2013
CITY OF VACAVILLE

Water Quality Report to Consumers

Este informe contiene información muy importante sobre su aqua potable. Tradúzcalo o hable con alguien que lo entienda bien.

The City of Vacaville wants you, our customers, to know that your water system has met all water quality standards and is a safe and reliable drinking water supply. These standards are established by the U.S. Environmental Protection Agency (USEPA) and the California State Department of Public Health (DPH). In 2013 the City distributed over 6 billion gallons of drinking water. This water was subjected to extensive testing, not only for regulated contaminants, but many non-regulated chemical properties as well. More than 4,000 analyses were performed on drinking water samples in 2013.

In order to ensure that tap water is safe to drink, the USEPA and the DPH prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. DPH regulations also establish limits for contaminants in bottled water that 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 doesn't 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, or visit the web site at http://www.epa.gov/safewater. If you have further questions, please contact the City Water Quality Laboratory Supervisor, Mindy Boele, by phone at (707) 469-6400 or by email at mindy.boele@cityofvacaville.com.

KEEP THE LEAD OUT

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. City of Vacaville is responsible for providing high quality drinking water, but can not always 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.

SOURCES OF WATER AND CONTAMINANTS:

The sources of drinking water (both tap and bottled) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Vacaville's water supply consists of two surface water sources and 11 deep groundwater wells. Lake Berryessa surface water, conveyed through the Putah South Canal (PSC), provided 33% of the City's total consumption of water in 2013, and Sacramento Delta surface water, from the North Bay Aqueduct (NBA), provided an additional 39%. Groundwater from the 11 deep wells made up the balance (28%) of our water needs. Treatment of the surface water is divided between the Vacaville Water Treatment Plant (VWTP) and the North Bay Regional Water Treatment Plant (NBR). The VWTP treats PSC source water only, while the NBR plant, which is jointly owned by the cities of Vacaville and Fairfield, treats both PSC and NBA source water.

CONTAMINANTS THAT MAY BE PRESENT IN SOURCE WATER:

- Microbial contaminants, such as viruses and bacteria that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- Inorganic contaminants, such as salts and metals, that can be naturally-occurring or result from urban storm-water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- Pesticides and herbicides that 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, that are by-products of industrial processes and petroleum production and can also come from gas stations, urban storm-water runoff, agricultural application, and septic systems.
- Radioactive contaminants that can be naturally-occurring or be the result of oil and gas production and mining activities.

ARSENIC IN DRINKING WATER: Vacaville Meets the Limit

While arsenic levels in your drinking water are less than the current USEPA standard of 10 ppb, the groundwater does contain very low levels of arsenic. These results are from samples taken in 2011 and 2013. The standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. The USEPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

HEALTH RELATED INFORMATION:

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA and Center for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the USEPA's Safe Drinking Water Hotline(1-800-426-4791).

SOURCE WATER ASSESSMENTS AND VULNERABILITY SUMMARIES

A Source Water Assessment evaluates the quality of water that is used in a community drinking water supply. It is also used to determine the Potential Contributing Activities (PCAs) that occur within and nearby a source water supply. The PCAs are then compiled into a Vulnerability Summary report. The latest Summary report for the Sacramento Delta, including the North Bay Aqueduct (NBA), was updated in 2012. The source was considered to be most vulnerable to animal grazing activities, urban and agricultural runoff, recreational use and seawater intrusion.

The Solano County cities treating NBA water, in conjunction with the Solano County Water Agency, have implemented watershed management practices to improve water quality and reduce the significance of the potential contaminant sources. The latest Summary report for Putah South Canal (PSC) was completed in 2012. The results of the assessment survey indicated that PSC is most vulnerable to illegal activities/ unauthorized dumping and herbicide application. Management measures along the canal have been implemented that mitigate the risk for each of these PCAs.

The summaries for Vacaville's groundwater wells were performed in 2002, 2003, and 2005. The wells are considered most vulnerable to automobile gas stations, chemical and petroleum processing and storage, dry cleaners, septic systems, sewer collection systems, agricultural drainage, agricultural wells and irrigation wells. The wells offer various levels of protection from PCAs due to factors such as the aquifer, deep water table intakes, well construction features and physical barriers. A copy of the Source Water Assessments and Vulnerability Summaries can be obtained through the California DPH, Drinking Water Field Operations Branch, San Francisco District Office, 850 Marina Bay Parkway, Bldg P, 2nd Floor, Richmond, California 94804. You may request that a summary be sent to you by contacting Bob Brownwood, District Engineer, CDPH, at (510) 620-3474.

Lake Berryessa "glory hole"

UCMR-3:

USEPA uses the Unregulated Contaminant Monitoring (UCM) program to collect data for contaminants suspected to be present in drinking water, but that do not have health-based standards set under the Safe Drinking Water Act (SDWA). Every five years EPA reviews the list of contaminants, largely based on the Contaminant Candidate List. The SDWA Amendments of 1996 provide for:

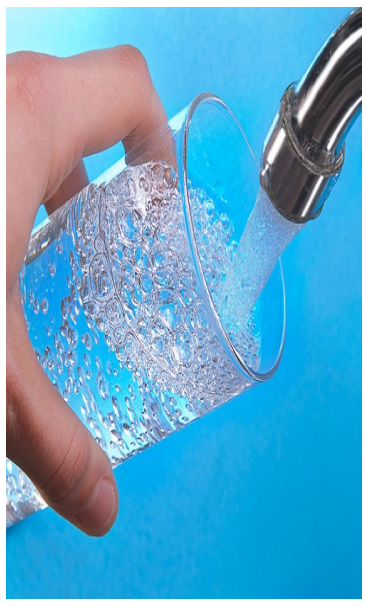
*Monitoring no more than 30 contaminants every five years.

*Storing analytical results in a National Contaminant Occurrence Database (NCOD).

*Monitoring only a representative sample of public water systems serving less than 10,000 people.

The UCM Program progressed in several stages. Currently, EPA manages the program directly as specified in the Unregulated Contaminant Monitoring Rule. The City of Vacaville performed sampling under UCMR1 in 2002, UCMR2 in 2010 and began the UCMR3 sampling in September of 2013.

The data collected allows the EPA to establish the need for continued monitoring and regulation of these constituents. Limits are established to be the most protective of the population.



Where your water comes from. Map is not to scale, but gives you a relative idea of the location of water sources for the City of Vacaville.

PROTECT YOUR WATER SUPPLY

Polluted storm water potentially affects drinking water sources, which can affect public health and increase drinking water treatment costs. Please help protect your water supply by controlling household, landscaping, health care and automotive products that contain toxic chemicals. Reduce the use of toxic chemicals wherever possible (including fertilizers and pesticides) and be sure to properly recycle or dispose of waste. Everything that goes down a storm drain or sewer may potentially affect your local water supply. Never dispose of household, landscaping, health care or automotive products that contain toxic chemicals down the storm drain or in the sewer.

The following tables list all the drinking water contaminants that were detected during the most recent sampling for the consistuents. To read the tables, start with the far left column titled Constituent and read across the row. Units express the amount measured. MCL shows the highest amount of the substance allowed. PHG (MCLG) is the goal amount for that substance, which may be a lower amount than the amount allowed. The Range reports the lowest and highest amounts detected and the Average is the annual average. Contaminant Sources describes where the substance usually originates. To better understand the report, use the Legend that defines the terms used.

Table 1- SAMPLING RESULTS SHOWING THE DETECTION OF COLIFORM BACTERIA

Microbiological Contaminant	Highest No. of Detections	No. of Months in Violation	MCL	MCLG	Contaminant Sources
Total Coliform Bacteria	1	0	5% (1378 samples collected in 2013)	0	Naturally present in the environment.
Fecal Coliform Bacteria	0	0	A routine sample and a repeat sample detect for total coliform and either sample also detects for fecal coliform.	0	Human and animal fecal waste.

Table 2 - SAMPLING RESULTS SHOWING THE DETECTION OF LEAD AND COPPER

Constituent (reporting units)	No of samples (collected in 2011)	90th Percentile Detected	No. Sites exceeding AL	AL	PHG	Contaminant Sources
Lead (ppb) [a]	31	2.5	0	15	0.2	Internal corrosion of household water plumbing systems; discharges from industrial manufacturers; erosion of natural deposits.
Copper (ppm)[a]	31	0.2	0	1.3	0.3	Internal corrosion of household water plumbing systems; erosion of natural deposits; leaching from wood preservatives.

Table 3 - SAMPLING RESULTS FOR SODIUM AND HARDNESS [b]

Constituent (reporting units)	Sample date	GROUNDWATER Range	GROUNDWATER Average	SURFACE WATER-NBA Range	SURFACE WATER-NBA Average	SURFACE WATER-VWTP Range	SURFACE WATER-VWTP Average	Contaminant Sources
Hardness (ppm)	2013	81 - 310[c]	173[c]	75 - 196	134	170	170	Sum of polyvalent cations present in the water, generally magnesium and calcium, and are usually naturally occurring.
Sodium (ppm)	2013	41 - 75[c]	55[c]	17 - 31	24	9.8	9.8	Salt present in the water and is generally naturally occurring.

Table 4 - DETECTION OF CONTAMINANTS WITH A PRIMARY DRINKING WATER STANDARD

Constituent (reporting units)	MCL	PHG (MCLG)	GROUNDWATER Range	GROUNDWATER Average	SURFACE WATER TREATED AT NBR Range	SURFACE WATER TREATED AT NBR Average	SURFACE WATER TREATED AT VWTP Range	SURFACE WATER TREATED AT VWTP Average	Contaminant Sources
Aluminum (ppb)	1000	600	nd - 88[c]	13[c]	nd - 42	18	nd	nd	Erosion of natural deposits; residue from some surface water treatment processes.
Arsenic (ppb)	10	0.004	nd - 6.8	2.7	nd - 3.0	0.7	nd	nd	Erosion of natural deposits; runoff from orchards; glass and electronics production wastes.
Barium (ppm)	1	2	0.07 - 0.14[c]	0.1[c]	0.03 - 0.04	0.04	nd	nd	Discharges of oil drilling wastes and from metal refineries; erosion of natural deposits.
Chromium (ppb)	50	(100)	1.0 - 23	12.3	nd - 0.2	nd	nd - 7.4	3.6	Discharge from steel and pulp mills and chrome plating; erosion of natural deposits.
Fluoride (ppm)[d]	2	1	System wide monthly average = 0.82, minumum = 0.69, maximum = 1.04						Erosion of natural deposits; water additive that promotes strong teeth.
Nickel (ppb)	100	12	nd[c]	nd[c]	nd - 12	5	nd	nd	Erosion of natural deposits; discharge from metal factories.
Nitrate as NO3 (ppm)	45	45	1.8 - 19.8	8.6	nd - 2.0	0.5	nd	nd	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits.
Gross Beta Activity (pCi/L)	50	0	nd - 5.0[c]	nd[c]	nd[c]	nd[c]	nd[c]	nd[c]	Decay of natural and man-made deposits.
Uranium (pCi/L)	20	0.43	1.1 - 3.2[c]	1.7[c]	nd[c]	nd[c]	nd[c]	nd[c]	Erosion of natural deposits.

Table 5 - DETECTION OF CONTAMINANTS WITH A SECONDARY DRINKING WATER STANDARD [e]

Constituent (reporting units)	MCL	GROUNDWATER Range	GROUNDWATER Average	SURFACE WATER-NBA Range	SURFACE WATER-NBA Average	SURFACE WATER-VWTP Range	SURFACE WATER-VWTP Average	Contaminant Sources
Aluminum (ppb)	200	nd - 88[c]	13[c]	nd - 42	18	nd	nd	Erosion of natural deposits; residue from some surface water treatment processes.
Color (units)	15	nd[c]	nd[c]	nd	nd	5	5	Naturally-occurring organic materials.
Iron (ppb)	300	nd - 89[c]	14[c]	nd	nd	69	69	Leaching from natural deposits; industrial wastes.
Manganese (ppb)	50	nd - 4.1[c]	0.9[c]	nd	nd	nd	nd	Leaching from natural deposits.
Odor- Threshold (units)	3	nd - 1.0[c]	0.3[c]	1.4	1.4	nd	nd	Naturally-occurring organic materials.
Silver (ppb)	100	nd[c]	nd[c]	nd - 12	6	nd	nd	Industrial discharges.
Turbidty (units)[f]	5	0.09 - 0.5[c]	0.17[c]	0.04 - 0.07	0.05	0.24	0.24	Soil runoff.
Total Dissolved Solids (ppm)	1000	290 - 540[c]	362[c]	157 - 245	196	210	210	Runoff/leaching from natural deposits.
Specific Conductance (uS/cm)	1600	480 - 820[c]	608[c]	274 - 428	342	340	340	Substances that form ions when in water; seawater influence.
Chloride (ppm)	500	8.1 - 37[c]	16[c]	10 - 17	14	7.3	7.3	Runoff/leaching from natural deposits; seawater influence.
Sulfate (ppm)	500	25 - 68[c]	37[c]	23 - 34	28	20	20	Runoff/leaching from natural deposits; seawater influence.

Table 6 - DETECTION OF UNREGULATED CONTAMINANTS (UCMR3)

Constituent (reporting units)	NL	PHG (MCLG)	Source Water Range	Source Water Average	Distribution System Water Range	Distribution System Water Average
Chlorate (ppb)	800	na	23-200	104	<20-180	104
Chromium (ppb) **	50	(100)	<0.2-23	10.7	<0.2-19	11.9
Hexavalent Chromium (ppb)	na	0.020	0.07-20	8.7	0.1-16	7.5
Molybdenum (ppb)	na	na	<1-3.4	1.6	<1-1.6	1.3
Strontium (ppb)	na	na	110-570	345	120-420	256
Vanadium (ppb)	50	na	1.9-31	14.2	2.5-24	12.8

Unregulated contaminant monitoring helps the EPA and the State determine where certain contaminants occur and whether the contaminants need to be regulated.
**Chromium is a regulated primary drinking water standard which has also been included in the UCMR3 data gathering program.

Table 7 - DETECTION OF DISINFECTION BYPRODUCTS

Constituent (reporting units)	MCL	PHG (MCLG)	Range	Average	Violations	Contaminant Sources
Total Trihalomethanes (ppb)	80	na	13 - 63	38	0	By-product of drinking water disinfection.
Halo-Acetic Acids (ppb)	60	na	10 - 54	19	0	By-product of drinking water disinfection.
Constituent (reporting units)	**MCL or MRDL**	**MCLG or MRDLG**	**Average**	**Minimum**	**Maximum**	**Contaminant Sources**
DBP Precursors/TOC (ppm)	tt	-	2.0	1.4	2.7	Various natural and man made sources.
Chlorine (ppm)	4	4	0.76	0.02	1.4	By-product of drinking water disinfection.

FOOTNOTES:

(a) This is the state action level for samples collected inside homes. The 90th percentile reflects the concentration of lead or copper at which 90% of the samples tested were found to have not exceeded. Household lead and copper results are from 2011. The next sampling is scheduled for Summer of 2014.

(b) There are no Drinking water standards (MCLs, PHGs or MCLGs) for these constituents, they are just reported for customer information. To convert hardness data from ppm to grains per gallon, divide by 17.

(c) Results from last samples collected in 2011.

(d) Not possible to differentiate water source. The City of Vacaville treats the water by adding fluoride to the naturally occuring level to help prevent dental caries in consumers. The fluoride levels in the treated water are maintained within the range of 0.7 - 1.3 ppm, as required by the California Department of Public Health regulations.

(e) There are no PHGs, MCLGs or mandatory standard health effects language for these constituents because secondary MCLs are set on the basis of aesthetics.

(f) Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of water quality. High turbidity can hinder the effectiveness of disinfectants.

LEGEND

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 USEPA.

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 Cal EPA.

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.

AL & NL (Regulatory Action Level or Notification Level): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

tt: (Treatment Technique): A required process intended to reduce the level of a contaminant in drinking water.

na: Not applicable or Not available.

nd: Not Detected.

ntu: Nephelometric Turbidity Units. This is the standard unit for turbidity.

pCi/L: Pico Curies per Liter.

uS/cm: unit of measure for conductance.

ppm: Parts Per Million or Milligrams Per Liter (mg/L).

ppb: Parts Per Billion or Micrograms Per Liter (ug/L).


City of Vacaville Water Treatment Plant


McMurtry Reservoir

Common Water Quality Issues in Public Supplies

TASTE AND ODOR

It is very difficult to separate taste from odor because these two human senses are so closely related. In addition to treatment additives, water can pick up tastes and odors from new pipe, from low usage in the treated water system or from natural substances in the source water. Tastes and odors in treated water are not harmful, but we do take steps to try and eliminate them.

CHLORINE SMELL

The most common complaint is a chlorine smell to the water. Chlorine is added to ensure that the water that makes it to your home or business is free of bacteria. The State allows us to have up to 4 parts per million chlorine residual in the drinking water; however, the City maintains the level around 0.8 parts per million with a maximum of 1.4 parts per million to reduce the taste and odor issues. Further reduction of taste and order can be achieved by point of use carbon filters, or by allowing water to sit in a pitcher in the refrigerator for an hour or so prior to use.

ROTTEN EGG SMELL

Also known as “sulfur odor”, the rotten egg smell in water is caused by the reaction of sulfates and microorganisms in unchlorinated water. As the City’s water is chlorinated, the actual cause of most sulfur odor issues comes from debris leftover in the sink p-trap below the water faucet where the odor is observed, which is easily resolved by flushing water down the p-trap to clear the odor-causing debris. If you still suspect the water supply to be the source of the smell, it is important to check to see whether the cold water also contains the odor, or just the hot water. Run the hot water to check for odor. Then move to another faucet and run the cold water. If the hot water alone has odor, then the odor is likely coming from the water heater, which may require a call to a plumber to resolve. If the cold water has an odor, then the source is in the cold water. Prior to calling the City to report a cold water rotten egg smell, be certain that the smell is not just gas trapped in the p-traps of your sewer drain system being pushed up as water flows to the sewer. If the smell is actually from the water, City water operators will want to know about the odor problem in order to resolve its source.

CLOUDY WATER

Cloudy water could be a result of dissolved air in the water, which is a common and harmless condition. To verify this, place the cloudy water in a glass and observe for 2 minutes. If it clears from the bottom up (you may be left with bubbles on the side of the glass and a small surface layer of bubbles), then you just have dissolved air in the water. If the cloudy water persists, or if you are noticing particles or unusual tastes or odors, please call us and a water operator will come check your water.

DISCOLORATION OF THE WATER

The discoloration is usually rust from aging pipes. It is not harmful, but is aesthetically displeasing. Discoloration of the water can be a result of disturbances in the water line due to using a hydrant improperly, installing new pipe, or shutting off the water to a local area for system maintenance. Home plumbing, especially in older homes, can also cause discoloration of the water.

HARD WATER

Hardness of the water varies from one part of the city to another. It is the main cause of white scaling and spotting on glassware. The higher the concentration of hardness causing minerals in your water, the more white scale you will notice on faucets and other water fixtures. Wiping down faucets and shower doors immediately after use if the best way to prevent hardness buildup.