WATER QUALITY

PUBLISHED BY THE CITY OF SAN CLEMENTE'S UTILITIES DIVISION

SAN CLEMENTE | 2013 REPORT

Drinking Water Quality

Since 1990, California water utilities have been providing an annual Water Quality Report to their customers. This year's report covers calendar year 2012 water quality testing, and has been prepared in compliance with regulations called for in the 1996 reauthorization of the Safe Drinking Water Act. The re-authorization charged the United States Environmental Protection Agency (USEPA) with updating and strengthening the tap water regulatory program.

The City of San Clemente vigilantly safeguards its water supply and, as in years past, the water delivered to your home meets the standards required by the state and federal regulatory agencies. In some cases, the City goes beyond what is required by testing for unregulated contaminants that may have known health risks.

Engineering marvels, the State Water Project and Colorado River Aqueduct, make our way of life possible by delivering water to millions of people in Orange County.

What You Need to Know About Your Water, and How it May Affect You

Sources of Supply

Your drinking water is a blend of surface water imported by the Metropolitan Water District of Southern California and ground water extracted from City wells located in the southern part of the City of San Clemente. The ground water represents eight percent of the total water source. Metropolitan's imported water sources are the Colorado River and the State Water Project, which draws water from the Sacramento-San Joaquin Delta.

For seven days in 2012 (January 8 to 14, 2012) the City received 16.8 acre feet of water through an emergency interconnection with the Irvine Ranch Water District (IRWD) while Metropolitan's filtration plant was shut down for a major upgrade that will improve the water supply in the future. IRWD's annual water quality report may be accessed through its web site at www.irwd.com.

Basic Information About Drinking Water Contaminants

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of land or through the layers of the ground it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animal and human activity.

Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.
- Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban storm runoff, industrial or domestic wastewater discharges, oil and gas production, mining and farming.
- Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production or mining activities.
- Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gasoline stations, urban storm water runoff, agricultural application and septic systems.

In order to ensure that tap water is safe to drink, USEPA and the California Depatment of Public Health (CDPH) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. CDPH regulations also establish limits for contaminants in bottled water that must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline at [800] 426-4791.

This report contains important information about your drinking water. Translate it, or speak with someone who understands it.

Este informe contiene información muy importante sobre su agua potable. Para mas información ó traducción, favor de contactar a Mr. Kevin Lussier. Telefono: [949] 366-1553.

Cryptosporidium

Cryptosporidium is a microscopic organism that, when ingested, can cause diarrhea, fever, and other gastrointestinal symptoms. The organism comes from animal and/or human wastes and may be in surface water. The Metropolitan Water District of Southern California tested their source water and treated surface water for Cryptosporidium in 2012 but did not detect it. If it ever is detected, Cryptosporidium is eliminated by an effective treatment combination including sedimentation, filtration and disinfection.

The USEPA and the federal Centers for Disease Control guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from USEPA's Safe Drinking Water hotline at [800] 426-4791 between 9 a.m. and 5 p.m. Eastern Time (6 a.m. to 2 p.m. in California).

Immuno-Compromised People

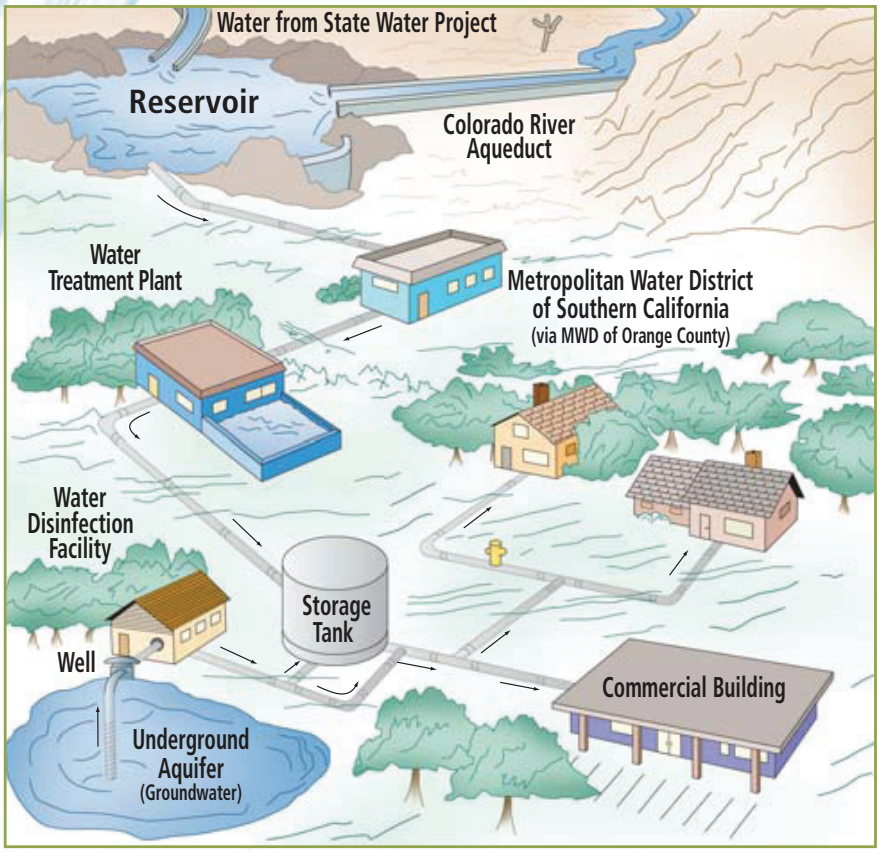
Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised people, such as those with cancer who are undergoing chemotherapy, persons who have had organ transplants, people with HIV/AIDS or other immune system disorders, some elderly persons and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers.

Lead in Tap Water

If present, elevated levels of lead can cause serious problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of San Clemente is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses).

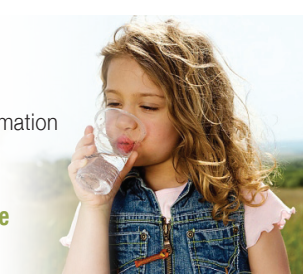
You can do this by posting this notice in a public place or distributing copies by hand or mail.



Imported water — from the Colorado River and northern California — travels hundreds of miles, across deserts and mountains, to meet the needs of Orange County. Water is also pumped from local groundwater basins, then treated and sent to homes and businesses.

Drinking Water Fluoridation

Fluoride has been added to U.S. drinking water supplies since 1945. Of the 50 largest cities in the U.S., 43 fluoridate their drinking water. In December 2007, the Metropolitan Water District of Southern California joined a majority of the nation's public water suppliers in adding fluoride to drinking water in order to prevent tooth decay. In line with recommendations from the CDPH, as well as the U.S. Centers for Disease Control and Prevention, Metropolitan adjusted the natural fluoride level in imported treated water from the Colorado River and State Project water to the optimal range for dental health of 0.7 to 1.3 parts per million. Locally produced groundwater is not supplemented with fluoride. Fluoride levels in drinking water are limited under California state regulations at a maximum dosage of 2 parts per million.



There are many places to go for additional information about the fluoridation of drinking water.

U.S. Centers for Disease Control and Prevention
1-800-232-4636
www.cdc.gov/Oralhealth/publications/factsheets/

American Dental Association
www.ada.org/public/topics/fluoride/index.asp

American Water Works Association
www.awwa.org

For more information about Metropolitan's fluoridation program, please contact Edgar G. Dymally at [213] 217-5709 or at edymally@mwdh2o.com.

If you have any questions about your water, please contact us for answers

For information about this report, or your water quality in general, please contact Utilities Operations Supervisor Kevin Lussier, at [949] 366-1553. The San Clemente City Council meets at 6:00 p.m. on the first and third Tuesdays of each month in the City Council Chambers, located at 100 Ave. Presidio in the City of San Clemente. Please feel free to participate in these meetings.

For more information about the health effects of the listed contaminants in the following tables, call the U.S. Environmental Protection Agency hotline at [800] 426-4791.

For further information about the City, please visit our website: http://san-clemente.org

THE CONTINUING QUALITY OF YOUR WATER is Our Primary Concern

Disinfection and Disinfection Byproducts

Disinfection of drinking water was one of the major public health advances in the 20th century. Disinfection was a major factor in reducing waterborne disease epidemics caused by pathogenic bacteria and viruses, and it remains an essential part of drinking water treatment today.

Chlorine disinfection has almost completely eliminated from our lives the risks of microbial waterborne diseases. Chlorine is added to your drinking water at the source of supply (groundwater well or surface water treatment plant). Enough chlorine is added so that it does not completely dissipate through the distribution system pipes. This "residual" chlorine helps to prevent the growth of bacteria in the pipes that carry drinking water from the source into your home.

However, chlorine can react with naturally-occurring materials in the water to form unintended chemical byproducts, called disinfection byproducts (DBPs), which may pose health risks. A major challenge is how to balance the risks from microbial pathogens and DBPs. It is important to provide protection from these microbial pathogens while simultaneously ensuring decreasing health risks from disinfection byproducts. The Safe Drinking Water Act requires the U.S. Environmental Protection Agency (USEPA) to develop rules to achieve these goals.

Trihalomethanes (THMs) and Haloacetic Acids (HAAs) are the most common and most studied DBPs found in drinking water treated with chlorine. In 1979, the USEPA set the maximum amount of total THMs allowed in drinking water at 100 parts per billion as an annual running average. Effective in January 2002, the Stage 1 Disinfectants / Disinfection Byproducts Rule lowered the total THM maximum annual average level to 80 parts per billion and added HAAs to the list of regulated chemicals in drinking water.

Stage 2 of the regulation was finalized by USEPA in 2006, which further controls allowable levels of DBPs in drinking water without compromising disinfection itself. A required distribution system evaluation was completed in 2008 and full Stage 2 compliance began in 2012.

2012 CITY OF SAN CLEMENTE | GROUNDWATER QUALITY

Chemical	MCL	PHG (MCLG)	Average Amount	Range of Detections	MCL Violation?	Most Recent Sampling Date	Typical Source of Contaminant
RADIOLOGICALS							
Beta Radiation (pCi/L)	50	(0)	4.1	4.1	No	2010	Decay of Man-made or Natural Deposits
Gross Alpha (pCi/L)	15	(0)	<3.0	ND - 4.3	No	2010	Decay of Man-made or Natural Deposits
Combined Radium (pCi/L)	5	(0)	<1.0	ND - 1.1	No	2010	Erosion of Natural Deposits
INORGANIC CHEMICALS							
Fluoride (ppm)	2	1	0.60	0.57 - 0.60	No	2012	Erosion of Natural Deposits
Nitrate (ppm as NO3)	45	45	7.6	7.6	No	2012	Fertilizers, Septic Tanks
Nitrate+Nitrite (ppm as N)	10	10	1.7	1.7	No	2012	Fertilizers, Septic Tanks
SECONDARY STANDARDS*							
Chloride (ppm) - treated	500*	n/a	260	260	No	2012	Erosion of Natural Deposits
Color (color units)	15*	n/a	2.0	2.0	No	2011	Erosion of Natural Deposits
Iron (ppb) - treated	300*	n/a	12	ND - 23	No	2012	Erosion of Natural Deposits
Manganese (ppb) - treated	50*	n/a	29	10 - 48	No	2012	Erosion of Natural Deposits
Odor (threshold odor number)	3*	n/a	1.0	1.0	No	2011	Erosion of Natural Deposits
Specific Conductance (µmho/cm)	1,600*	n/a	1,200	1,200	No	2011	Erosion of Natural Deposits
Sulfate (ppm)	500*	n/a	160	160	No	2011	Erosion of Natural Deposits
Total Dissolved Solids (ppm)	1,000*	n/a	780	780	No	2012	Erosion of Natural Deposits
Turbidity (ntu) - treated	5*	n/a	0.076	0.076	No	2012	Erosion of Natural Deposits
UNREGULATED CONTAMINANTS REQUIRING MONITORING							
Bicarbonate (ppm)	Not Regulated	n/a	170	170	n/a	2011	Erosion of Natural Deposits
Calcium (ppm)	Not Regulated	n/a	81	81	n/a	2011	Erosion of Natural Deposits
Aggressive Index	Not Regulated	n/a	12	12	n/a	2011	Erosion of Natural Deposits
Magnesium (ppm)	Not Regulated	n/a	43	43	n/a	2011	Erosion of Natural Deposits
pH (pH units) - treated	Not Regulated	n/a	7.1	7.1	n/a	2012	Hydrogen Ion Concentration
Potassium (ppm)	Not Regulated	n/a	4.3	4.3	n/a	2009	Erosion of Natural Deposits
Sodium (ppm)	Not Regulated	n/a	98	98	n/a	2011	Erosion of Natural Deposits
Total Alkalinity (ppm as CaCO3)	Not Regulated	n/a	170	170	n/a	2011	Erosion of Natural Deposits
Total Hardness (ppm as CaCO3)	Not Regulated	n/a	430	430	n/a	2012	Erosion of Natural Deposits

ppb = parts-per-billion; **ppm** = parts-per-million; **pCi/L** = picoCuries per liter; **ntu** = nephelometric turbidity units; **ND** = not detected; **n/a** = not applicable; **<** = average is less than the detection limit for reporting purposes; **MCL** = Maximum Contaminant Level; **(MCLG)** = Federal MCL Goal; **PHG** = California Public Health Goal; **µmho/cm** = micromho per centimeter; *Contaminant is regulated by a secondary standard to maintain aesthetic qualities (taste, odor, color).

2012 CITY OF SAN CLEMENTE | DISTRIBUTION SYSTEM WATER QUALITY

	MCL (MRDL/MRDLG)	Average Amount	Range of Detections	MCL Violation?	Typical Source of Contaminant
DISINFECTION BYPRODUCTS					
Total Trihalomethanes (ppb)	80	65	50 - 78	No	Byproducts of Chlorine Disinfection
Haloacetic Acids (ppb)	60	31	13 - 43	No	Byproducts of Chlorine Disinfection
Chlorine Residual (ppm)	(4 / 4)	1.4	0.08 - 2.2	No	Disinfectant Added for Treatment
AESTHETIC QUALITY					
Color (color units)	15*	1.0	1.0	No	Erosion of Natural Deposits
pH (pH units)	Not Regulated	7.8	7.1 - 8.5	No	Hydrogen Ion Concentration
Odor (threshold odor number)	3*	1.0	1.0	No	Erosion of Natural Deposits
Turbidity (ntu)	5*	0.25	0.45 - 0.53	No	Erosion of Natural Deposits

Four locations in the distribution system are tested quarterly for total trihalomethanes and haloacetic acids; twenty locations are tested monthly for color, odor and turbidity. **MRDL** = Maximum Residual Disinfectant Level; **MRDLG** = Maximum Residual Disinfectant Level Goal; **ntu** = nephelometric turbidity units; *Contaminant is regulated by a secondary standard to maintain aesthetic qualities (taste, odor, color).

BACTERIAL QUALITY	MCL	MCLG	Highest Monthly Percent Positives	MCL Violation?	Typical Source of Contaminant
Total Coliform Bacteria	5%	0	1.0%	No	Naturally Present in the Environment

No more than 5% of the monthly samples may be positive for total coliform bacteria. The occurrence of 2 consecutive total coliform positive samples, one of which contains fecal coliform/E.coli, constitutes an acute MCL violation.

LEAD AND COPPER ACTION LEVELS | AT RESIDENTIAL TAPS

	Action Level	Health Goal (AL)	90th Percentile Value	Sites Exceeding AL / Number of Sites	AL Violation?	Typical Source of Contaminant
Lead (ppb)	15	0.2	<5.0 DLR	0 / 30	No	Corrosion of Household Plumbing
Copper (ppm)	1.3	0.3	0.15	0 / 30	No	Corrosion of Household Plumbing

In 2010, 30 residences were tested for lead and copper at-the-tap. Lead was detected in 2 of the samples. Copper was detected in 22 of 30 samples. None of the samples exceeded the regulatory Action Level (AL). A regulatory action level is the concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow. **DLR** = Detection Limit for Reporting Purposes

SOURCE WATER ASSESSMENTS

Imported (Metropolitan) Water Assessment

Every five years, Metropolitan Water District of Southern California is required by CDPH to examine possible sources of drinking water contamination in its State Water Project and Colorado River source waters. In 2012 Metropolitan Water District of Southern California submitted to CDPH its updated Watershed Sanitary Surveys for the Colorado River and State Water Project, which include suggestions for how to better protect these source waters. Both source waters are exposed to stormwater runoff, recreational activities, wastewater discharges, wildlife, fires, and other watershed-related factors that could affect water quality. Water from the Colorado River is considered to be most vulnerable to contamination from recreation, urban/stormwater runoff, increasing urbanization in the watershed, and wastewater. Water supplies from Northern California's State Water Project are most vulnerable to contamination from urban/stormwater runoff, wildlife, agriculture, recreation, and wastewater. USEPA also requires Metropolitan to complete one Source Water Assessment (SWA) that utilizes information collected in the watershed sanitary surveys. Metropolitan completed its SWA in December 2002. The SWA is used to evaluate the vulnerability of water sources to contamination and helps determine whether more protective measures are needed. A copy of the most recent summary of either Watershed Sanitary Survey or the SWA can be obtained by calling Metropolitan at (213) 217-6850.

Groundwater Assessment

The City of San Clemente Utilities Division completed an assessment of drinking water sources for its water supply in October 2001 and again in 2008. The City's wells are considered vulnerable to the following Possible Contamination Activities (PCAs) associated with some contaminants detected in the water supply: Maintenance yards, above-ground fuel tanks, an historic dump site, an electrical switching station, and a site for temporary deposition of street sweeper debris. Residences, parks, sewers, roads and storm drains represent additional PCAs. While PCAs exist within the source water assessment area, the water sources are protected from immediate contamination threats by the confining nature of the aquifer, and the significant depth of well perforations at each water source.

Copies of each water assessment are located at the City of San Clemente Utilities Division administration office, 380 Avenida Pico, Building N, San Clemente, California. You may inspect these water source assessments by contacting the Utilities Manager at [949] 366-1553.

WHAT ARE WATER QUALITY STANDARDS?

Drinking water standards established by USEPA and CDPH set limits for substances that may affect consumer health or aesthetic qualities of drinking water. The chart in this report shows the following types of water quality standards:

- **Maximum Contaminant Level (MCL):** 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.
- **Maximum Residual Disinfectant Level (MRDL):** The highest level of a disinfecant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
- **Secondary MCLs** are set to protect the odor, taste, and appearance of drinking water.
- **Primary Drinking Water Standard:** MCLs for contaminants that affect health along with their monitoring and reporting requirements and water treatment requirements.
- **Regulatory Action Level (AL):** The concentration of a contaminant, which, if exceeded, triggers treatment or other requirements that a water system must follow.

What is a Water Quality Goal?

In addition to mandatory water quality standards, USEPA and CDPH have set voluntary water quality goals for some contaminants. Water quality goals are often set at such low levels that they are not achievable in practice and are not directly measurable. Nevertheless, these goals provide useful guideposts and direction for water management practices. The chart in this report includes three types of water quality goals:

- **Maximum Contaminant Level Goal (MCLG):** The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by USEPA.
- **Maximum Residual Disinfectant Level Goal (MRDLG):** The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not relect the benefits of the use of disinfectants to control microbial contaminants.
- **Public Health Goal (PHG):** 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.

2012 METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA TREATED SURFACE WATER

Chemical	MCL	PHG (MCLG)	Average Amount	Range of Detections	MCL Violation?	Typical Source of Contaminant
RADIOLOGICALS • TESTED IN 2011						
Alpha Radiation (pCi/L)	15	(0)	3	ND - 3	No	Erosion of Natural Deposits
Beta Radiation (pCi/L)	50	(0)	ND	ND - 4	No	Decay of Man-made or Natural Deposits
Uranium (pCi/l)	20	0.43	2	2	No	Erosion of Natural Deposits
INORGANIC CHEMICALS | TESTED IN 2012						
Aluminum (ppm)	1	0.6	0.15	ND - 0.34	No	Treatment Process Residue, Natural Deposits
Fluoride (ppm) treatment-related	Control Range 0.7 - 1.3 ppm Optimal Level 0.8 ppm		0.8	0.7 - 0.8	No	Water Additive for Dental Health
SECONDARY STANDARDS* • TESTED IN 2012						
Aluminum (ppb)	200*	600	150	ND - 340	No	Treatment Process Residue, Natural Deposits
Chloride (ppm)	500*	n/a	90	87 - 93	No	Runoff or Leaching from Natural Deposits
Color (color units)	15*	n/a	1	1	No	Naturally-occurring Organic Materials
Odor (threshold odor number)	3*	n/a	2	2	No	Naturally-occurring Organic Materials
Specific Conductance (µmho/cm)	1,600*	n/a	780	340 - 930	No	Substances that Form Ions in Water
Sulfate (ppm)	500*	n/a	160	160	No	Runoff or Leaching from Natural Deposits
Total Dissolved Solids (ppm)	1,000*	n/a	500	490 - 500	No	Runoff or Leaching from Natural Deposits
UNREGULATED CHEMICALS • TESTED IN 2012						
Alkalinity, total as CaCO3 (ppm)	Not Regulated	n/a	98	53 - 120	n/a	Runoff or Leaching from Natural Deposits
Boron (ppb)	NL=1,000	n/a	130	130	n/a	Runoff or Leaching from Natural Deposits
Calcium (ppm)	Not Regulated	n/a	51	49 - 53	n/a	Runoff or Leaching from Natural Deposits
Hardness, total as CaCO3 (ppm)	Not Regulated	n/a	210	84 - 270	n/a	Runoff or Leaching from Natural Deposits
Hardness, total (grains/gal)	Not Regulated	n/a	12	4.9 - 16	n/a	Runoff or Leaching from Natural Deposits
Magnesium (ppm)	Not Regulated	n/a	21	21	n/a	Runoff or Leaching from Natural Deposits
pH (pH units)	Not Regulated	n/a	8.1	7.9 - 8.4	n/a	Hydrogen Ion Concentration
Potassium (ppm)	Not Regulated	n/a	4.0	4.0	n/a	Runoff or Leaching from Natural Deposits
Sodium (ppm)	Not Regulated	n/a	80	80 - 81	n/a	Runoff or Leaching from Natural Deposits
Total Organic Carbon (ppm)	Not Regulated	TT	2.4	2.0 - 2.7	n/a	Various Natural and Man-made Sources

ppb = parts-per-billion; **ppm** = parts-per-million; **pCi/L** = picoCuries per liter; **µmho/cm** = micromhos per centimeter; **ND** = not detected; **MCL** = Maximum Contaminant Level; **(MCLG)** = Federal MCL Goal; **PHG** = California Public Health Goal; **NL** = Notification Level; **n/a** = not applicable; **TT** = treatment technique; *Contaminant is regulated by a secondary standard.

Turbidity - combined filter effluent Metropolitan Water District Diemer Filtration Plant	Treatment Technique	Turbidity Measurements	TT Violation?	Typical Source of Contaminant
1) Highest single turbidity measurement	0.3 NTU	0.04	No	Soil Runoff
2) Percentage of samples less than 0.3 NTU	95%	100%	No	Soil Runoff

Turbidity is a measure of the cloudiness of the water, an indication of particulate matter, some of which might include harmful microorganisms. Low turbidity in Metropolitan's treated water is a good indicator of effective filtration. Filtration is called a "treatment technique" (TT). A treatment technique is a required process intended to reduce the level of contaminants in drinking water that are difficult and sometimes impossible to measure directly.

HOW ARE CONTAMINANTS MEASURED?

Water is sampled and tested throughout the year. Contaminants are measured in:

- parts per million (ppm) or milligrams per liter (mg/l)
- parts per billion (ppb) or micrograms per liter (µg/l)
- parts per trillion (ppt) or nanograms per liter (ng/l)

If this is difficult to imagine, think about these comparisons:

Parts per million (ppm or mg/L):	Parts per billion (ppb or µg/L):	Parts per trillion (ppt or ng/L)
3 drops in 42 gallons	3 drops in 14,000 gallons	10 drops in a Rose Bowl sized pool
1 second in 12 days	1 second in 32 years	1 second in 32,000 years
1 inch in 16 miles	1 inch in 16,000 miles	1 inch in 16 million miles

Want Additional Information?

There's a wealth of information on the internet about Drinking Water Quality and water issues in general. Some good sites — both local and national — to begin your own research are:

City of San Clemente | http://san-clemente.org

Municipal Water District of Orange County | www.mwdoc.com

Orange County Water District | www.ocwd.com

Metropolitan Water District of Southern California | www.mwdh2o.com

California Department of Public Health, Division of Drinking Water & Environmental Management | www.cdph.ca.gov/certlic/drinkingwater

U.S. Environmental Protection Agency | www.epa.gov/safewater

CITY OF SAN CLEMENTE | UTILITIES DIVISION

380 Avenida Pico, San Clemente, California 92672

http://san-clemente.org