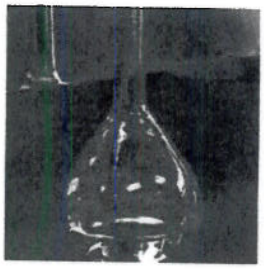
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Annual Drinking Water Quality Report

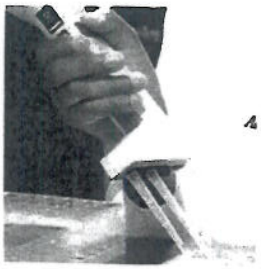
Covering the reporting period of January–December 2013

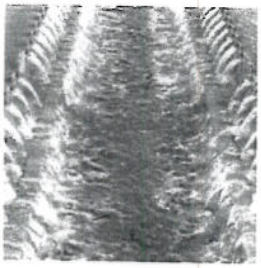
2014 WATER QUALITY EXCELLENCE

METROPOLITAN'S WATER QUALITY IS EQUAL TO OR BETTER THAN REQUIRED TO SAFEGUARD PUBLIC HEALTH



DRINKING WATER REGULATIONS





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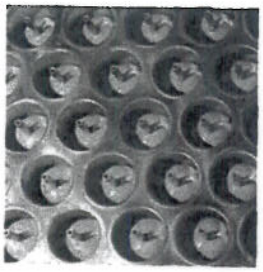
about water provided by Metropolitan, how it compares favorably to all drinking water standards, and what is being done to further protect **19 million Southland consumers.**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

2013 Water Quality Table

A	B	C	D	F	G	H					I
						Treatment Plant Effluent					
	Parameter	Units	State MCL [MRDL]	PHG (MCLG) [MRDLG]	Range Average	Weymouth Plant	Diemer Plant	Jensen Plant	Skinner Plant	Mills Plant	Major Sources in Drinking Water
	Percent State Project Water	%	NA	NA	Range Average	0 - 98 23	0 - 58 23	100 100	4 - 86 32	100 100	NA
E	**PRIMARY STANDARDS - Mandatory Health-Related Standards**										
	CLARITY										
	Combined Filter Effluent Turbidity	NTU %	TT=1 TT (a)	NA	Highest % ≤ 0.3	0.05 100	0.06 100	0.10 100	0.09 100	0.12 100	Soil runoff
	MICROBIOLOGICAL										
	Total Coliform Bacteria (b)	%	5.0	(0)	Range Average	Distribution System-Wide: Distribution System-Wide:		ND - 0.2 ND			Naturally present in the environment
	Heterotrophic Plate Count (HPC) (c)	CFU/mL	TT	NA	Range Median	Distribution System-Wide: Distribution System-Wide:		TT TT			Naturally present in the environment
	ORGANIC CHEMICALS										
	Acrylamide	NA	TT	(0)	Range Average	TT TT	TT TT	TT TT	TT TT	TT TT	Water treatment chemical impurities
	Epichlorohydrin	NA	TT	(0)	Range Average	TT TT	TT TT	TT TT	TT TT	TT TT	Water treatment chemical impurities
	INORGANIC CHEMICALS										
	Aluminum (d)	ppb	1,000	600	Range Highest RAA	95 - 220 140	100 - 230 160	67 - 110 84	ND ND	ND - 360 130	Residue from water treatment process; natural deposits erosion
	Arsenic	ppb	10	0.004	Range Average	ND ND	2.0 2.0	ND ND	ND ND	ND ND	Natural deposits erosion; glass and electronics production wastes
					Control Range Optimal Fluoride Level	0.7 - 1.3 0.8	0.7 - 1.3 0.8	0.7 - 1.3 0.8	0.7 - 1.3 0.8	0.7 - 1.3 0.8	
	Fluoride (e) (treatment-related)	ppm	2.0	1	Range Average Range	0.7 - 1.0 0.8	0.7 - 1.0 0.8	0.7 - 0.8 0.8 0.7 - 1.0	0.7 - 1.0 0.8	0.2 - 1.0 0.8	Water additive for dental health
	Nitrate (as N) (f)	ppm	10	10	Range Average	0.5 0.5	0.4 0.4	0.5 0.5	ND ND	1.1 1.1	Runoff and leaching from fertilizer use; sewage; natural deposits erosion
	RADIONUCLIDES (g)										
	Gross Alpha Particle Activity	pCi/L	15	(0)	Range Average	ND - 3 ND	ND - 3 3	ND ND	ND - 3 ND	ND ND	Erosion of natural deposits
	Gross Beta Particle Activity (h)	pCi/L	50	(0)	Range Average	ND - 6 4	ND - 4 ND	ND - 4 ND	ND - 5 ND	ND ND	Decay of natural and man-made deposits
	Uranium	pCi/L	20	0.43	Range Average	1 - 2 2	2 2	ND - 2 1	ND - 2 1	ND - 1 1	Erosion of natural deposits
	DISINFECTION BY-PRODUCTS, DISINFECTANT RESIDUALS, AND DISINFECTION BY-PRODUCTS PRECURSORS (i)										
	Total Trihalomethanes (TTHM) (j)	ppb	80	NA	Range Average	33 - 46 40	27 - 41 35	9.1 - 55 22	13 - 32 21	16 - 22 19	By-product of drinking water chlorination
	Total Trihalomethanes (TTHM) (j, k)	ppb	80	NA	Range Highest LRAA	34 - 58 56	30 - 52 52	12 - 24 17	14 - 25 24	15 - 27 24	By-product of drinking water chlorination
	Total Trihalomethanes (TTHM) (j, l)	ppb	80	NA	Range Highest LRAA	Distribution System-Wide: Distribution System-Wide:		12 - 60 58			By-product of drinking water chlorination
	Haloacetic Acids (five) (HAA5) (m)	ppb	60	NA	Range Average	4.6 - 17 11	7.2 - 15 12	1.9 - 3.8 3.0	1.9 - 7.8 4.0	2.0 - 7.4 5.4	By-product of drinking water chlorination
	Haloacetic Acids (five) (HAA5) (k, m)	ppb	60	NA	Range Highest LRAA	4.8 - 19 16	5.1 - 21 18	1.8 - 5.8 3.8	1.2 - 12 7.0	2.0 - 9.3 7.4	By-product of drinking water chlorination
	Haloacetic Acids (five) (HAA5) (l, m)	ppb	60	NA	Range Highest LRAA	Distribution System-Wide: Distribution System-Wide:		ND - 22 18			By-product of drinking water chlorination
	Total Chlorine Residual	ppm	[4.0]	[4.0]	Range Highest RAA	Distribution System-Wide: Distribution System-Wide:		ND - 2.9 2.3			Drinking water disinfectant added for treatment
	Bromate (n)	ppb	10	0.1	Range Highest RAA	NA NA	NA NA	3.9 - 13 7.6	1.0 - 11 5.9	1.0 - 12 3.9	By-product of drinking water ozonation
	DBP Precursor Control (TOC)	ppm	TT	NA	Range Average	TT TT	TT TT	TT TT	TT TT	TT TT	Various natural and man-made sources; TOC as a medium for DBP formation

B	C	D	F	G	H					I
					Treatment Plant Effluent					
Parameter	Units	State MCL [MRDL]	PHG (MCLG) [MRDLG]	Range Average	Weymouth Plant	Diemer Plant	Jensen Plant	Skinner Plant	Mills Plant	Major Sources in Drinking Water
E SECONDARY STANDARDS - Aesthetic Standards										
Aluminum (d)	ppb	200	600	Range Highest RAA	95 - 220 140	100 - 230 160	67 - 110 84	ND ND	ND - 360 130	Residue from water treatment process; natural deposits erosion
Chloride	ppm	500	NA	Range Average	84 - 91 88	84 - 87 86	75 - 77 76	83 - 86 84	76 - 100 90	Runoff/leaching from natural deposits; seawater influence
Color	Color Units	15	NA	Range Average	1 1	1 1	1 - 2 2	1 - 2 2	1 - 2 2	Naturally-occurring organic materials
Odor Threshold (o)	TON	3	NA	Range Average	3 - 6 4	3 3	3 3	2 2	3 3	Naturally-occurring organic materials
Specific Conductance	µS/cm	1,600	NA	Range Average	850 - 890 870	870 - 900 890	520 - 540 530	830 - 870 850	570 - 580 580	Substances that form ions in water; seawater influence
Sulfate	ppm	500	NA	Range Average	170 - 190 180	180 - 200 190	44 - 51 48	170 - 180 170	45 - 63 54	Runoff/leaching from natural deposits; industrial wastes
Total Dissolved Solids (TDS)	ppm	1,000	NA	Range Average	520 - 540 530	520 - 560 540	280 - 300 290	500 - 520 510	310 - 320 310	Runoff/leaching from natural deposits; seawater influence

ABBREVIATIONS AND DEFINITIONS

CDPH California Department of Public Health

CFU/mL Colony-Forming Units per milliliter

DBP Disinfection By-Products

DLR Detection Limits for Purposes of Reporting

LRAA Locational Running Annual Average; highest LRAA is the highest of all Locational Running Annual Averages calculated as average of all the samples collected within a 12-month period.

MCL Maximum Contaminant Level - The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.

MCLG Maximum Contaminant Level Goal - The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the U.S. Environmental Protection Agency.

MRDL Maximum Residual Disinfectant Level - The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG Maximum Residual Disinfectant Level Goal - The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

NA Not Applicable

ND Not Detected

NTU Nephelometric Turbidity Units

pCi/L picoCuries per liter

PHG Public Health Goal - The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.

ppb Parts per billion or micrograms per liter (µg/L)

ppm Parts per million or milligrams per liter (mg/L)

RAA Running Annual Average: highest RAA is the highest of all Running Annual Averages calculated as average of all the samples collected within a 12-month period.

TON Threshold Odor Number

TT Treatment Technique - A required process intended to reduce the level of a contaminant in drinking water.

µS/cm microSiemen per centimeter; or micromho per centimeter (µmho/cm)

Primary Standards (Primary Drinking Water Standards) - MCLs and MRDLs for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.

Secondary Standards - Requirements that ensure the appearance, taste and smell of drinking water are acceptable.

FOOTNOTES

(a) The turbidity level of the filtered water shall be less than or equal to 0.3 NTU in 95% of the measurements taken each month and shall not exceed 1 NTU at any time. Turbidity is a measure of the cloudiness of the water and is an indicator of treatment performance.

(b) Total coliform MCLs: No more than 5.0% of the monthly samples may be total coliform-positive. Compliance is based on the combined distribution system sampling from all the treatment plants. In 2013, 7,981 samples were analyzed and 3 samples were positive for total coliforms. The MCL was not violated.

(c) All distribution system samples collected had detectable total chlorine residuals and no HPC was required. HPC reporting level is 1 CFU/mL.

(d) Aluminum has both primary and secondary standards.

(e) Metropolitan was in compliance with all provisions of the State's Fluoridation System Requirements.

(f) State MCL is 45 mg/L as nitrate, which is the equivalent of 10 mg/L as N.

(g) Data are from samples collected (triennially) during four consecutive quarters of monitoring in 2011 and reported for three years until the next samples are collected.

(h) CDPH considers 50 pCi/L to be the level of concern for beta particles; the gross beta particle activity MCL is 4 millirem/year annual dose equivalent to the total body or any internal organ.

(i) Metropolitan was in compliance with all provisions of the Stage 2 Disinfectants and Disinfection By-Products Rule (D/DBPR).

(j) Metropolitan's reporting level is 0.5 ppb for each of the trihalomethanes (bromodichloromethane, bromoform, chloroform, and dibromochloromethane) which is lower than the state DLR of 1.0 ppb.

(k) Compliance was based on the highest Locational Running Annual Average (LRAA) of all data collected at the treatment plant specific core monitoring locations.

(l) Compliance was based on the highest Locational Running Annual Average (LRAA) of all data collected at distribution system-wide monitoring locations.

(m) State DLR is 1 ppb for each of the following: dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid; and 2 ppb for monochloroacetic acid.

(n) Metropolitan used EPA method 326.0 which has a state DLR of 1.0 ppb. Compliance was based on the RAA.

(o) In April 2013, the Weymouth plant effluent TON was 6, which exceeded the secondary MCL of 3 TON. Per CDPH requirements, quarterly monitoring was initiated. No taste and odor event was observed and no complaints were received during this period.

Other **Detected Constituents** That May be of Interest to Consumers

Parameter	Units	NL [PHG]	Range Average	Treatment Plant Effluent				
				Weymouth Plant	Diemer Plant	Jensen Plant	Skinner Plant	Mills Plant
Alkalinity (as $CaCO_3$)	ppm	NA	Range	76 - 130	93 - 120	77 - 93	72 - 130	63 - 89
			Average	110	110	84	110	78
Boron	ppb	1,000	Range	150	140	160	120	220
			Average	150	140	160	120	220
Calcium	ppm	NA	Range	56 - 61	59 - 61	22 - 26	56 - 59	19 - 28
			Average	58	60	24	58	24
Chlorate	ppb	800	Range	62	56	25	51	33
			Range	**Distribution System-wide:** 28 - 72				
Chromium VI (a)	ppb	[0.02]	Range	ND	ND	ND	ND	ND
			Average	ND	ND	ND	ND	ND
Corrosivity (b) (as Aggressiveness Index)	AI	NA	Range	12.3	12.3	12.0	12.4 - 12.5	11.9 - 12.1
			Average	12.3	12.3	12.0	12.4	12.0
Corrosivity (c) (as Saturation Index)	SI	NA	Range	0.35 - 0.45	0.43 - 0.53	0.20 - 0.21	0.51 - 0.66	0.20 - 0.31
			Average	0.40	0.48	0.20	0.58	0.26
Hardness (as $CaCO_3$)	ppm	NA	Range	230 - 250	240 - 250	110 - 120	230 - 240	100 - 120
			Average	240	250	110	230	110
Heterotrophic Plate Count (HPC) (d)	CFU/mL	NA	Range	ND - 1	ND - 1	ND - 1	ND	ND
			Median	ND	ND	ND	ND	ND
Magnesium	ppm	NA	Range	21 - 23	22 - 23	12	20 - 21	12
			Average	22	22	12	20	12
N-Nitrosodimethylamine (NDMA)	ppt	10 [3]	Range	ND	ND	ND	6.5	2.1
			Range	**Distribution System-wide:** ND - 11				
pH	pH Units	NA	Range	8.1	8.1	8.2 - 8.4	8.2	8.4
			Average	8.1	8.1	8.3	8.2	8.4
Potassium	ppm	NA	Range	4.0 - 4.3	4.0 - 4.4	2.6 - 2.7	3.9 - 4.3	2.8 - 3.0
			Average	4.2	4.2	2.6	4.1	2.9
Sodium	ppm	NA	Range	79 - 85	82 - 87	57 - 60	78 - 81	63 - 72
			Average	82	84	58	80	68
Total Organic Carbon (TOC)	ppm	NA	Range	2.1 - 2.7	2.2 - 2.7	1.8 - 2.0	2.1 - 2.4	1.7 - 3.0
			Highest RAA	2.4	2.5	1.9	2.2	2.3
Vanadium	ppb	50	Range	3.0	ND	3.2	ND	4.4
			Average	3.0	ND	3.2	ND	4.4

Abbreviations and Definitions (please refer to the main table for other abbreviations and definitions)

NL	Notification Level - The level at which notification of the public water system's governing body is required. Prior to 2005, NL was known as action level (AL)
ppt	Parts per trillion or nanograms per liter (ng/L)
$CaCO_3$	Calcium Carbonate

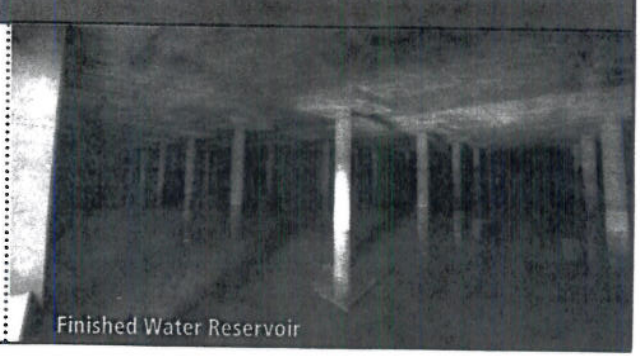
Footnotes

(a) Metropolitan's chromium VI reporting level is 0.03 ppb, which is below the state DLR of 1 ppb. Annual treatment plant effluent concentrations were 0.15 ppb for Weymouth, 0.12 ppb for Diemer, 0.12 ppb for Jensen, 0.10 ppb for Skinner and 0.39 ppb for Mills. All were below the State MCL of 10 ppb.

(b) AI <10.0 = Highly aggressive and very corrosive water
AI ≥ 12.0 = Non-aggressive water
AI (10.0 - 11.9) = Moderately aggressive water

(c) Positive SI index = non-corrosive; tendency to precipitate and/or deposit scale on pipes
Negative SI index = corrosive; tendency to dissolve calcium carbonate

(d) All distribution system samples collected had detectable total chlorine residuals and no HPC was required. HPC reporting level is 1 CFU/mL. Values are based on monthly median per State guidelines and recommendations.



Finished Water Reservoir