

**City of Garden Grove**

**INTER-DEPARTMENT MEMORANDUM**

To: Matthew J. Fertal  
Dept.: City Manager  
Subject: PUBLIC HEARING – APPROVAL OF THE  
2013 DRINKING WATER PUBLIC HEALTH  
GOAL REPORT

From: William E. Murray  
Dept.: Public Works  
Date: August 27, 2013

OBJECTIVE

That the City Council conduct a Public Hearing and approve the City's 2013 Drinking Water Public Health Goal Report.

BACKGROUND

In 1974, Congress passed the Safe Drinking Water Act to ensure that municipalities provide safe, clean drinking water. The Act sets the mandatory and enforceable levels of constituents in drinking water known as Maximum Contaminant Levels ("MCL"). The range and value of these constituents are communicated to customers annually in the City's Water Quality Report. Staff prepared this report and it has been distributed to the City's water customers and available on the City's website since July 1, 2013, as required by California Department of Public Health ("CDPH").

The City's drinking water continues to be in full compliance with the MCL enforceable standards established by state and federal regulatory agencies.

DISCUSSION

Separate and apart from the MCL standards, the State Office of Environmental Health Hazard Assessment ("OEHHA") has established Public Health Goals ("PHG") for each regulated drinking water contaminant. A PHG represents a health-protective level for a contaminant that public water systems should strive to achieve if feasible to do so. However, as long as drinking water complies with all MCLs, the California Environmental Protection Agency considers the water safe to drink.

California's Health and Safety Code Section 116470(b) requires a Public Health Goal Report be prepared every three years detailing any contaminants that exceed the Public Health Goal levels set by OEHHA. The PHG Report provides water system customers access to information on levels of contaminants in drinking water, but below the MCLs. Each public water purveyor is required to hold a Public Hearing on its PHG Report for the purpose of accepting and responding to public comment on the report.

For the City's 2013 Public Health Goal Report, five (5) contaminants, arsenic, uranium, gross alpha, gross beta and total coliform bacteria, were required to be reported as they exceed the PHGs. However, none of the samples exceeded enforceable MCL regulatory levels.

FINANCIAL IMPACT

There is no financial impact to the City. The City is in compliance with all enforceable drinking water standards established by state and federal regulatory agencies.

RECOMMENDATION

It is recommended that City Council:

- Conduct a Public Hearing on the Public Health Goal Report, and
- Approve the Public Health Goal Report as submitted.

  
WILLIAM E. MURRAY, P.E.  
Director of Public Works/City Engineer

Attachment 1: Public Health Goal Report 2013  
Attachment 2: 2013 Water Quality Report

**Approved for Agenda Listing**

  
**Matthew Fertal**  
City Manager

**CITY OF GARDEN GROVE  
2013 PUBLIC HEALTH GOAL REPORT**

**June 2013**

## Public Health Goal Report 2013

### **Background:**

The California Health and Safety Code specifies that water utilities that serve more than 10,000 service connections prepare a special report every three (3) years by July 1<sup>st</sup> if any water quality measurements have exceeded specific Public Health Goals (PHGs).

PHGs are non-enforceable goals established by the California Environmental Protection Agency's (Cal-EPA) Office of Environmental Health Hazard Assessment (OEHHA). Not all constituents have been assigned a PHG. In those cases where the OEHHA has not adopted a PHG for a constituent, water suppliers use the Maximum Contaminant Level Goals (MCLGs are the federal equivalent to PHGs) adopted by the United States Environmental Protection Agency (USEPA). Only regulated constituents that have either a PHG or MCLG set and have a California primary drinking water standard are addressed.

The PHGs and associated MCLGs are not enforceable and are not required to be met by any public water system.

PHGs are based solely on public health risk considerations. None of the practical risk-management factors that are considered by the USEPA or the California Department of Public Health (CDPH) in setting drinking water standards (Maximum Contaminant Levels [MCLs]) are considered in setting the PHGs. These factors include analytical detection capability, treatment technologies commercially available, benefits of constituent reduction, and the estimated cost to reduce constituent levels.

If a constituent was detected in the City's water supply between 2010 and 2012 at a level exceeding an applicable PHG or MCLG, this report provides the information required by law. Included within this report:

- The numerical public health risk associated with the MCL and the PHG or MCLG.
- The category or type of risk to health that could be associated with each constituent.
- The Best Available Treatment (BAT) technology available that could be used to reduce the constituent level.
- An estimate of the cost to install that treatment if it is appropriate and feasible.

### Guidelines Followed:

The Association of California Water Agencies (ACWA) formed a workgroup that prepared guidelines for water utilities to use in preparing these newly required reports. The ACWA guidelines were used in the preparation of our report.

## **Public Health Goal Report 2013**

### Best Available Treatment Technology and Cost Estimates:

Both the USEPA and CDPH adopt what are known as Best Available Technologies (BATs), which are the best known methods of reducing contaminant levels to the MCL. Costs can be estimated for such technologies. However, since many PHGs and all MCLGs are set much lower than the MCL, it is not always analytically possible nor financially feasible to determine what treatment is needed to further reduce a constituent downward to or near the PHG or MCLG, many of which are set at zero.

### **Constituents Detected that Exceed a PHG or a MCLG:**

The following is a discussion of constituents that were detected in one or more of our drinking water sources at levels above the PHG, or if no PHG, above the MCLG. PHG or MCLG exceedances were found for: Arsenic in local groundwater and in surface water purchased from Metropolitan Water District of Southern California (MWDSC); Gross Alpha and Gross Beta in surface water purchased from MWDSC; Uranium in local groundwater and in surface water purchased from MWDSC; and Total Coliform Bacteria in the distribution system.

### **Arsenic:**

Between calendar years 2010 and 2012, Arsenic was detected at maximum concentrations of 3.9 parts per billion (ppb or micrograms per liter) and 2.8 ppb in local groundwater and in surface water purchased from MWDSC, respectively, with the average concentration of below the Detection Limit for Purposes of Reporting (DLR) of 2 ppb for both local groundwater and MWDSC surface water. The CDPH MCL for Arsenic is 10 ppb, and the PHG for Arsenic is 0.004 ppb. Although levels were detected above the PHG, at no time was the MCL exceeded.

### Best Available Technology:

BAT for Arsenic removal is Reverse Osmosis (RO). However, this treatment technology is costly and may be impractical in high flow situations. This treatment technology also produces waste effluent that may be problematic with regard to disposal.

### Cost Estimate:

The City of Garden Grove has 12 individual well sites, each of which provides a variable amount of water to the distribution system. Typically, not all wells operate at the same time, nor do all wells operate 24 hours a day. Based on water quality data for calendar years 2010 through 2012, Arsenic was detected above the PHG in four wells. Estimates are approximate, using the ACWA guidelines under "Cost Estimates for Treatment Technologies" for RO.

## **Public Health Goal Report 2013**

The RO removal system is also the BAT for Gross Alpha, Gross Beta, and Uranium. Therefore, the City has determined that the most efficient and effective method would be to install RO removal systems at each of the well sites to treat both Arsenic and Uranium (detected in all 12 wells); and at the MWDSC surface water intake sites to treat Arsenic, Gross Alpha, Gross Beta, and Uranium. Estimated costs to install and operate the separate RO systems could range from approximately 5.78 million dollars annually to approximately 49.6 million dollars annually. This translates into an annual cost of between approximately \$175 and \$1,498 per service connection for the life of the treatment system. It should be noted that even with the installation of RO treatment systems, it is unlikely that the endpoint reduction of Arsenic will be sufficient to meet PHGs.

### Health Risk Category:

Arsenic's health risk has been classified as a "Carcinogen." Arsenic has been shown to cause cancer in laboratory animals when exposed to high levels over their lifetimes. The CDPH has set the drinking water standard (MCL) for Arsenic at 10 ppb to reduce the risk of cancer or other adverse health effects. Cancer risk is stated in terms of "excess" cancer cases per million population. OEHHA has determined that the theoretical health risk associated with the PHG is one excess case of cancer in one million people and the risk associated with the MCL is 2.5 excess cases of cancer in 1,000 people exposed over a 70-year lifetime.

### **Gross Alpha:**

There is no PHG for Gross Alpha, but the federal MCLG established by the USEPA is 0 picoCurie per liter (pCi/L). The CDPH MCL for Gross Alpha is 15 pCi/L. Between calendar years 2010 and 2012, Gross Alpha was detected at a maximum concentration of 9.3 pCi/L in surface water purchased from MWDSC, with an average concentration of 3.9 pCi/L. All levels were below the MCL.

### Best Available Technology:

See Arsenic above.

### Cost Estimate:

See Arsenic above.

### Health Risk Category:

Gross Alpha's health risk has been classified as a "Carcinogen." USEPA has determined that the theoretical health risk associated with the MCLG is 0 and the risk associated with the MCL is 1 excess case of cancer in 1,000 people over a lifetime exposure.

## **Public Health Goal Report 2013**

### **Gross Beta:**

There is no PHG for Gross Beta, but the federal MCLG established by the USEPA is 0 pCi/L. The CDPH MCL for Gross Beta is 50 pCi/L. Between calendar years 2010 and 2012, Gross Beta was detected at a maximum concentration of 6.4 pCi/L in surface water purchased from MWDSC, with an average concentration of below the DLR of 4 pCi/L. All levels were below the MCL.

#### **Best Available Technology:**

See Arsenic above.

#### **Cost Estimate:**

See Arsenic above.

#### **Health Risk Category:**

Gross Beta's health risk has been classified as a "Carcinogen." USEPA has determined that the health risk associated with the MCLG is 0 and the risk associated with the MCL is 2 excess cases of cancer in 1,000 people over a lifetime exposure.

### **Uranium:**

The CDPH MCL for Uranium is 20 pCi/L, and the PHG for Uranium is 0.43 pCi/L. Between calendar years 2010 and 2012, Uranium was detected at maximum concentrations of 15 pCi/L and 3.7 pCi/L in local groundwater and in surface water purchased from MWDSC, respectively, with the average concentrations of 9.4 pCi/L and 2.4 pCi/L in local groundwater and in surface water purchased from MWDSC, respectively. All levels were below the MCL.

#### **Best Available Technology:**

See Arsenic above.

#### **Cost Estimate:**

See Arsenic above.

#### **Health Risk Category:**

Uranium's health risk has been classified as a "Carcinogen." OEHHA has determined that the theoretical health risk associated with the PHG is one excess case of cancer in a million people and the risk associated with the MCL is 5 excess cases of cancer in 100,000 people exposed over a 70-year lifetime.

## Public Health Goal Report 2013

### Total Coliform Bacteria:

Between calendar years 2010 and 2012, the highest monthly percentage of positive Total Coliform Bacteria in the distribution system was 3 percent, with an average of 1.8 percent. The CDPH MCL for Coliform Bacteria is 5 percent. There is no PHG for Coliform Bacteria, but the federal MCLG established by the USEPA is 0 percent.

#### Best Available Technology:

The BAT for removal of Coliform Bacteria in drinking water has been determined by USEPA to be disinfection. The City of Garden Grove already disinfects all water served to the public. Chlorine is used to disinfect the water because it is an effective disinfectant and residual concentrations can be maintained to guard against biological contamination in the water distribution system.

Coliform Bacteria are indicator organisms that are ubiquitous in nature. They are a useful tool because of the ease in monitoring and analysis. The City of Garden Grove collects weekly samples for Total Coliforms at various locations in the distribution system. If Coliform Bacteria are detected in the drinking water sample, it indicates a potential problem that needs to be investigated and followed up with additional sampling. It is not unusual for a system to have an occasional positive sample. Although USEPA set the MCLG for Total Coliforms at zero percent positive, there is no commercially available technology that will guarantee zero percent positive every single month; therefore, the cost of achieving the PHG cannot be estimated.

The City of Garden Grove will continue several programs that are now in place to prevent contamination of the water supply with microorganisms. These include:

- Disinfection using Chlorine and maintenance of a Chlorine residual at every point in the distribution system
- Monitoring throughout the distribution system to verify the absence of Total Coliforms and the presence of a protective Chlorine residual
- Flushing program in which water pipelines known to have little use are flushed to remove stagnant water and bring in fresh water with residual disinfectant
- Cross-connection control program that prevents the accidental entry of non-disinfected water into the drinking water system.

#### Cost Estimate:

Since the City of Garden Grove has already taken all of the steps described by CDPH as "best available technology" for Coliform Bacteria in Section 64447, Title 22, California Code of Regulations, no cost estimate has been included.

#### Health Risk Category:

USEPA has determined that the health risk associated with the MCLG is 0.



## **Public Health Goal Report 2013**

### **Recommendations for Further Action:**

The City of Garden Grove meets all CDPH and USEPA drinking water standards set to protect public health. Costly treatment processes would be required to further reduce the levels of the constituents identified in this report that are already significantly below the health-based MCLs established to provide "safe drinking water." The effectiveness of the treatment processes to provide any significant reductions in constituent levels at these already low values is uncertain. The health protection benefits of these further hypothetical reductions are not at all clear and may not be quantifiable. Therefore, no action is proposed.

# Your 2013 Water Quality Report

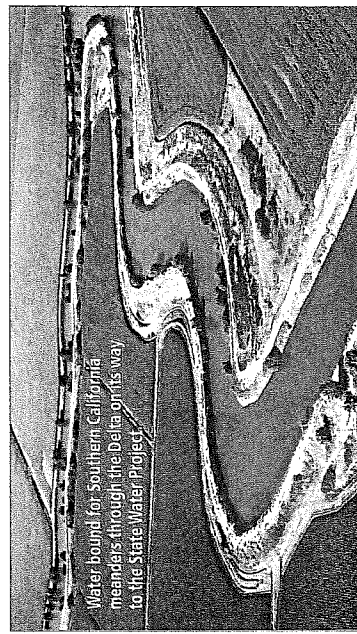
## Drinking Water Quality

Since 1990, California public water utilities have been providing an annual Water Quality Report to their customers. This year's report covers calendar year 2012 drinking water quality testing and reporting. The City of Garden Grove Water Service Division (City) vigilantly safeguards its water supply and, as in years past, the water delivered to your home meets the quality standards required by federal and state regulatory agencies. The U.S. Environmental Protection Agency (USEPA) and the California Department of Public Health (CDPH) are the agencies responsible for establishing and enforcing drinking water quality standards.

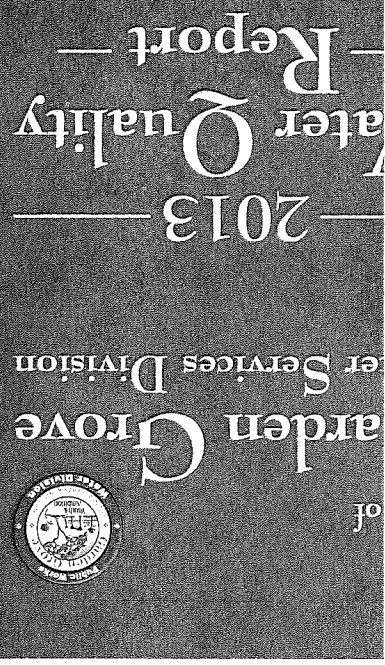
In some cases, the City goes beyond what is required by testing for unregulated chemicals that may have known health risks but do not have drinking water standards. For example, the Orange County Water District (OCWD), which manages the groundwater basin, and the Metropolitan Water District of Southern California (MWDSC), which supplies imported treated surface water to the City test for unregulated chemicals in our water supply. Unregulated chemical monitoring helps USEPA and CDPH determine where certain chemicals occur and whether new standards need to be established for those chemicals to protect public health.

Through drinking water quality testing programs carried out by OCWD for groundwater, MWDSC for treated surface water and the City for the water distribution system, your drinking water is constantly monitored from source to tap for regulated and unregulated constituents.

The State allows us to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of our data, though representative, are more than one year old.



Water bound for Southern California meanders through the Delta on its way to the State Water Project.



City of Garden Grove  
Public Works Department  
Water Service Division  
13802 Newhope Street  
Garden Grove, California 92843



Este informe contiene información muy importante sobre su agua potable. Tradúzcalo a un idioma que usted entienda bien.

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

more information available at (714) 741-5395.

이 보고서는 귀하가 거주하는 지역의 수질에 관한 중요한 정보를 제공합니다. 이것을 당신의 모국어로 번역하십시오.

Korean

Bản báo cáo có ghi những chi tiết quan trọng về phẩm chất nước trong cộng đồng quy vì. Hay nhờ người thông dịch, hoặc hỏi một người bạn biết rõ về văn hóa này.

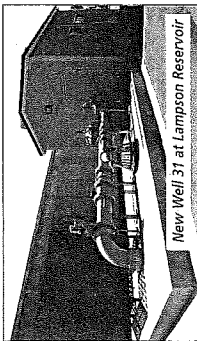
Vietnamese

# We Go to Great Lengths to Ensure the Continued Quality of Your Water

## Sources of Supply

Your drinking water is a blend of mostly groundwater from 12 wells in the Orange County groundwater basin and also surface water imported by MWDSC. MWDSC's imported water sources are a blend of State Water project water from northern California and water from the Colorado River Aqueduct. Your groundwater comes from a natural underground reservoir managed by the Orange County Water District (OCWD) that stretches from the Prado Dam and fans across the northwestern portion of Orange County, excluding the communities of Brea and La Habra, and stretching as far south as the El Toro 'Y'.

Last year, as in years past, your tap water met all USEPA and State drinking water health standards. The City vigilantly safeguards its water supplies and once again we are proud to report that our system has never violated a maximum contaminant level or any other water quality standard. This brochure is a snapshot of last year's water quality. Included are details about where your water comes from, what it contains, and how it compares to Federal and State standards.



New Well 37 at Lamson Reservoir

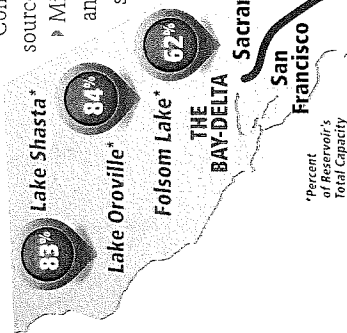
## Basic Information

### 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:

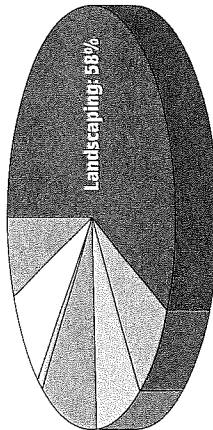
- Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.



After a promising Fall that saw the December snowpack at nearly 200% of average, this year's rainy season has proved one of the driest on record. Despite the awinding

## How Residential Water is Used in Orange County

Outdoor watering of lawns and gardens makes up approximately 60% of home water use. By cutting your outdoor watering by 1 or 2 days a week, you can dramatically reduce your overall water use.



Visit [www.bewaterwise.com](http://www.bewaterwise.com) for water saving tips and ideas for your home and business.

- 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 stormwater 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 stormwater runoff, agricultural application and septic systems.

In order to ensure that tap water is safe to drink, USEPA and the 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.

## Drinking Water Fluoridation

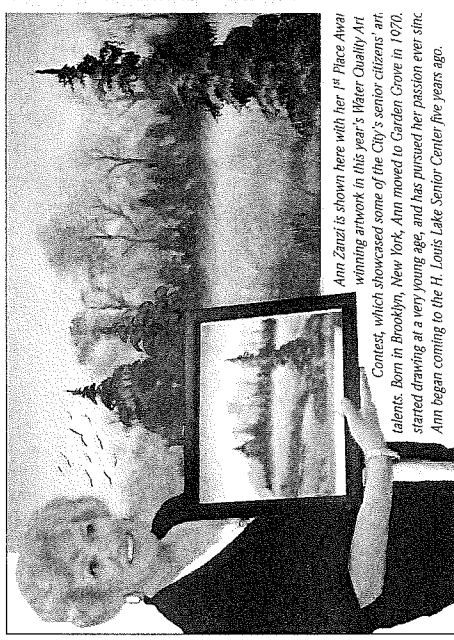
Fluoride has been added to U.S. drinking water supplies since 1945. Of the 50 largest cities in the U.S., 43 fluoridate their drinking water. In December 2007, MWDSC joined a majority of the nation's public water suppliers in adding fluoride to drinking water in order to prevent tooth decay. In line with recommendations from the CDPH, as well as the U.S. Centers for Disease Control and Prevention, MWDSC 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. Our local water is not supplemented with fluoride. Fluoride levels in

## For Your Information...

**Disinfection:** Water provided by the City contains chlorine use for disinfection and chloramines used by MWDSC, also for disinfecting purposes. Customers on kidney dialysis should consult their physician **Fish or Amphibians:** If you have fish or amphibians, make sure to remove any chloramines and chlorine before changing or adding water to the tanks. Remember, allowing drinking water to stand will not remove chloramines. Consult your local aquarium store for products that will remove the disinfectants.

**Hot Water Heaters:** Many odor complaints may be traced to the home's hot water heater. Remember to follow manufacturer's instructions and flush hot water heaters regularly. This will flush out any sediments that may have accumulated, provide good water turnover to maximize water quality, and help keep your unit in good working order.

**Point of Use or Home Water Filtration Units:** Be vigilant in changing or cleaning any filters or media on your home units. Always follow the manufacturer's instructions. Remember, the water is only as clean as the filter allows. Improperly maintained filters can deliver very poor quality water.



Ann Zinai is shown here with her 1st Place Award winning artwork in this year's Water Quality Art Contest, which showcased some of the City's senior citizens' art talents. Born in Brooklyn, New York, Ann moved to Garden Grove in 1970, started drawing at a very young age, and has pursued her passion ever since. Ann began coming to the H. Louis Lake Senior Center five years ago.

**For information about this report, or your water quality in general, please contact Zachary Barrett, Water Quality Supervisor, or Cel Pasillas or Cody Nicolae, Water Quality Technicians, at (714) 741-5395.**

Public City Council meetings are held on the second and fourth Tuesdays of each month at 6:45 p.m. in the Council Chambers at the Community Meeting Center, 11300 Stanford Avenue, Garden Grove, California. You may also contact our City Clerk's Office, Garden Grove City Hall, 11222 Acacia Parkway, Garden Grove, CA 92840 or call (714) 741-5040 for information about Garden Grove

Questions about your water?

Contact us for answers.

# Information You Should Know About the Quality of Your Drinking Water

## 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.

## 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. MWDSC tested its 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 10 a.m. and 4 p.m. Eastern Time (7 a.m. to 1 p.m. in California).

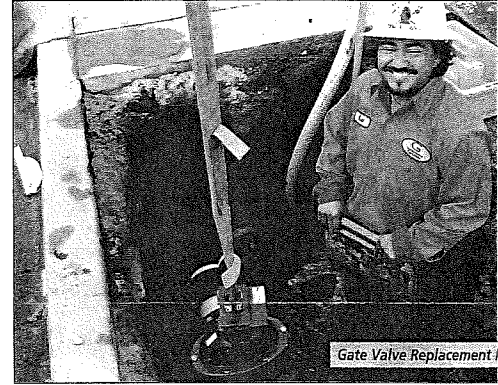
## About Lead in Tap Water

If present, elevated levels of lead can cause serious health 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 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 limit exposure is available from the Safe Drinking Water Hotline or at: [www.epa.gov/safewater/lead](http://www.epa.gov/safewater/lead).

## Nitrate Advisory

At times, nitrate in your tap water may have exceeded one-half the MCL, but it was never greater than the MCL of 45 milligrams per liter (mg/L). Nitrate in your drinking water in 2012 ranged from non-detect to 39 mg/L. The following advisory is because in 2012 we recorded nitrate measuremen



## 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 disinfectant 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.

## 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)

## 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 reflect 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, or (MCLG)	Average Amount	Range of Detections	MCL Violation?	Typical Source of Contaminant
<b>Radiologicals – Tested in 2011</b>						
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
<b>Inorganic Chemicals – Tested in 2012</b>						
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
<b>Secondary Standards* – Tested in 2012</b>						
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
<b>Unregulated Chemicals – Tested in 2012</b>						
Alkalinity, total as CaCO <sub>3</sub> (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 CaCO <sub>3</sub> (ppm)	Not Regulated	n/a	210	84 – 270	n/a	Runoff or Leaching from Natural Deposits
Hardness, total (grains/gallon)	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	4	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)	TT	n/a	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. NTU = nephelometric turbidity unit. 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.



water supply which exceeded one-half (CL).

drinking water at levels above 45 mg/L for infants of less than six months of age. High nitrate levels in drinking water can reduce the capacity of the infant's blood to carry oxygen, resulting in a serious illness; symptoms include lethargy, weakness, and blueness of the skin. Nitrate levels above 45 mg/L may also affect the blood to carry oxygen in other ways, such as pregnant women and those with certain genetic enzyme deficiencies. If you are caring for a child or you are pregnant, you should ask your health care provider.

### 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 Garden Grove: [www.ci.garden-grove.ca.us](http://www.ci.garden-grove.ca.us)
- Municipal Water District of Orange County: [www.mwdoc.com](http://www.mwdoc.com)
- Orange County Water District: [www.ocwd.com](http://www.ocwd.com) • Water Education Foundation: [www.watereducation.org](http://www.watereducation.org)
- Metropolitan Water District of Southern California: [www.mwdh2o.com](http://www.mwdh2o.com)
- California Department of Public Health, Division of Drinking Water and Environmental Management: [www.cdph.ca.gov/certlic/drinkingwater](http://www.cdph.ca.gov/certlic/drinkingwater)
- U.S. Environmental Protection Agency: [www.epa.gov/safewater/](http://www.epa.gov/safewater/)
- California Department of Water Resources: [www.water.ca.gov](http://www.water.ca.gov)
- Water Conservation Tips: [www.bewaterwise.com](http://www.bewaterwise.com) • [www.wateruseitwisely.com](http://www.wateruseitwisely.com)

## Source Water Assessments Imported (MWDSC) Water Assessment

Every five years, MWDSC is required by CDPH to examine possible sources of drinking water contamination in its State Water Project and Colorado River source waters.

In 2012, MWDSC 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 MWDSC to complete one Source Water Assessment (SWA) that utilizes information collected in the watershed sanitary surveys. MWDSC 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 MWDSC at (213) 217-6850.

## Groundwater Assessment

An assessment of the drinking water sources for the City was completed in December 2002. The groundwater sources are considered most vulnerable to the following activities associated with contaminants detected in the water supply: known contaminant plumes, historic agricultural activities and application of fertilizers, and parks. The groundwater sources are considered most vulnerable to the following activities not associated with detected contaminants: confirmed leaking underground storage tanks, dry cleaners, gas stations, and photo processing/printing.

A copy of the complete assessment is available at Department of Public Health Office of Drinking Water, Santa Ana District, 28 Civic Center Plaza, Room 325, Santa Ana, CA 92701. You may request a summary of the assessment by contacting the City at

### 2012 City of Garden Grove Groundwater Quality

Contaminant	MCL	PHG (MCLG)	Average Amount	Range of Detections	MCL Violation?	Most Recent Sampling Date	Typical Source of Contaminant
Calcium (mg/L)	20	0.43	9.3	4.6 – 15	No	2012	Erosion of Natural Deposits
<b>Chemicals</b>							
Chloride (ppm)	10	0.004	<2	ND – 3.9	No	2012	Erosion of Natural Deposits
Iron (ppm)	1	2	<0.1	ND – 0.15	No	2012	Erosion of Natural Deposits
Nitrate (ppm as N)	2	1	0.44	0.37 – 0.5	No	2012	Erosion of Natural Deposits
Nitrate (ppm as NO <sub>3</sub> )	45	45	16	ND – 39	No	2012	Fertilizers, Septic Tanks
Ammonia (ppm as N)	10	10	3.6	ND – 8.9	No	2012	Fertilizers, Septic Tanks
Fluoride (ppm)	50	30	<5	ND – 6.5	No	2012	Erosion of Natural Deposits
<b>Standards*</b>							
Lead (ppb)	500*	n/a	73	27 – 120	No	2012	Erosion of Natural Deposits
Asbestos (ppb)	50*	n/a	<20	ND – 20	No	2012	Erosion of Natural Deposits
Radon (pCi/L)	1,600*	n/a	820	520 – 1,100	No	2012	Erosion of Natural Deposits
Chlorine (ppm)	500*	n/a	120	52 – 180	No	2012	Erosion of Natural Deposits
Total Solids (ppm)	1,000*	n/a	510	310 – 740	No	2012	Erosion of Natural Deposits
Turbidity (NTU)	5*	n/a	0.21	ND – 0.7	No	2012	Erosion of Natural Deposits
<b>Regulated Contaminants Requiring Monitoring</b>							
Calcium (ppm as CaCO <sub>3</sub> )	Not Regulated	n/a	180	170 – 220	n/a	2012	Erosion of Natural Deposits
Bicarbonate (ppm as HCO <sub>3</sub> )	Not Regulated	n/a	220	200 – 270	n/a	2012	Erosion of Natural Deposits
Total Hardness (ppm)	Not Regulated	n/a	<100	ND – 220	n/a	2012	Erosion of Natural Deposits
Iron (ppm)	Not Regulated	n/a	98	61 – 130	n/a	2012	Erosion of Natural Deposits
Calcium (ppm as CaCO <sub>3</sub> )	Not Regulated	n/a	320	200 – 440	n/a	2012	Erosion of Natural Deposits
Total Hardness (ppm)	Not Regulated	n/a	19	12 – 26	n/a	2012	Erosion of Natural Deposits
Chromium (ppb)	Not Regulated	0.02	1.2	ND – 2.2	n/a	2012	Erosion of Natural Deposits
Ammonia (ppm)	Not Regulated	n/a	18	11 – 25	n/a	2012	Erosion of Natural Deposits
pH	Not Regulated	n/a	7.9	7.8 – 8	n/a	2012	Acidity, hydrogen ions
Iron (ppm)	Not Regulated	n/a	3.7	2.5 – 5.1	n/a	2012	Erosion of Natural Deposits
Nitrate (ppm)	Not Regulated	n/a	51	36 – 80	n/a	2012	Erosion of Natural Deposits
Fluoride (ppm)	Not Regulated	n/a	<3	ND – 4.2	n/a	2012	Erosion of Natural Deposits

ppb = parts-per-billion; ppm = parts-per-million; pCi/L = pico curies per liter; NTU = nephelometric turbidity units; ND = not detected; mg/L = milligrams per liter; cmhos = micromhos per centimeter; n/a = not applicable; MCL = Maximum Contaminant Level; (MCLG) = federal MCL Goal; PHG = California Public Health Goal; \* Contaminant is regulated by a secondary standard to maintain aesthetic qualities (taste, odor, color).

### 2012 City of Garden Grove Distribution System Water Quality

Contaminant	MCL (MRDL/MRDLG)	Average Amount	Range of Detections	MCL Violation?	Typical Source of Contaminant
Total Trihalomethanes (ppb)	80	50	5 – 63	No	Byproducts of Chlorine Disinfection
Halooacetic Acids (ppb)	60	15	1.1 – 23	No	Byproducts of Chlorine Disinfection
Total Disinfectant Residual (ppm)	(4 / 4)	1.2	0.03 – 2.6	No	Disinfectant Added for Treatment
<b>Quality</b>					
Turbidity (NTU)	5*	0.09	ND – 0.21	No	Erosion of Natural Deposits

Water in the distribution system are tested quarterly for total trihalomethanes and haloacetic acids; thirty-three locations are tested each month for color, odor and turbidity. Turbidity was not detected in 2012. 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).

Contaminant	MCL	MCLG	Highest Monthly Positive Samples	MCL Violation?	Typical Source of Contaminant
Total Coliform Bacteria	5%	0	3%	No	Naturally Present in the Environment

5% of the monthly samples may be positive for total coliform bacteria. 3% 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 (AL)	Public Health Goal	99 <sup>th</sup> Percentile Value	Sites Exceeding AL / Number of Sites	AL Violation?	Typical Source of Contaminant	
Lead (ppb)	15	0.2	ND < 5	0 / 50	No	Corrosion of Household Plumbing
Copper (ppm)	1.3	0.3	0.25	0 / 50	No	Corrosion of Household Plumbing

In 2012, 50 residences are tested for lead and copper at-the-tap. The most recent set of samples was collected in 2010. Lead was detected above the reporting level in three samples, 6 samples exceeded the lead Action Level. Copper was detected above the reporting level in 40 samples, but none of the samples exceeded the copper Action Level. \* Action Level (AL) is the concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.