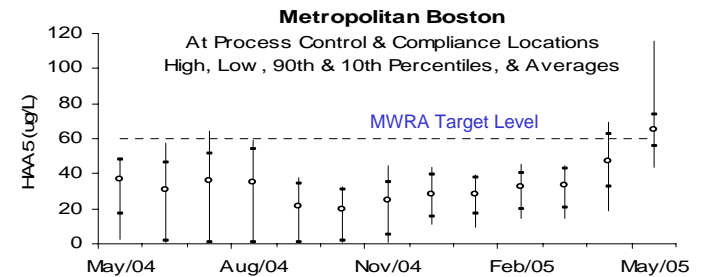
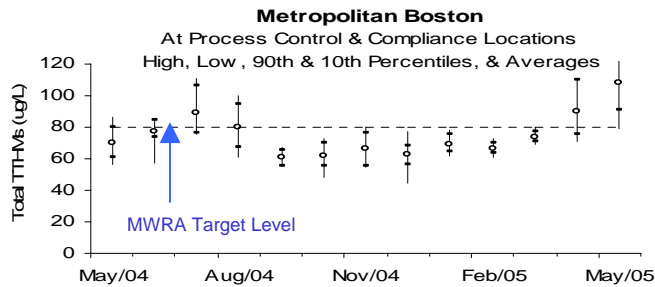
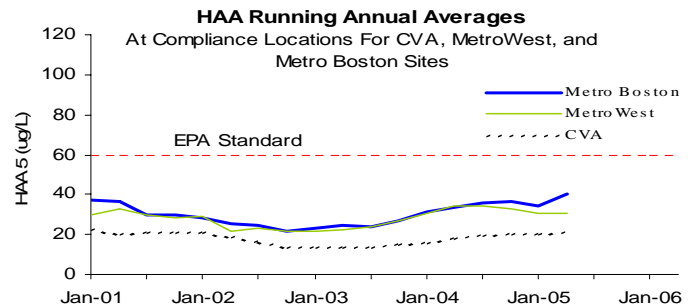
Total Trihalomethanes (TTHMs) and Haloacetic Acids (HAAs) are by-products of disinfection treatment with chlorine. Chlorination levels, the presence of organic precursors, pH levels, the contact time of water with chlorine used for disinfection, and temperature all affect TTHM and HAA levels. DBPs are of concern due to their potential adverse health effects at high levels. EPA's running annual average standards are 80 ug/L for TTHMs and 60 ug/L for HAA5. DEP requires that compliance samples be collected quarterly. MWRA samples weekly at some locations, monthly and quarterly at others. **Metro Boston numbers from the fully-served communities are used for compliance purposes;** results presented below from CVA and MetroWest sampling sites enable MWRA staff to monitor MWRA treatment processes. Individual CVA and MetroWest communities are responsible for their own compliance monitoring and reporting. They must be contacted directly for their results.

The running annual average for TTHMs and HAA5s at compliance locations, represented in the top two graphs below, remained below current standards. Average monthly HAA5 and TTHM levels at all sampling locations for the MetroWest and Metropolitan Boston communities are higher than those of last year. The increase in UV and Total Organic Carbon levels (indicators of organic precursors) found in the Wachusett Reservoir and the high flows to support the testing at the Walnut Hill Water Treatment Plant all contribute to the elevated DBP levels. See UV graph on the bottom right of Page 3. Transfers of Quabbin Reservoir water to Wachusett Reservoir was initiated on May 20, 2005 and this will lower UV levels.

TOTAL TRIHALOMETHANES



HALOACETIC ACIDS



MWRA Monthly Water Quality Analysis

May 2005

This page provides information on water quality at six locations in the MWRA transmission system. Results reflect a "snapshot" in time and may not represent typical conditions. Elevated levels of a particular parameter may occur from time to time. MWRA staff review these numbers carefully and follow-up unusual results by re-analyzing samples, collecting new samples, or auditing sample sites. More rigorous daily or weekly monitoring of select parameters at these and other locations provides a better overall picture of water quality and is reported for some parameters elsewhere in this document. Monitoring for parameters indicated in bold is quarterly, as they either (1) have minimal variability or (2) are always below detection levels.

Component	CVA System		Metropolitan Boston				I Standards		Exceedance
	Quabbin Reservoir at Ware Disinfection Facility (Raw)	Ludlow Monitoring Station (Treated)	Wachusett Reservoir at Cosgrove Intake (Raw)	ICC Marlboro (Treated)	Comm Ave., Newton (Treated)	Shaft 9A, Malden (Treated)	Standard	Units	
Alkalinity	2.8	2.8	5.3	36.3	38.8	38.2		MG/L	
Aluminum	< 15.0	< 15.0	< 15.0	< 15.0	19.7	< 15.0	50-200 (e)	UG/L	NO
Ammonia-N	0.01	0.01	0.02	0.01	0.17	0.19		MG/L	
Antimony	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	6 (a)	UG/L	NO
Arsenic	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	50 (a)	UG/L	NO
Barium	7.0	7.1	10.7	10.7	5.7	10.8	2000 (a)	UG/L	NO
Beryllium	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	4 (a)	UG/L	NO
Bromate	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	10 (a)	UG/L	NO
Bromide	10.6	5.2	19.2	10.8	8.2	6.6		UG/L	
Cadmium	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	5 (a)	UG/L	NO
Calcium	2290	2310	5140	5170	4950	5280		UG/L	
Chloride	7.8	9.3	30.9	32.7	34.7	35.2	250 (e)	MG/L	NO
Chlorine, Free	NS	0.70	NS	0.98	NS	NS	4 (c)(d)	MG/L	NO
Chlorine, Total	NS	NS	NS	NS	1.9	1.7	4 (c)(d)	MG/L	NO
Chromium	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	100 (a)	UG/L	NO
Coliform, Fecal, MF Method	0	NS	3	NS	NS	NS	20 (b)	CFU/100 mL	NO
Coliform, Total, MF Method (h)	1	0	0	0	0	0	100 (b) 0 (c)	CFU/100 mL	NO
Copper **	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	4.0	1300 (f) 1000 (g)	UG/L	NO
Cyanide	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.2 (a)	MG/L	NO
Fluoride	< 0.02	< 0.02	< 0.11	0.108	1.11	1.13	4 (a)	MG/L	NO
Hardness	9.6	8.0	16.9	17.0	16.5	17.3		MG/L	
Iron **	11.8	10.8	34.2	39.5	38.8	37.8	300 (e)	UG/L	NO
Lead	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	15 (a)	UG/L	NO
Magnesium	551	545	997	1000	1000	996		UG/L	
Manganese	2.4	1.7	15.8	17.3	15.4	15.6	50 (e)	UG/L	NO
Mercury	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	2 (a)	UG/L	NO
Nickel	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0		UG/L	
Nitrate-N	0.016	0.018	0.089	0.093	0.152	0.096	10 (a)	MG/L	NO
Nitrate/Nitrite	0.015	0.018	0.162	0.170	0.206	0.202			
Nitrite	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	1 (a)	MG/L	NO
Orthophosphate	0.003	0.003	0.006	0.010	0.014	0.011		MG/L	
pH	6.2	6.9	7.2	9.0	9.2	9.2		S.U.	
Potassium	458	480	822	876	934	894		UG/L	
Selenium	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	50 (a)	UG/L	NO
Silica (SiO2)	1880	1860	3600	3990	4560	4100		UG/L	
Silver	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	100 (e)	UG/L	NO
Sodium	4.9	6.0	17.0	32.8	35.1	33.9		MG/L	
Specific Conductance	49	53	141	208	195	193		UMHO/cm	
Standard Plate Count, HPC (48 Hrs @ 35C)	NS	NS	44	3	1	1	500 (c)	CFU/mL	NO
Sulfate (SO4)	5.1	5.2	7.2	7.2	7.1	7.2	250 (e)	MG/L	
Thallium	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	2 (a)	UG/L	NO
Total Dissolved Solids	29	32	71	110	133	109	500 (d)	MG/L	
Total Organic Carbon	1.9	1.6	2.8	2.6	2.7	2.7		MG/L	
Total Phosphorus	0.014	0.014	0.018	0.022	0.020	0.026		MG/L	
UV-254	0.025	0.018	0.076	0.057	0.066	0.065		A	
Zinc **	1.9	2.3	2.2	2.3	< 1.5	2.1	5000 (e)	UG/L	NO

- (a) = Primary MCL standard (health related). DEP "Drinking Water Regulations", 310CMR 22.00.
- (b) = Primary MCL standard (health related), applies to source (raw) water only. DEP "Drinking Water Regulations", 310CMR 22.00.
- (c) = Primary MCL standard (health related). DEP "Drinking Water Regulations", 310CMR 22.00. Applies to samples of treated water downstream of Wachusett and Quabbin Reservoirs.
- (d) = Maximum Residual Disinfectant Level. DEP "Drinking Water Regulations", 310CMR 22.00.
- (e) = Secondary MCL standard (aesthetic related). DEP "Drinking Water Regulations", 310CMR 22.00.
- (f) - Refers to 90th percentile Action Level
- (g) - Refers to a single sample, secondary MCL
- (h) - Confirmed results only are reported

MCL = Maximum Contaminant Level
 CFU = Colony Forming Unit
 S.U. = Standard Units
 UG/L = micrograms per liter = parts per billion

NS = No sample
 NTU = Nephelometric Turbidity Unit
 MG/L = milligrams per liter = parts per million
 < = less than method detection limit

HPC = Heterotrophic Plate Count
 Inv Res = Invalid sample result
 ** = Metal results may be elevated due to local plumbing at the sample tap.
Bold Italics = Quarterly Samples

Most results are based on single grab samples collected on May 2, 9, and 23, 2005 and analyzed by MWRA and contract laboratories. **Quarterly Samples are from April 2005.**

NOTE: MWRA tests for cadmium and mercury are more sensitive than the EPA-set levels of detection and reporting. For cadmium any level below 1.0 ug/L and for mercury any level below 0.2 ug/L are under the EPA minimum detection limits. MWRA will continue to report any result below these detection limits here in the monthly report but will follow EPA reporting requirements and not report them in the EPA-regulated annual Consumer Confidence Report.

Special Update on Lead and Copper Sampling for 2005

Good News on Lead Levels

The most recent sampling round, once again, meets the Lead Action Level. Results from lead and copper samples collected in March and April 2005 show that ninety-one percent of the targeted high-risk homes had lead levels equal to or below the Lead Action Level (AL) of 15 parts per billion (ppb), meeting the requirement of at least 90 percent. The 90th percent value was 13.2 ppb. MWRA, as a system, has met three straight rounds and 6 of the last 8 sampling rounds.

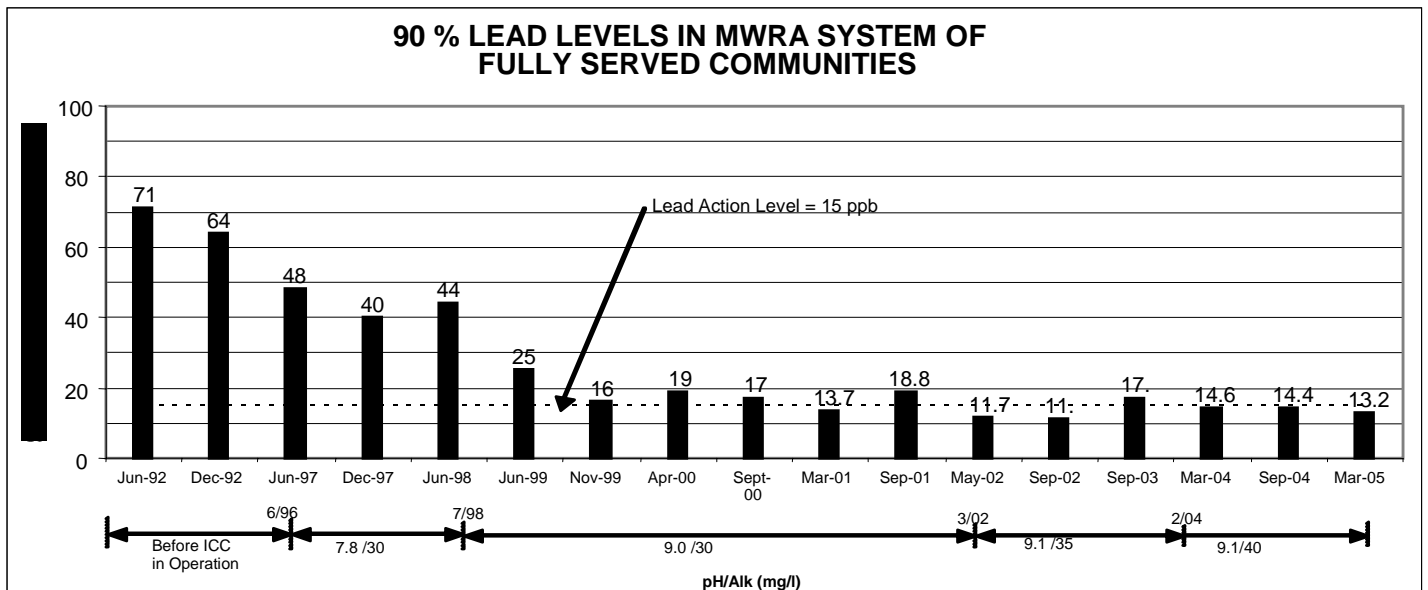
Background

MWRA source waters contain virtually no lead, but lead can leach from lead service pipes connecting homes to water mains and from lead solder and brass fixtures in homes. In 1991, EPA issued the Lead & Copper Rule which set action levels of 15 ppb for lead and 1,300 ppb for copper, and required that 90 percent or more of targeted high-risk homes be below that level. The samples must be first flush samples taken at homes and locations most likely to have high levels of lead after the water has sat stagnant overnight.

In 1996, MWRA began to add sodium carbonate and carbon dioxide to the water to make it less corrosive. Lead levels dropped significantly after this change in treatment, but still did not consistently meet the standard. Therefore, in 2002 and 2003, MWRA adjusted the corrosion control process by fine-tuning the pH and alkalinity levels. Six of the last eight rounds of lead sampling have now been below the 15 ppb Action Level, and MWRA continues to work so that the MWRA service area will consistently be below the 15-ppb Action Level. Further optimization may be possible when the new ozone plant goes on-line in July 2005.

Current Results

The March-June 2004 data showed that 91 percent of the targeted high-risk homes had lead levels below the Action Level, meeting the target of 90 percent. The 90th percentile of lead results was 13.2 ppb, compared to the 15-ppb standard. Figure 1 shows the over 80% reduction in lead levels since 1992.



The 90th percentile for copper was 146 ppb, compared with the Action Level of 1,300 ppb. MWRA has always been in compliance with the Copper Action Level.



Operation Start-up

STRENGTHENING AND SECURING A FIRST CLASS WATER SYSTEM

IMPORTANT INFORMATION ON CHANGE IN WATER TREATMENT

A decade of planning, design, and construction for \$1.7 billion in improvements to MWRA's water system is nearing completion. By the end of July, the last major project, the Walnut Hill Treatment Plant, will be going into service. The new plant will provide state-of-the-art treatment and will consolidate all treatment steps into one plant. These changes will improve water quality by strengthening disinfection with ozone, producing less chlorine disinfection by-products, and enhancing corrosion control.

The biggest change will be the addition of ozone, instead of chlorine, for primary disinfection. Ozone consists of three atoms of oxygen, and is created by applying an electrical current to pure oxygen in a specially designed chamber. Ozone provides better disinfection than chlorine, especially against *Cryptosporidium* and other hard-to-kill pathogens. Chloramine will continue to be used for residual disinfection.

These changes will not affect the availability of the water supplied to MWRA communities. But, there may be changes in certain water parameters, in particular pH and chloramine levels, during the change-over from chlorine to ozone. You may also notice an improvement or change in the taste of the water.

Some of the changes to the water quality are:

- Chloramine levels will be increased, and levels may reach up to around 2.5 mg/L, though most of the values will be only slightly higher than existing levels. This increase in chloramine levels will occur both during and after the start-up to ensure disinfection throughout the entire distribution system.
- There will be an increase in the pH of the water, from the previous target of 9.1 to a new target of 9.3. pH values at the tap should range from 8.8 to 9.5.
- There will be no change in alkalinity, with the target remaining at 40 mg/l.
- With the use of ozone, dissolved oxygen levels in the water may increase.

In order to ensure the safety of dialysis patients and other sensitive users; please keep a close watch on all water tests involving these patients, but particularly between July 11 through the end of July.

Please ensure that you check pH and chlorine levels regularly for water to be used with all dialysis patients and other sensitive users during this time period.

If you have any questions about these changes or would like more information about your drinking water, please feel free to contact Stephen Estes-Smargiassi at 617-788-4303 (Smargias@mwra.state.ma.us) or Joshua Das at 617-788-4668 (Joshua.Das@mwra.state.ma.us). There will be regular updates on the MWRA web site (www.mwra.com) with current information on the schedule and water quality changes.

Not sure if you receive MWRA water? Check www.mwra.com/02org/html/whatis.htm for a list of communities served by the new plant.

24-7 Emergency Contact – MWRA Operations Control Center - 617-305-5950