2016 PUBLIC HEALTH GOALS REPORT

PREPARED FOR:

CITY OF SACRAMENTO DEPARTMENT OF UTILITIES
SACRAMENTO, CALIFORNIA

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BACKGROUND

The California Health and Safety Code (Section 116470(b)) requires that public water systems with 10,000 or more service connections prepare a special report every three years if water quality measurements exceed a Public Health Goal (PHG). Attachment 1 includes Section 116470(b)).

The report must be completed by July 1 of the year in which it is due. The first report was completed by July 1, 1998, and new reports are required every three years. The City of Sacramento Department of Utilities prepared the required reports in 1998, 2001, 2004, 2007, 2010, and 2013 and the current report was completed by July 1, 2016 as required.

The PHG report must present information on (1) contaminants that have been detected above a PHG, (2) health risk information for the detected contaminants, (3) an estimate of the cost to install best available treatment technology to reduce the level of a given contaminant, and (4) what action, if any, the local water purveyor intends to take to reduce the concentration of the contaminant(s) and the basis for that decision.

The State Water Resources Control Board Division of Drinking Water (DDW) sets Maximum Contaminant Levels (MCLs) as close as feasible to the PHG taking treatment costs and available analytical and treatment technology into consideration. MCLs are enforceable limits that water purveyors must meet to protect public health.

The California Office of Environmental Health Hazard Assessment (OEHHA) is required to determine and publish the "numerical public health risk" associated with PHGs and MCLs. This PHG report uses the most recent health risk information published by OEHHA.

This report identifies each contaminant that exceeds its PHG, describes the public health risk at both the PHG and the MCL, identifies the Best Available Technology (BAT) for treatment, and the costs to install BAT to reduce levels of the contaminant.

Only constituents that are regulated in drinking water, either with an MCL or Treatment Technique (TT) requirement, and for which either a PHG or MCLG has been set are to be included in the report. There are some regulated constituents that are routinely monitored and detected by water systems at levels below the drinking water standard for which no PHG or MCLG have yet been adopted. One example is disinfection byproducts, including trihalomethanes and haloacetic acids. These will be addressed in a future report if PHGs are adopted by OEHHA.

WHAT ARE PUBLIC HEALTH GOALS?

PHGs are non-enforceable goals established by OEHHA. PHGs are developed using available toxicological data in scientific literature. A PHG is the level below which OEHHA has determined that a drinking water contaminant does not pose a significant health risk. None of the practical

risk-management factors that are considered by the USEPA or DDW in setting enforceable drinking water standards are considered in setting the PHGs. Such factors include analytical detection capability, treatment technology availability, and benefits and costs. If a constituent does not have a PHG then for the preparation of this report, public water systems are to use Maximum Contaminant Level Goals (MCLGs) developed by the US Environmental Protection Agency (USEPA). Attachment 2 presents a list of constituents with their respective MCLs and PHGs.

WHAT IS BEST AVAILABLE TECHNOLOGY (BAT)?

State law requires that at the same time DDW adopts a primary drinking water standard (i.e., health based) they identify BAT for the specific constituent being regulated. BATs are the best known treatment methods to reduce contaminant levels to the MCL. To be considered BAT, the treatment must be proven effective under full-scale field applications.

WHAT ARE DETECTION LIMITS FOR PURPOSES OF REPORTING (DLRS)?

In addition, when DDW establishes a drinking water regulation, the Agency evaluates available analytical methods and sets a DLR for the constituent. DLRs are the lowest concentration of the constituent that laboratories report for determining compliance. A constituent is "detected" when measured concentrations are above the DLR.

WHAT WATER QUALITY DATA WAS REVIEWED TO PREPARE THIS REPORT?

The 2016 PHG report was prepared based upon a review of water quality data for the years 2013-2015. Water quality data was collected and reviewed for both surface water treatment plants (Sacramento River Water Treatment Plant and the E.A. Fairbairn Water Treatment Plant) and wells that served water to the system.

WHAT GUIDELINES WERE FOLLOWED IN PREPARING THIS REPORT?

The Association of California Water Agencies (ACWA) prepared guidelines for water utilities to use in preparing their PHG reports. The most recent ACWA guidelines (ACWA, "2016 PHG Guidance") were used to prepare this report. No guidance materials are available from the DDW regarding preparation of PHG reports. OEHHA publishes a document with health risk information for regulated constituents. The OEHHA publication (OEHHA, "Health Risk Information for PHG Exceedance Reports," February 2016) was used to prepare this report (see Attachment 3).

WHAT CONSTITUENTS WERE DETECTED ABOVE A PHG (OR MCLG)?

Table 1 presents the constituents that were detected by the City of Sacramento Department of Utilities above a PHG or an MCLG during 2013-2015.

Table 1
Constituents Detected Above PHG or MCLG
(2013-2015)

Constituent	PHG (MCLG)	MCL
Arsenic	0.004 µg/L	10 µg/L
Hexavalent chromium (CrVI)	0.02 µg/L	10 µg/L
Coliform Bacteria (including *E. coli*)	(0)	5.0 %
Gross alpha	(0)	15 pCi/L
Uranium	0.43 pCi/L	20 pCi/L

µg/L = micrograms per liter (equivalent to parts per billion, ppb)
pCi/L = picoCuries per liter

INORGANIC CHEMICALS

The following section of the PHG report presents a discussion of inorganic chemicals detected above their PHG.

Arsenic. The PHG for arsenic is 0.004 µg/L[1]. The federal and state MCL for arsenic is 10 µg/L (the federal MCLG is 0 µg/L). The DLR for arsenic is 2 µg/L and at the present time there are no laboratory methods available that can reliably measure arsenic as low as the PHG. The health risk category associated with arsenic is carcinogenicity. At the PHG, the theoretical cancer risk is 1×10^{-6}. This means the 70-year lifetime cancer risk for drinking water at the PHG is 1 excess case of cancer per million people exposed. At the federal MCL of 10 µg/L, the theoretical cancer risk is 2.5×10^{-3}. This means the 70-year lifetime cancer risk for drinking water at the federal MCL is 2.5 excess cases per 1,000 people exposed.

The California DDW has identified the following treatment technologies as Best Available Technology for reducing arsenic levels in drinking water to levels closer to the PHG of 0.004 µg/L.

- Activated alumina
- Coagulation/filtration
- Ion Exchange
- Lime softening
- Reverse Osmosis
- Electrodialysis
- Oxidation/filtration

From the above list of best available treatment technology, the cost evaluation will be conducted using ion exchange, given that ion exchange is also best available technology for hexavalent chromium and uranium (also included in this PHG report). Like ion exchange, reverse osmosis and

[1] Note that 1 µg/L (microgram per liter) is equivalent to 1 part per billion.
[2]Attachment 4 presents a description of the model and methodology used to estimate capital and O&M costs

coagulation/filtration have also been identified as BAT for all three constituents (arsenic, hexavalent chromium and uranium). While many factors (both technical and financial) go in to the use of a given technology, ion exchange would be a more cost effective approach than either reverse osmosis or coagulation/filtration. Specifically, reverse osmosis was not selected for this analysis, due to higher capital and operating costs, the amount of water that would be lost as a concentrated brine solution as well as the elevated energy consumption. Coagulation/filtration was not selected for this analysis as it can require large amounts of land and would likely need additional labor to operate and maintain.

All samples that exceeded the arsenic PHG during 2013-2015 were in groundwater wells. Table 2 presents the 15 wells that exceeded the arsenic PHG during 2013-2015. The water quality data presented in Table 2 indicates arsenic levels at an average of 2.9 µg/L (with a range of 2.3 µg/L to 3.8 µg/L). All results were below the MCL of 10 µg/L.

The total estimated capital cost to provide ion exchange treatment at the wells presented in Table 2, at their respective maximum well water production during 2013-2015, is $42,200,000 (the total annual O&M costs would be $8,420,000/year)[2]. Capital and O&M costs were estimated with the goal of achieving the arsenic 0.004 µg/L PHG. There is no information available, however, to indicate that ion exchange treatment could in fact reduce arsenic concentrations to such a low level. In addition, the DLR as determined by DDW is 2 µg/L and there is no analytical method available that can reliably measure arsenic in drinking water down to 0.004 µg/L.

[2]Attachment 4 presents a description of the model and methodology used to estimate capital and O&M costs presented in this PHG Report.

Table 2
Wells Where Arsenic Was Detected Above PHG
(2013-2015)

Well Number	Arsenic Concentration (µg/L)			Maximum Water Production (gpm)*	Ion Exchange Treatment Cost	
	2013	2014	2015		Capital ($M)	Annual O&M ($M/Year)
94		3		886	3.4	0.63
107		3.6		702	2.7	0.57
120		2.3		556	2.5	0.53
122		2.6		508	2.5	0.51
124		2.5		529	2.5	0.52
126	3	2.6		673	2.6	0.56
133		3.8		750	2.8	0.59
134		3		788	3.4	0.60
137		2.7		582	2.6	0.53
138		2.5		551	2.5	0.53
143		2.3		432	2.5	0.49
144		2.5		503	2.5	0.51
153A		3.6		972	3.4	0.65
156		3.8		863	3.4	0.62
159		3.3		729	2.7	0.58

*gpm = gallons per minute
$M = dollars in millions
O&M = operation and maintenance costs

Hexavalent Chromium (CrVI). The PHG for CrVI is 0.02 µg/L. The MCL for CrVI is 10 µg/L and the DLR is 1 µg/L. The health risk category associated with CrVI is carcinogenicity. At the PHG, the theoretical cancer risk is 1×10^{-6}. This means the 70-year lifetime cancer risk for drinking water at the PHG is 1 excess case of cancer per million people exposed. At the MCL of 10 µg/L, the numerical cancer risk is 5×10^{-4}. This means the 70-year lifetime theoretical cancer risk for drinking water at the MCL is five excess cases per 10,000 people exposed.

The California DDW has identified the following treatment technologies as Best Available Technology for reducing CrVI levels in drinking water to levels closer to the CrVI PHG of 0.02 µg/L.

- Coagulation/filtration
- Ion exchange
- Reverse Osmosis

From the above list of best available treatment technology, the cost evaluation will be conducted using ion exchange, given that ion exchange is also best available technology for arsenic and uranium (also included in this PHG report).

All samples that exceeded the CrVI PHG during 2013-2015 were in groundwater wells. Table 3 presents the 15 wells that exceeded the CrVI PHG during 2013-2015. All results were below the MCL of 10 µg/L. The water quality data presented in Table 3 indicates that CrVI in groundwater was detected at an average of 6.5 µg/L (with a range of 3.3 µg/L to 9.7 µg/L). Well 154, the well with the highest chromium results ranging from 8.9 µg/L to 9.7 µg/L, has been removed from service while the City investigates treatment options. The total estimated capital cost to provide ion exchange treatment (with the goal of achieving the PHG) at the wells presented in Table 3 would be $34,800,000 (the total annual O&M costs would be $6,200,000 /year). Capital and O&M costs were estimated with the goal of achieving the CrVI 0.02 µg/L PHG. There is no full-scale treatment information available, however, to indicate that ion exchange treatment could in fact reliably reduce CrVI concentrations to such a low level.

Table 3
Wells Where Hexavalent Chromium (CrVI) Was Detected Above PHG
(2013-2015)

Well Number	CrVI Concentration (µg/L)			Maximum Water Production (gpm)*	Ion Exchange Treatment Cost	
	2013**	2014	2015		Capital ($M)	Annual O&M ($M/Year)
94		5.6, 6.1	6.0, 6.2	886	2.8	0.45
107		7		702	2.3	0.42
120		3.3		556	2.2	0.40
122		3.4, 3.7		508	2.2	0.40
124		3.5	3.8	529	2.2	0.40
126		4.6		673	2.3	0.41
129			6.8	570	2.3	0.41
133		8, 8.4	8.4	750	2.3	0.42
134		5.6	7.6, 7.9	788	2.8	0.44
137		6.4	6.6	582	2.3	0.41
138		7.4, 7.9	7.0, 8.0	551	2.3	0.41
143		4.2		432	2.1	0.40
153A		6.1, 6.6	6.7	972	2.8	0.44
154			8.9, 9.6, 9.5, 9.7	365	1.7	0.39
159		3.6		729	2.3	0.41

*gpm = gallons per minute
**There was no CrVI MCL in 2013 (regulation was for total chromium)
$M = dollars in millions
O&M = operation and maintenance costs

RADIONUCLIDES

During 2013 to 2015, two naturally occurring radionuclides were detected in two wells: uranium and gross alpha. The following sections present an evaluation of the health risks and treatment costs for reducing the levels of these two constituents.

Uranium. Uranium is a naturally occurring radionuclide. The PHG for uranium is 0.43 pCi/L (picoCuries per liter) and the DLR is 1 pCi/L. The MCL for uranium is 20 pCi/L. The health risk category associated with uranium is carcinogenicity. At the PHG, the theoretical cancer risk is 1×10^{-6}. This means the 70-year lifetime theoretical cancer risk for drinking water at the PHG is 1 excess case of cancer per million people exposed. At the MCL of 20 pCi/L, the numerical cancer risk is 5×10^{-5}. This means the 70-year lifetime theoretical cancer risk for drinking water at the MCL is five excess cases per 100,000 people exposed.

The State Water Resources Control Board DDW has identified the following treatment technologies as Best Available Technology for reducing uranium levels in drinking water.

- Ion exchange
- Reverse Osmosis
- Lime softening
- Coagulation/filtration

From the above list of best available treatment technology, the cost evaluation will be conducted using ion exchange, given that ion exchange is also best available technology for arsenic and CrVI (also included in this PHG report).

Table 4 presents the two wells where uranium was detected above the PHG, but below the MCL during 2013-2015. The levels detected above the PHG were 1.4 pCi/L and 5.9 pCi/L. The total estimated capital cost to provide ion exchange treatment at the two wells presented in Table 4 is estimated at $5,100,000 (and the total annual O&M costs would be $820,000/year).

Table 4
Wells Where Uranium Was Detected Above the PHG
(2013-2015)

Well Number	Uranium Concentration (pCi/L)			Maximum Water Production (gpm)*	Ion Exchange Treatment Cost	
	2013	2014	2015		Capital ($M)	Annual O&M ($M/Year)
134		1.4		788	2.8	0.41
159		5.9		729	2.3	0.41

*gpm = gallons per minute
$M = dollars in millions
O&M = operation and maintenance costs

Gross Alpha. OEHHA has not established a PHG for gross alpha activity because the results are used as a screening tool for naturally occurring radionuclides (i.e., gross alpha does not represent a specific constituent). The federal MCLG for gross alpha is 0 pCi/L due to the classification of gross alpha radioactivity as carcinogenic. The cancer health risk at 0 pCi/L is zero. The MCL for gross alpha activity is 15 pCi/L. Gross alpha measurements can indicate the presence of a number of alpha emitting radionuclides, such as uranium and radium. OEHHA indicates that depending upon which isotopes are present, the numerical cancer health risk at the MCL of 15 pCi/L could be 1×10^{-3}. That means for a 70-year lifetime exposure at the MCL, there could be a theoretical risk of one excess case of cancer per 1,000 people exposed.

The State Water Resources Control Board DDW has identified Reverse Osmosis (RO) as the Best Available Technology for reducing gross alpha levels in drinking water. The cost evaluation was conducted using reverse osmosis given that no other technology has been identified as best available technology. During 2013-2015, Well 159 had a gross alpha measurement above the MCLG. The gross alpha result was 7.8 pCi/L (below the MCL of 15 pCi/L). The total estimated capital cost for reverse osmosis treatment at Well 159 would be $5,200,000 (the total annual O&M costs would be $600,000/year). A brief description of the estimated cost procedure for Well 159 is presented in Attachment 4 of this document. RO treatment produces a concentrated waste product that the City of Sacramento would need to dispose. The estimated costs do not include the costs of disposal, nor the costs to replace that lost water.

COLIFORM BACTERIA

The MCL for coliform bacteria is 5% positive samples of all distribution system samples per month. There is no PHG set for coliforms but USEPA set an MCLG of zero. Coliform bacteria are an indicator organism that are ubiquitous in nature and are not generally considered harmful. They are used because of the ease in monitoring and analysis. If a positive sample is found, follow up sampling is required. It is difficult, if not impossible, to assure that a system will never get a positive sample. As required during 2013-2015, the City of Sacramento Department of Utilities collects approximately 240 samples each month throughout the entire distribution system for coliform analysis (approximately 2,900 samples are collected each year).

Because coliform bacteria are only a surrogate indicator of the potential presence of pathogens, it is not possible to state a specific numerical health risk. Table 5 presents the monthly results from 2013-2015 when at least one monthly sample was positive for total coliforms.

Table 5
Months Where at Least One Sample Was Total Coliform Positive
(2013 – 2015)

2013		2014		2015	
Month	**Percent Positive**	**Month**	**Percent Positive**	**Month**	**Percent Positive**
February	0.45%	April	1.65%	June*	0.42%
April	0.41%	September	0.41%	July	0.40%
May	0.79%			August	0.41%
				September	0.82%
				October	0.40%
				November	0.83%
				December	1.93%

*During June 2015, one positive coliform sample was positive for *E. coli*. All follow up tests did not indicate the presence of total coliform or *E. coli*. There is no MCLG or PHG for *E. coli*. The federal MCLG for total coliforms includes *E. coli*.

Table 6 presents the total number of samples collected, the total number of positive coliform samples detected, and the percent of the total number of samples that were positive for each year during 2013 – 2015.

Table 6
Positive Coliform Samples
(2013-2015)

Year	Total Number of Samples Collected	Number of Positives/Year	Percent Positives/Year
2013	2,913	4	0.14%
2014	2,917	5	0.17%
2015	2,908	13	0.44%

Title 22 lists the following Best Available Technology for microbiological contaminants (Section 64447, CCR):

- Protection of wells from coliform contamination by appropriate placement and construction,
- Maintenance of a disinfectant residual throughout the distribution system,
- Proper maintenance of the distribution system, and
- Filtration and disinfection of approved surface water or disinfection of groundwater.

The City of Sacramento Department of Utilities implements the above Best Available Technology for total coliforms. The City's two surface water sources are filtered and disinfected and all wells are disinfected at the sources before serving water to the system. City staff collects samples on a weekly basis to check for the presence of coliforms and to measure the level of disinfectant in the

water. The City maintains positive pressure throughout the distribution system to minimize the chance of intrusion of constituents into drinking water pipes. The City also maintains an effective cross-connection control program. This is to prevent water used for industrial or irrigation purposes from flowing back into the distribution system. All groundwater wells are properly constructed and operated and are inspected annually by the State Water Resources Control Board DDW.

SUMMARY OF TOTAL COSTS AND POTENTIAL IMPACT ON CUSTOMER BILLS

As required, treatment costs were estimated for regulated constituents that were detected above the PHG but below the MCL. For arsenic, CrVI and uranium, ion exchange (IX) costs were evaluated for all three constituents, given that IX is one of the Best Available Treatment for all three constituents. Table 7 presents the capital costs and annual O&M costs for each well evaluated in this PHG Report. In addition, Table 7 presents the annualized total cost for each well (this is the sum of the annualized capital cost plus the annual O&M costs). For the 2013 through 2015, the total capital costs to install IX and RO Best Available Treatment would be $48,700,000 and the annual O&M cost would be $9,300,000. The total annualized capital cost plus the annual O&M costs would be approximately $10,560,000. The estimated increase in each City of Sacramento customer's water bill would be approximately $78 per year.

Table 7
Summary of Capital and O&M Costs

Well Number	Constituents Detected	Constituent Driving the Cost (& Treatment)	Cost of Treatment		
			Capital Cost, $M	Annual O&M ($M/Year)	Annualized Total Cost* ($M/Year)
94	Arsenic, CrVI	Arsenic (IX)	3.4	0.63	0.72
107	Arsenic, CrVI	Arsenic (IX)	2.7	0.57	0.61
120	Arsenic, CrVI	Arsenic (IX)	2.5	0.53	0.57
122	Arsenic, CrVI	Arsenic (IX)	2.5	0.51	0.56
124	Arsenic, CrVI	Arsenic (IX)	2.5	0.52	0.57
126	Arsenic, CrVI	Arsenic (IX)	2.6	0.56	0.60
129	CrVI	CrVI (IX)	2.3	0.41	0.47
133	Arsenic, CrVI	Arsenic (IX)	2.8	0.59	0.63
134	Arsenic, CrVI, Uranium	Arsenic (IX)	3.4	0.60	0.69
137	Arsenic, CrVI	Arsenic (IX)	2.6	0.53	0.58
138	Arsenic, CrVI	Arsenic (IX)	2.5	0.53	0.57
143	Arsenic, CrVI	Arsenic (IX)	2.5	0.49	0.54
144	Arsenic	Arsenic (IX)	2.5	0.51	0.56
153A	Arsenic, CrVI	Arsenic (IX)	3.4	0.65	0.73
154	CrVI	CrVI (IX)	1.7	0.39	0.41
156	Arsenic	Arsenic (IX)	3.4	0.62	0.71
159	Arsenic, CrVI, Uranium, Gross alpha	Gross Alpha (RO)	5.2	0.60	1.02
		Total =**	**48.7**	**9.3**	**10.6**

*Annualized total cost is the sum of the annual O&M cost and the amortized capital annual cost. The amortized capital annual cost was calculated assuming a 20-year amortization period and an interest rate of 5%.

**The total costs are the sum of the actual costs from the model. The individual well costs are presented using one significant figure. For example, for well 94 the modeled capital cost was $3,434,993. The table presents this value as $3.4M.

RECOMMENDATIONS

The drinking water quality of the City of Sacramento – Department of Utilities meets all State of California and USEPA drinking water standards set to protect public health. To further reduce the levels of the constituents identified in this report that are already below the health-based MCLs established to provide "safe drinking water", would require additional costly treatment processes and would significantly increase the annual customer water bills. The health protection benefits of these potential reductions are unclear and may not be quantifiable. Therefore, no action is proposed.

ATTACHMENTS

No. 1 Excerpt from California Health & Safety Code: Section 116470 (b)

No. 2 Table of California Regulated Constituents with MCLs and PHGs

No. 3 Health Risk Information for Public Health Goal Exceedance Reports. Prepared by the Office of Environmental Health Hazard Assessment. February 2016

No. 4 Description of Cost Estimating Methodology for this PHG Report

No.5 City of Sacramento – Department of Utilities 2013, 2014 and 2015 Consumer Confidence Reports.

ATTACHMENT 1

EXCERPT FROM CALIFRONIA HEALTH & SAFETY CODE SECTION 116470 (b)

116470. (b) On or before July 1, 1998, and every three years thereafter, public water systems serving more than 10,000 service connections that detect one or more contaminants in drinking water that exceed the applicable public health goal, shall prepare a brief written report in plain language that does all of the following:

(1) Identifies each contaminant detected in drinking water that exceeds the applicable public health goal.

(2) Discloses the numerical public health risk, determined by the office, associated with the maximum contaminant level for each contaminant identified in paragraph (1) and the numerical public health risk determined by the office associated with the public health goal for that contaminant.

(3) Identifies the category of risk to public health, including, but not limited to, carcinogenic, mutagenic, teratogenic, and acute toxicity, associated with exposure to the contaminant in drinking water, and includes a brief plainly worded description of these terms.

(4) Describes the best available technology, if any is then available on a commercial basis, to remove the contaminant or reduce the concentration of the contaminant. The public water system may, solely at its own discretion, briefly describe actions that have been taken on its own, or by other entities, to prevent the introduction of the contaminant into drinking water supplies.

(5) Estimates the aggregate cost and the cost per customer of utilizing the technology described in paragraph (4), if any, to reduce the concentration of that contaminant in drinking water to a level at or below the public health goal.

(6) Briefly describes what action, if any, the local water purveyor intends to take to reduce the concentration of the contaminant in public drinking water supplies and the basis for that decision.

(c) Public water systems required to prepare a report pursuant to subdivision (b) shall hold a public hearing for the purpose of accepting and responding to public comment on the report. Public water systems may hold the public hearing as part of any regularly scheduled meeting.

(d) The department shall not require a public water system to take any action to reduce or eliminate any exceedance of a public health goal.

(e) Enforcement of this section does not require the department to amend a public water system's operating permit.

(f) Pending adoption of a public health goal by the Office of Environmental Health Hazard Assessment pursuant to subdivision (c) of Section 116365, and in lieu thereof, public water systems shall use the national maximum contaminant level goal adopted by the United States Environmental Protection Agency for the corresponding contaminant for purposes of complying with the notice and hearing requirements of this section.

ATTACHMENT 2

TABLE OF CALIFORNIA REGULATED CONSTITUENTS WITH MCLs AND PHGs

MCLs, DLRs, and PHGs for Regulated Drinking Water Contaminants

(Units are in milligrams per liter (mg/L), unless otherwise noted.)

Last Update: September 23, 2015

This table includes:

California's maximum contaminant levels (MCLs)

Detection limits for purposes of reporting (DLRs)

Public health goals (PHGs) from the Office of Environmental Health Hazard Assessment (OEHHA)

Also, PHGs for NDMA and 1,2,3-Trichloropropane (which are not yet regulated) are included at the bottom of this table.

	MCL	DLR	PHG	Date of PHG
Chemicals with MCLs in 22 CCR §64431—Inorganic Chemicals				
Aluminum	1	0.05	0.6	2001
Antimony	0.006	0.006	0.02	1997
Antimony	--	--	0.0007	2009 draft
Arsenic	0.010	0.002	0.000004	2004
Asbestos (MFL = million fibers per liter; for fibers >10 microns long)	7 MFL	0.2 MFL	7 MFL	2003
Barium	1	0.1	2	2003
Beryllium	0.004	0.001	0.001	2003
Cadmium	0.005	0.001	0.00004	2006
Chromium, Total - OEHHA withdrew the 0.0025-mg/L PHG	0.05	0.01	withdrawn Nov. 2001	1999
Chromium, Hexavalent	0.010	0.001	0.00002	2011
Cyanide	0.15	0.1	0.15	1997
Fluoride	2	0.1	1	1997
Mercury (inorganic)	0.002	0.001	0.0012	1999 (rev2005)*
Nickel	0.1	0.01	0.012	2001
Nitrate (as nitrogen, N)	10 as N	0.4	45 as NO3 (=10 as N)	1997
Nitrite (as N)	1 as N	0.4	1 as N	1997
Nitrate + Nitrite (as N)	10 as N	--	10 as N	1997
Perchlorate	0.006	0.004	0.001	2015
Selenium	0.05	0.005	0.03	2010
Thallium	0.002	0.001	0.0001	1999 (rev2004)
Copper and Lead, 22 CCR §64672.3				
Values referred to as MCLs for lead and copper are not actually MCLs; instead, they are called "Action Levels" under the lead and copper rule				
Copper	1.3	0.05	0.3	2008
Lead	0.015	0.005	0.0002	2009

Radionuclides with MCLs in 22 CCR §64441 and §64443—Radioactivity				
[units are picocuries per liter (pCi/L), unless otherwise stated; n/a = not applicable]				
Gross alpha particle activity - OEHHA concluded in 2003 that a PHG was not practical	15	3	none	n/a
Gross beta particle activity - OEHHA concluded in 2003 that a PHG was not practical	4 mrem/yr	4	none	n/a
Radium-226	--	1	0.05	2006
Radium-228	--	1	0.019	2006
Radium-226 + Radium-228	5	--	--	--
Strontium-90	8	2	0.35	2006
Tritium	20,000	1,000	400	2006
Uranium	20	1	0.43	2001
Chemicals with MCLs in 22 CCR §64444—Organic Chemicals				
(a) Volatile Organic Chemicals (VOCs)				
Benzene	0.001	0.0005	0.00015	2001
Carbon tetrachloride	0.0005	0.0005	0.0001	2000
1,2-Dichlorobenzene	0.6	0.0005	0.6	1997 (rev2009)
1,4-Dichlorobenzene (p-DCB)	0.005	0.0005	0.006	1997
1,1-Dichloroethane (1,1-DCA)	0.005	0.0005	0.003	2003
1,2-Dichloroethane (1,2-DCA)	0.0005	0.0005	0.0004	1999 (rev2005)
1,1-Dichloroethylene (1,1-DCE)	0.006	0.0005	0.01	1999
cis-1,2-Dichloroethylene	0.006	0.0005	0.1	2006
trans-1,2-Dichloroethylene	0.01	0.0005	0.06	2006
Dichloromethane (Methylene chloride)	0.005	0.0005	0.004	2000
1,2-Dichloropropane	0.005	0.0005	0.0005	1999
1,3-Dichloropropene	0.0005	0.0005	0.0002	1999 (rev2006)
Ethylbenzene	0.3	0.0005	0.3	1997
Methyl tertiary butyl ether (MTBE)	0.013	0.003	0.013	1999
Monochlorobenzene	0.07	0.0005	0.07	2014
Styrene	0.1	0.0005	0.0005	2010
1,1,2,2-Tetrachloroethane	0.001	0.0005	0.0001	2003
Tetrachloroethylene (PCE)	0.005	0.0005	0.00006	2001
Toluene	0.15	0.0005	0.15	1999
1,2,4-Trichlorobenzene	0.005	0.0005	0.005	1999
1,1,1-Trichloroethane (1,1,1-TCA)	0.2	0.0005	1	2006
1,1,2-Trichloroethane (1,1,2-TCA)	0.005	0.0005	0.0003	2006
Trichloroethylene (TCE)	0.005	0.0005	0.0017	2009
Trichlorofluoromethane (Freon 11)	0.15	0.005	1.3	2014
1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	1.2	0.01	4	1997 (rev2011)
Vinyl chloride	0.0005	0.0005	0.00005	2000
Xylenes	1.75	0.0005	1.8	1997

(b) Non-Volatile Synthetic Organic Chemicals (SOCs)				
Alachlor	0.002	0.001	0.004	1997
Atrazine	0.001	0.0005	0.00015	1999
Bentazon	0.018	0.002	0.2	1999 (rev2009)
Benzo(a)pyrene	0.0002	0.0001	0.000007	2010
Carbofuran	0.018	0.005	0.0017	2000
Carbofuran	--	--	0.0007	2015 draft
Chlordane	0.0001	0.0001	0.00003	1997 (rev2006)
Dalapon	0.2	0.01	0.79	1997 (rev2009)
1,2-Dibromo-3-chloropropane (DBCP)	0.0002	0.00001	0.0000017	1999
2,4-Dichlorophenoxyacetic acid (2,4-D)	0.07	0.01	0.02	2009
Di(2-ethylhexyl)adipate	0.4	0.005	0.2	2003
Di(2-ethylhexyl)phthalate (DEHP)	0.004	0.003	0.012	1997
Dinoseb	0.007	0.002	0.014	1997 (rev2010)
Diquat	0.02	0.004	0.015	2000
Diquat	--	--	0.006	2015 draft
Endrin	0.002	0.0001	0.0018	1999 (rev2008)
Endrin	--	--	0.0003	2015 draft
Endothal	0.1	0.045	0.094	2014
Ethylene dibromide (EDB)	0.00005	0.00002	0.00001	2003
Glyphosate	0.7	0.025	0.9	2007
Heptachlor	0.00001	0.00001	0.000008	1999
Heptachlor epoxide	0.00001	0.00001	0.000006	1999
Hexachlorobenzene	0.001	0.0005	0.00003	2003
Hexachlorocyclopentadiene	0.05	0.001	0.002	2014
Lindane	0.0002	0.0002	0.000032	1999 (rev2005)
Methoxychlor	0.03	0.01	0.00009	2010
Molinate	0.02	0.002	0.001	2008
Oxamyl	0.05	0.02	0.026	2009
Pentachlorophenol	0.001	0.0002	0.0003	2009
Picloram	0.5	0.001	0.5	1997
Picloram	--	--	0.166	2015 draft
Polychlorinated biphenyls (PCBs)	0.0005	0.0005	0.00009	2007
Simazine	0.004	0.001	0.004	2001
2,4,5-TP (Silvex)	0.05	0.001	0.003	2014
2,3,7,8-TCDD (dioxin)	$3x10^{-8}$	$5x10^{-9}$	$5x10^{-11}$	2010
Thiobencarb	0.07	0.001	0.07	2000
Thiobencarb	--	--	0.042	2015 draft
Toxaphene	0.003	0.001	0.00003	2003

Chemicals with MCLs in 22 CCR §64533—Disinfection Byproducts				
Total Trihalomethanes	0.080	--	0.0008	2010 draft
Bromodichloromethane	--	0.0010	--	--
Bromoform	--	0.0010	--	--
Chloroform	--	0.0010	--	--
Dibromochloromethane	--	0.0010	--	--
Haloacetic Acids (five) (HAA5)	0.060	--	--	--
Monochloroacetic Acid	--	0.0020	--	--
Dichloroacetic Adic	--	0.0010	--	--
Trichloroacetic Acid	--	0.0010	--	--
Monobromoacetic Acid	--	0.0010	--	--
Dibromoacetic Acid	--	0.0010	--	--
Bromate	0.010	0.0050**	0.0001	2009
Chlorite	1.0	0.020	0.05	2009
Chemicals with PHGs established in response to DDW requests. These are not currently regulated drinking water contaminants.				
N-Nitrosodimethylamine (NDMA)	--	--	0.000003	2006
1,2,3-Trichloropropane	--	--	0.0000007	2009

*OEHHA's review of this chemical during the year indicated (rev20XX) resulted in no change in the PHG.

**The DLR for Bromate is 0.0010 mg/L for analysis performed using EPA Method 317.0 Revision 2.0, 321.8, or 326.0.

ATTACHMENT 3

HEALTH RISK INFORMATION FOR PUBLIC HEALTH GOAL EXCEEDANCE REPORTS

PREPARED BY OEHHA
FEBRUARY 2016

Health Risk Information for Public Health Goal Exceedance Reports

Prepared by

Office of Environmental Health Hazard Assessment
California Environmental Protection Agency

February 2016

Under the Calderon-Sher Safe Drinking Water Act of 1996 (the Act), water utilities are required to prepare a report every three years for contaminants that exceed public health goals (PHGs) (Health and Safety Code Section 116470 (b)(2)). The numerical health risk for a contaminant is to be presented with the category of health risk, along with a plainly worded description of these terms. The cancer health risk is to be calculated at the PHG and at the California maximum contaminant level (MCL). This report is prepared by the Office of Environmental Health Hazard Assessment (OEHHA) to assist the water utilities in meeting their requirements.

PHGs are concentrations of contaminants in drinking water that pose no significant health risk if consumed for a lifetime. PHGs are developed and published by OEHHA (Health and Safety Code Section 116365) using current risk assessment principles, practices and methods.

Numerical health risks. Table 1 presents health risk categories and cancer risk values for chemical contaminants in drinking water that have PHGs.

The Act requires that OEHHA publish PHGs based on health risk assessments using the most current scientific methods. As defined in statute, PHGs for non-carcinogenic chemicals in drinking water are set at a concentration “at which no known or anticipated adverse health effects will occur, with an adequate margin of safety.” For carcinogens, PHGs are set at a concentration that “does not pose any significant risk to health.” PHGs provide one basis for revising MCLs, along with cost and technological feasibility. OEHHA has been publishing PHGs since 1997 and the entire list published to date is shown in Table 1.

Table 2 presents health risk information for contaminants that do not have PHGs but have state or federal regulatory standards. The Act requires that, for chemical contaminants with California MCLs that do not yet have PHGs, water utilities use the federal maximum contaminant level goal (MCLG) for the purpose of complying with the requirement of public notification. MCLGs, like PHGs, are strictly health based and include a margin of safety. One difference, however, is that the MCLGs for carcinogens are set at zero because the US Environmental Protection Agency (US EPA) assumes there is no absolutely safe level of exposure to such chemicals. PHGs, on the other hand, are set at a level considered to pose no *significant* risk of cancer; this is usually a no more than one-in-one-million excess cancer risk (1×10^{-6}) level for a lifetime of exposure. In Table 2, the cancer risks shown are based on the US EPA's evaluations.

For more information on health risks: The adverse health effects for each chemical with a PHG are summarized in a PHG technical support document. These documents are available on the OEHHA Web site (http://www.oehha.ca.gov). Also, technical fact sheets on most of the chemicals having federal MCLs can be found at http://www.epa.gov/your-drinking-water/table-regulated-drinking-water-contaminants.

Table 1: Health Risk Categories and Cancer Risk Values for Chemicals with California Public Health Goals (PHGs)

Chemical	Health Risk Category[1]	California PHG (mg/L)[2]	Cancer Risk[3] at the PHG	California MCL[4] (mg/L)	Cancer Risk at the California MCL
Alachlor	carcinogenicity (causes cancer)	0.004	NA[5]	0.002	NA
Aluminum	neurotoxicity and immunotoxicity (harms the nervous and immune systems)	0.6	NA	1	NA
Antimony	digestive system toxicity (causes vomiting)	0.02	NA	0.006	NA
Arsenic	carcinogenicity (causes cancer)	0.000004 (4×10^{-6})	1×10^{-6} (one per million)	0.01	2.5×10^{-3} (2.5 per thousand)
Asbestos	carcinogenicity (causes cancer)	7 MFL[6] (fibers >10 microns in length)	1×10^{-6}	7 MFL (fibers >10 microns in length)	1×10^{-6} (one per million)
Atrazine	carcinogenicity (causes cancer)	0.00015	1×10^{-6}	0.001	7×10^{-6} (seven per million)

[1] Based on the OEHHA PHG technical support document unless otherwise specified. The categories are the hazard traits defined by OEHHA for California's Toxics Information Clearinghouse (online at: http://oehha.ca.gov/multimedia/green/pdf/GC_Regtext011912.pdf).
[2] mg/L = milligrams per liter of water or parts per million (ppm)
[3] Cancer Risk = Upper estimate of excess cancer risk from lifetime exposure. Actual cancer risk may be lower or zero. 1×10^{-6} means one excess cancer case per million people exposed.
[4] MCL = maximum contaminant level.
[5] NA = not applicable. Risk cannot be calculated. The PHG is set at a level that is believed to be without any significant public health risk to individuals exposed to the chemical over a lifetime.
[6] MFL = million fibers per liter of water.

Table 1: Health Risk Categories and Cancer Risk Values for Chemicals with California Public Health Goals (PHGs)

Chemical	Health Risk Category[1]	California PHG (mg/L)[2]	Cancer Risk[3] at the PHG	California MCL[4] (mg/L)	Cancer Risk at the California MCL
Barium	cardiovascular toxicity (causes high blood pressure)	2	NA	1	NA
Bentazon	hepatotoxicity and digestive system toxicity (harms the liver, intestine, and causes body weight effects[7])	0.2	NA	0.018	NA
Benzene	carcinogenicity (causes leukemia)	0.00015	1×10^{-6}	0.001	7×10^{-6} (seven per million)
Benzo[a]pyrene	carcinogenicity (causes cancer)	0.000007 (7×10^{-6})	1×10^{-6}	0.0002	3×10^{-5} (three per hundred thousand)
Beryllium	digestive system toxicity (harms the stomach or intestine)	0.001	NA	0.004	NA
Bromate	carcinogenicity (causes cancer)	0.0001	1×10^{-6}	0.01	1×10^{-4} (one per ten thousand)
Cadmium	nephrotoxicity (harms the kidney)	0.00004	NA	0.005	NA
Carbofuran	reproductive toxicity (harms the testis)	0.0017	NA	0.018	NA

[7] Body weight effects are an indicator of general toxicity in animal studies.

Table 1: Health Risk Categories and Cancer Risk Values for Chemicals with California Public Health Goals (PHGs)

Chemical	Health Risk Category[1]	California PHG (mg/L)[2]	Cancer Risk[3] at the PHG	California MCL[4] (mg/L)	Cancer Risk at the California MCL
Carbon tetrachloride	carcinogenicity (causes cancer)	0.0001	1×10^{-6}	0.0005	5×10^{-6} (five per million)
Chlordane	carcinogenicity (causes cancer)	0.00003	1×10^{-6}	0.0001	3×10^{-6} (three per million)
Chlorite	hematotoxicity (causes anemia) neurotoxicity (causes neurobehavioral effects)	0.05	NA	1	NA
Chromium, hexavalent	carcinogenicity (causes cancer)	0.00002	1×10^{-6}	0.01	5×10^{-4} (five per ten thousand)
Copper	digestive system toxicity (causes nausea, vomiting, diarrhea)	0.3	NA	1.3 (AL[8])	NA
Cyanide	neurotoxicity (damages nerves) endocrine toxicity (affects the thyroid)	0.15	NA	0.15	NA
Dalapon	nephrotoxicity (harms the kidney)	0.79	NA	0.2	NA

[8] AL = action level. The action levels for copper and lead refer to a concentration measured at the tap. Much of the copper and lead in drinking water is derived from household plumbing (The Lead and Copper Rule, Title 22, California Code of Regulations [CCR] section 64672.3).

Table 1: Health Risk Categories and Cancer Risk Values for Chemicals with California Public Health Goals (PHGs)

Chemical	Health Risk Category[1]	California PHG (mg/L)[2]	Cancer Risk[3] at the PHG	California MCL[4] (mg/L)	Cancer Risk at the California MCL
1,2-Dibromo-3-chloropropane (DBCP)	carcinogenicity (causes cancer)	0.0000017 (1.7×10^{-6})	1×10^{-6}	0.0002	1×10^{-4} (one per ten thousand)
1,2-Dichloro-benzene (o-DCB)	hepatotoxicity (harms the liver)	0.6	NA	0.6	NA
1,4-Dichloro-benzene (p-DCB)	carcinogenicity (causes cancer)	0.006	1×10^{-6}	0.005	8×10^{-7} (eight per ten million)
1,1-Dichloro-ethane (1,1-DCA)	carcinogenicity (causes cancer)	0.003	1×10^{-6}	0.005	2×10^{-6} (two per million)
1,2-Dichloro-ethane (1,2-DCA)	carcinogenicity (causes cancer)	0.0004	1×10^{-6}	0.0005	1×10^{-6} (one per million)
1,1-Dichloro-ethylene (1,1-DCE)	hepatotoxicity (harms the liver)	0.01	NA	0.006	NA
1,2-Dichloro-ethylene, cis	nephrotoxicity (harms the kidney)	0.1	NA	0.006	NA
1,2-Dichloro-ethylene, trans	hepatotoxicity (harms the liver)	0.06	NA	0.01	NA
Dichloromethane (methylene chloride)	carcinogenicity (causes cancer)	0.004	1×10^{-6}	0.005	1×10^{-6} (one per million)
2,4-Dichloro-phenoxyacetic acid (2,4-D)	hepatotoxicity and nephrotoxicity (harms the liver and kidney)	0.02	NA	0.07	NA

Table 1: Health Risk Categories and Cancer Risk Values for Chemicals with California Public Health Goals (PHGs)

Chemical	Health Risk Category[1]	California PHG (mg/L)[2]	Cancer Risk[3] at the PHG	California MCL[4] (mg/L)	Cancer Risk at the California MCL
1,2-Dichloro-propane (propylene dichloride)	carcinogenicity (causes cancer)	0.0005	1×10^{-6}	0.005	1×10^{-5} (one per hundred thousand)
1,3-Dichloro-propene (Telone II®)	carcinogenicity (causes cancer)	0.0002	1×10^{-6}	0.0005	2×10^{-6} (two per million)
Di(2-ethylhexyl) adipate (DEHA)	developmental toxicity (disrupts development)	0.2	NA	0.4	NA
Diethylhexyl-phthalate (DEHP)	carcinogenicity (causes cancer)	0.012	1×10^{-6}	0.004	3×10^{-7} (three per ten million)
Dinoseb	reproductive toxicity (harms the uterus and testis)	0.014	NA	0.007	NA
Dioxin (2,3,7,8-TCDD)	carcinogenicity (causes cancer)	5×10^{-11}	1×10^{-6}	3×10^{-8}	6×10^{-4} (six per ten thousand)
Diquat	ocular toxicity (harms the eye) developmental toxicity (causes malformation)	0.015	NA	0.02	NA
Endothall	digestive system toxicity (harms the stomach or intestine)	0.094	NA	0.1	NA
Endrin	hepatotoxicity (harms the liver) neurotoxicity (causes convulsions)	0.0018	NA	0.002	NA

Table 1: Health Risk Categories and Cancer Risk Values for Chemicals with California Public Health Goals (PHGs)

Chemical	Health Risk Category[1]	California PHG (mg/L)[2]	Cancer Risk[3] at the PHG	California MCL[4] (mg/L)	Cancer Risk at the California MCL
Ethylbenzene (phenylethane)	hepatotoxicity (harms the liver)	0.3	NA	0.3	NA
Ethylene dibromide	carcinogenicity (causes cancer)	0.00001	1×10^{-6}	0.00005	5×10^{-6} (five per million)
Fluoride	musculoskeletal toxicity (causes tooth mottling)	1	NA	2	NA
Glyphosate	nephrotoxicity (harms the kidney)	0.9	NA	0.7	NA
Heptachlor	carcinogenicity (causes cancer)	0.000008 (8×10^{-6})	1×10^{-6}	0.00001	1×10^{-6} (one per million)
Heptachlor epoxide	carcinogenicity (causes cancer)	0.000006 (6×10^{-6})	1×10^{-6}	0.00001	2×10^{-6} (two per million)
Hexachloroben-zene	carcinogenicity (causes cancer)	0.00003	1×10^{-6}	0.001	3×10^{-5} (three per hundred thousand)
Hexachloro-cyclopentadiene (HCCPD)	digestive system toxicity (causes stomach lesions)	0.002	NA	0.05	NA
Lead	developmental neurotoxicity (causes neurobehavioral effects in children) cardiovascular toxicity (causes high blood pressure) carcinogenicity (causes cancer)	0.0002	$<1\times10^{-6}$ (PHG is not based on this effect)	0.015 (AL[8])	2×10^{-6} (two per million)

Table 1: Health Risk Categories and Cancer Risk Values for Chemicals with California Public Health Goals (PHGs)

Chemical	Health Risk Category[1]	California PHG (mg/L)[2]	Cancer Risk[3] at the PHG	California MCL[4] (mg/L)	Cancer Risk at the California MCL
Lindane (γ-BHC)	carcinogenicity (causes cancer)	0.000032	1×10^{-6}	0.0002	6×10^{-6} (six per million)
Mercury (inorganic)	nephrotoxicity (harms the kidney)	0.0012	NA	0.002	NA
Methoxychlor	endocrine toxicity (causes hormone effects)	0.00009	NA	0.03	NA
Methyl tertiary-butyl ether (MTBE)	carcinogenicity (causes cancer)	0.013	1×10^{-6}	0.013	1×10^{-6} (one per million)
Molinate	carcinogenicity (causes cancer)	0.001	1×10^{-6}	0.02	2×10^{-5} (two per hundred thousand)
Monochloro-benzene (chlorobenzene)	nephrotoxicity (harms the kidney)	0.07	NA	0.07	NA
Nickel	developmental toxicity (causes increased neonatal deaths)	0.012	NA	0.1	NA
Nitrate	hematotoxicity (causes methemoglobinemia)	45 as nitrate	NA	10 as nitrogen (=45 as nitrate)	NA
Nitrite	hematotoxicity (causes methemoglobinemia)	1 as nitrogen	NA	1 as nitrogen	NA

Table 1: Health Risk Categories and Cancer Risk Values for Chemicals with California Public Health Goals (PHGs)

Chemical	Health Risk Category[1]	California PHG (mg/L)[2]	Cancer Risk[3] at the PHG	California MCL[4] (mg/L)	Cancer Risk at the California MCL
Nitrate and Nitrite	hematotoxicity (causes methemoglobinemia)	10 as nitrogen	NA	10 as nitrogen	NA
N-nitroso-dimethyl-amine (NDMA)	carcinogenicity (causes cancer)	0.000003 (3×10^{-6})	1×10^{-6}	none	NA
Oxamyl	general toxicity (causes body weight effects)	0.026	NA	0.05	NA
Pentachloro-phenol (PCP)	carcinogenicity (causes cancer)	0.0003	1×10^{-6}	0.001	3×10^{-6} (three per million)
Perchlorate	endocrine toxicity (affects the thyroid) developmental toxicity (causes neurodevelop-mental deficits)	0.001	NA	0.006	NA
Picloram	hepatotoxicity (harms the liver)	0.5	NA	0.5	NA
Polychlorinated biphenyls (PCBs)	carcinogenicity (causes cancer)	0.00009	1×10^{-6}	0.0005	6×10^{-6} (six per million)
Radium-226	carcinogenicity (causes cancer)	0.05 pCi/L	1×10^{-6}	5 pCi/L (combined $Ra^{226+228}$)	1×10^{-4} (one per ten thousand)
Radium-228	carcinogenicity (causes cancer)	0.019 pCi/L	1×10^{-6}	5 pCi/L (combined $Ra^{226+228}$)	3×10^{-4} (three per ten thousand)

Table 1: Health Risk Categories and Cancer Risk Values for Chemicals with California Public Health Goals (PHGs)

Chemical	Health Risk Category[1]	California PHG (mg/L)[2]	Cancer Risk[3] at the PHG	California MCL[4] (mg/L)	Cancer Risk at the California MCL
Selenium	integumentary toxicity (causes hair loss and nail damage)	0.03	NA	0.05	NA
Silvex (2,4,5-TP)	hepatotoxicity (harms the liver)	0.003	NA	0.05	NA
Simazine	general toxicity (causes body weight effects)	0.004	NA	0.004	NA
Strontium-90	carcinogenicity (causes cancer)	0.35 pCi/L	1×10^{-6}	8 pCi/L	2×10^{-5} (two per hundred thousand)
Styrene (vinylbenzene)	carcinogenicity (causes cancer)	0.0005	1×10^{-6}	0.1	2×10^{-4} (two per ten thousand)
1,1,2,2-Tetrachloro-ethane	carcinogenicity (causes cancer)	0.0001	1×10^{-6}	0.001	1×10^{-5} (one per hundred thousand)
Tetrachloro-ethylene (perchloro-ethylene, or PCE)	carcinogenicity (causes cancer)	0.00006	1×10^{-6}	0.005	8×10^{-5} (eight per hundred thousand)
Thallium	integumentary toxicity (causes hair loss)	0.0001	NA	0.002	NA
Thiobencarb	general toxicity (causes body weight effects) hematotoxicity (affects red blood cells)	0.07	NA	0.07	NA

Table 1: Health Risk Categories and Cancer Risk Values for Chemicals with California Public Health Goals (PHGs)

Chemical	Health Risk Category[1]	California PHG (mg/L)[2]	Cancer Risk[3] at the PHG	California MCL[4] (mg/L)	Cancer Risk at the California MCL
Toluene (methylbenzene)	hepatotoxicity (harms the liver) endocrine toxicity (harms the thymus)	0.15	NA	0.15	NA
Toxaphene	carcinogenicity (causes cancer)	0.00003	1×10^{-6}	0.003	1×10^{-4} (one per ten thousand)
1,2,4-Trichloro-benzene	endocrine toxicity (harms adrenal glands)	0.005	NA	0.005	NA
1,1,1-Trichloro-ethane	neurotoxicity (harms the nervous system), reproductive toxicity (causes fewer offspring) hepatotoxicity (harms the liver) hematotoxicity (causes blood effects)	1	NA	0.2	NA
1,1,2-Trichloro-ethane	carcinogenicity (causes cancer)	0.0003	$1x10^{-6}$	0.005	2×10^{-5} (two per hundred thousand)
Trichloro-ethylene (TCE)	carcinogenicity (causes cancer)	0.0017	1×10^{-6}	0.005	3×10^{-6} (three per million)
Trichlorofluoro-methane (Freon 11)	accelerated mortality (increase in early death)	1.3	NA	0.15	NA

Table 1: Health Risk Categories and Cancer Risk Values for Chemicals with California Public Health Goals (PHGs)

Chemical	Health Risk Category[1]	California PHG (mg/L)[2]	Cancer Risk[3] at the PHG	California MCL[4] (mg/L)	Cancer Risk at the California MCL
1,2,3-Trichloro-propane (1,2,3-TCP)	carcinogenicity (causes cancer)	0.0000007 (7×10^{-7})	$1x10^{-6}$	none	NA
1,1,2-Trichloro-1,2,2-trifluoro-ethane (Freon 113)	hepatotoxicity (harms the liver)	4	NA	1.2	NA
Tritium	carcinogenicity (causes cancer)	400 pCi/L	$1x10^{-6}$	20,000 pCi/L	$5x10^{-5}$ (five per hundred thousand)
Uranium	carcinogenicity (causes cancer)	0.43 pCi/L	1×10^{-6}	20 pCi/L	5×10^{-5} (five per hundred thousand)
Vinyl chloride	carcinogenicity (causes cancer)	0.00005	1×10^{-6}	0.0005	1×10^{-5} (one per hundred thousand)
Xylene	neurotoxicity (affects the senses, mood, and motor control)	1.8 (single isomer or sum of isomers)	NA	1.75 (single isomer or sum of isomers)	NA

Table 2: Health Risk Categories and Cancer Risk Values for Chemicals without California Public Health Goals

Chemical	Health Risk Category[1]	U.S. EPA MCLG[2] (mg/L)	Cancer Risk[3] @ MCLG	California MCL[4] (mg/L)	Cancer Risk @ California MCL
Disinfection byproducts (DBPS)					
Chloramines	acute toxicity (causes irritation) digestive system toxicity (harms the stomach) hematotoxicity (causes anemia)	4[5,6]	NA[7]	none	NA
Chlorine	acute toxicity (causes irritation) digestive system toxicity (harms the stomach)	4[5,6]	NA	none	NA
Chlorine dioxide	hematotoxicity (causes anemia) neurotoxicity (harms the nervous system)	0.8[5,6]	NA	none	NA
Disinfection byproducts: haloacetic acids (HAA5)					
Chloroacetic acid	general toxicity (causes body and organ weight changes[8])	0.07	NA	none	NA

[1] Health risk category based on the U.S. EPA MCLG document or California MCL document unless otherwise specified.
[2] MCLG = maximum contaminant level goal established by U.S. EPA.
[3] Cancer Risk = Upper estimate of excess cancer risk from lifetime exposure. Actual cancer risk may be lower or zero. 1×10^{-6} means one excess cancer case per million people exposed.
[4] California MCL = maximum contaminant level established by California.
[5] Maximum Residual Disinfectant Level Goal, or MRDLG.
[6] The federal Maximum Residual Disinfectant Level (MRDL), or highest level of disinfectant allowed in drinking water, is the same value for this chemical.
[7] NA = not available.
[8] Body weight effects are an indicator of general toxicity in animal studies.

Table 2: Health Risk Categories and Cancer Risk Values for Chemicals without California Public Health Goals

Chemical	Health Risk Category[1]	U.S. EPA MCLG[2] (mg/L)	Cancer Risk[3] @ MCLG	California MCL[4] (mg/L)	Cancer Risk @ California MCL
Dichloroacetic acid	carcinogenicity (causes cancer)	0	0	none	NA
Trichloroacetic acid	hepatotoxicity (harms the liver)	0.02	0	none	NA
Bromoacetic acid	NA	none	NA	none	NA
Dibromoacetic acid	NA	none	NA	none	NA
Total haloacetic acids	carcinogenicity (causes cancer)	none	NA	0.06	NA
Disinfection byproducts: trihalomethanes (THMs)					
Bromodichloro-methane (BDCM)	carcinogenicity (causes cancer)	0	0	none	NA
Bromoform	carcinogenicity (causes cancer)	0	0	none	NA
Chloroform	hepatotoxicity and nephrotoxicity (harms the liver and kidney)	0.07	NA	none	NA
Dibromo-chloromethane (DBCM)	hepatotoxicity, nephrotoxicity, and neurotoxicity (harms the liver, kidney, and nervous system)	0.06	NA	none	NA
Total trihalomethanes (sum of BDCM, bromoform, chloroform and DBCM)	carcinogenicity (causes cancer), hepatotoxicity, nephrotoxicity, and neurotoxicity (harms the liver, kidney, and nervous system)	none	NA	0.08	NA

Table 2: Health Risk Categories and Cancer Risk Values for Chemicals without California Public Health Goals

Chemical	Health Risk Category[1]	U.S. EPA MCLG[2] (mg/L)	Cancer Risk[3] @ MCLG	California MCL[4] (mg/L)	Cancer Risk @ California MCL
Radionuclides					
Gross alpha particles[9]	carcinogenicity (causes cancer)	0 (^{210}Po included)	0	15 pCi/L[10] (includes ^{226}Ra but not radon and uranium)	up to $1x10^{-3}$ (for ^{210}Po, the most potent alpha emitter
Beta particles and photon emitters[9]	carcinogenicity (causes cancer)	0 (^{210}Pb included)	0	50 pCi/L (judged equiv. to 4 mrem/yr)	up to $2x10^{-3}$ (for ^{210}Pb, the most potent beta-emitter)

[9] MCLs for gross alpha and beta particles are screening standards for a group of radionuclides. Corresponding PHGs were not developed for gross alpha and beta particles. See the OEHHA memoranda discussing the cancer risks at these MCLs at http://oehha.studio-weeren.com/media/downloads/water/chemicals/phg/grossalphahealth.pdf.

[10] pCi/L = picocuries per liter of water.

ATTACHMENT 4

DESCRIPTION OF COST ESTIMATE PROCEDURES

Estimate of Ion-Exchange Treatment Costs – Cost estimates were developed for ion-exchange treatment of CrVI, arsenic, and uranium with a strong-base anion (SBA) resin. The SBA treatment costs were estimated for CrVI, arsenic, and uranium levels to meet their respective PHG levels of 0.02 µg/L, 0.004 µg/L, and 0.43 pCi/L in the finished water under the assumption that IX treatment can reduce these constituents to those levels and that these levels can be detected. The cost estimates were developed for each individual well using the maximum concentration measured during 2013 – 2015 as the treatment design influent concentration for CrVI, arsenic, or uranium, and using the well capacity listed in Tables 2, 3 and 4. The cost estimates were developed with WQTS' in-house ion exchange treatment design and cost model. The cost estimates were based on 2016 costs and have an expected accuracy range of +50/-30%. For the model to predict cost, it needed to make projections about treatment performance based on water quality, and then constructed capital and annual O&M cost based on specific unit costs of equipment, chemicals, supplies, labor, energy, disposal fees, etc. Cost estimates include the costs associated with clarification of the waste brine produced by the regeneration of the SBA resin as well as the costs for disposal of the dewatered sludge as hazardous waste.

Estimate of Reverse Osmosis Treatment Cost – Cost estimates for gross alpha treatment of Well 159 with reverse osmosis (RO) were estimated from a previous WQTS project where cost estimates were developed for nitrate removal using RO treatment. The cost estimates were developed for four treatment influent flow rates ranging between 320 and 1,000 gpm. These four treatment flow rates were plotted against their respective estimated capital and annual O&M costs to establish linear relationships from which costs for Well 159 were interpolated. The maximum water production for Well 159 during 2013-2015 was 729 gpm. The capital and annual O&M costs were adjusted from 2009 cost estimates, date of original cost estimates, to 2016 using the 20-city national average Engineering News Record Construction Cost Index for capital cost adjustment and the Consumer Price Index for O&M cost adjustment. Finally, the adjusted total annualized cost estimate ($2.65/1,000 gallons treated) for RO treatment of Well 159 was compared to the data furnished by ACWA. Based on ACWA's Estimates for Treatment Technologies document, the estimated total annualized cost for RO treatment for plants of similar size to Well 159 ranged from $2.45 to $6.65 per 1,000 gallons of water treated. The total annualized cost estimate of $2.65/1,0000 gallons was within this reported range.

ATTACHMENT 5

CITY OF SACRAMENTO – DEPARTMENT OF UTILITIES

2013, 2014 AND 2015 CONSUMER CONFIDENCE REPORTS

Tradition of Excellence

Since its founding in 1849, the City of Sacramento has considered water quality of utmost importance. This Consumer Confidence Report is presented to enhance your understanding of where your water comes from and what it contains and to confirm that your drinking water continues to meet or exceed all state and federal drinking water standards.

The City of Sacramento Department of Utilities is dedicated to providing our customers dependable, high quality water, storm drainage, and wastewater services in a fiscally and environmentally sustainable manner. In doing so, we work to conserve and preserve our water sources.

California Source Water Quality

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 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.

Contaminants that may be present in source water include:
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 stormwater 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 stormwater 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 stormwater runoff, agricultural applications, and septic systems.
Radioactive contaminants, that can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (USEPA) and the California Department of Public Health (CDPH) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Department regulations also establish limits for contaminants in bottled water that must provide the same protection for public health.

Sacramento's Water Source Assessment

The City of Sacramento has two independent water sources. Our primary water source is river water from the American and Sacramento Rivers, which provide 89 percent of our water supply. Groundwater provides the remaining 11 percent. Assessments of potential contaminating activities for the City's Sacramento River and American River water sources were completed in December 2000 and April 2001. These reports indicated that both rivers are most vulnerable to contaminants from recreational activities and that the Sacramento River is also most susceptible to agricultural contaminants. The City of Sacramento, along with several other water utilities updates assessments of the river water sources every five years.

An assessment of the City's groundwater wells was completed in December 2002. In 2012, three wells considered vulnerable to known contaminant plumes and dry cleaning activity had detections of trichloroethylene (TCE) or tetrachloroethylene (PCE). The well that had TCE detection was immediately removed from service while the City investigates possible wellhead treatment or decommissioning of the well. The two wells with detection of PCE were immediately removed from service; the City is investigating possible wellhead treatment or decommissioning one of these wells. The second well is currently out of service for mechanical equipment repair. After it is repaired, if a resample confirms the initial result, the City will conduct further evaluation for possible wellhead treatment or decommissioning of the well. Any out of service wells are thoroughly tested before returning to service to ensure that all regulatory requirements are met.. In addition, due to the proximity to potential contaminant sources, the wells north of the American River are considered most vulnerable to sewage collection systems, leaking underground storage tanks, known contaminant plumes, agricultural drainage, gas stations, dry cleaners, metal plating and chemical processing storage facilities, electrical/electronic manufacturing, and automobile repair and body shops. Wells south of the American River are considered vulnerable to leaking underground storage tanks and sewage collection systems. Copies of the complete assessments are available for review at the City of Sacramento, Department of Utilities, 1395 35th Avenue, or call 808-5454 to request a summary of the assessments.

Teamwork : Together We Can Protect Our Water Resources

The City of Sacramento Department of Utilities works hard to bring you quality drinking water. Please be careful as you live, work and play to limit what goes into the storm drains and rivers, so we can continue to preserve the quality of the water and our diverse river ecosystem.

As California faces an unprecedented drought, water is more precious than ever. The City of Sacramento has established watering rules to help ensure an adequate supply of water this year. Find your watering days, tips to save water and available water conservation services and rebates at www.SpareSacWater.org

Here are some ways that you can help preserve and conserve our water resources.

Fill It Up. Use your dishwasher and washing machine only for full loads.
Go Green. Purchase household and garden products that are "least toxic" to the environment.
Look for Leaks. Inspect and maintain your car regularly to prevent leaks of oil, antifreeze and other fluids. Also, conserve water by fixing leaks around your home and yard.
Apply When Dry. Do not apply lawn or garden products when rain is forecasted and do not over-water your lawn.
Pick Up After Yourself and Your Pets. Pick up your trash and put recycling in an appropriate bin. Shovel up animal wastes, seal it in bags and throw it away in a garbage can. Also, when visiting our rivers, be sure to use a public restroom or if your boat has a restroom, be sure to use a pumpout station to dispose of sewage safely.
Slow the Flow. Use a low-flow hose nozzle when landscaping and only water on your assigned day. Also use a low-flow showerhead and take showers instead of baths.
Spend Time in the Gutter. Keep the gutters clear of debris and lawn clippings to prevent clogging of storm drains. If you are putting out yard clippings for pick up, sweep them into the street. Using a yard waste container can protect our local waterways by keeping yard waste out of the storm drain. Call 311 or (916) 264-5011 to request a container.

Information You Should Know About Water

This Consumer Confidence Report (CCR) is a summary of results of tests conducted to detect contaminants in your drinking water. It has been provided to educate you, our customer, about the quality of your drinking water. Many tests were conducted and only those constituents detected are listed in this report.

The CCR includes a comparison of the detected chemicals in the City of Sacramento Department of Utilities' drinking water to the standards set by the California Department of Public Health (CDPH) and the United States Environmental Protection Agency (USEPA).

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 (1-800-426-4791).

Your water meets or exceeds all federal and state drinking water standards.

Special Information Available

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/Centers 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).

FOR MORE INFORMATION VISIT:
www.cityofsacramento.org/utilities

www.facebook.com/SacramentoCityUtilities
www.twitter.com/saccityutility

Helpful Phone Numbers and Information

The City of Sacramento Department of Utilities is dedicated to providing our customers dependable, high quality water, storm drainage, and wastewater services in a fiscally and environmentally sustainable manner.

City of Sacramento Department of Utilities
(24 hours a day, 7 days a week)
311 or 264-5011
www.cityofsacramento.org/utilities

USEPA Safe Drinking Water Hotline
(800) 426-4791
http://water.epa.gov/drink/

The City Council holds public meetings most Tuesdays at 6 p.m. in the City Council Chambers at 915 I Street, Sacramento. You can access Council agendas at www.cityofsacramento.org/clerk.

本報告有關於您的飲用水的重要資料。請找人為您翻譯，或與能明白該報告的人交談。

Phúc trình này có các chi tiết quan trọng về nước uống của quý vị. Hãy nhờ người dịch cho quý vị, hoặc hỏi người nào hiểu rõ các chi tiết này.

Este informe contiene información importante sobre el agua que usted bebe. Pida a alguien que se lo traduzca o hable con alguien que lo entienda.

ລາຍງານນີ້ມີຂໍ້ມູນສຳຄັນກ່ຽວກັບນ້ຳປະປາຂອງທ່ານ. ຈົ່ງໃຫ້ຄົນອື່ນແປຄວາມໃຫ້ທ່ານ, ຫລືໃຫ້ປຶກສາກັບຄົນໃດຄົນໜຶ່ງທີ່ເຂົ້າໃຈເລື່ອງ.

この報告書には私達の飲料水に関する重要な情報が記載されています。貴方のために翻訳してくれる人、あるいは内容を理解し説明してくれる人を見つけてください。

Tsab ntawv (report) no muaj cov kev qhia tseemceeb txog koj cov dej haus. Thov ib tus tibneeg pab txhais rau koj lossis nrog tej tus tibneeg uas totaub txog tsab ntawv no tham.

Ang report na ito ay naglalaman ng mahalagang impormasyon tungkol sa tubig na inyong iniinum. Magpatulong sa taong maaring magsalin, o makipag-usap sa taong nakakaunawa nito.

Данный рапорт содержит важную информацию о вашей питьевой воде. Переведите его или проконсультируйтесь с тем, кто его понимает.

CALL 916-264-5011
我們講中文 · Hablamos Español
Мы говорим по-русски · พวกเราเว้าพาสาลาวได้
Peb hais lus Hmoob · Chúng tôi nói tiếng Việt

2013 WATER QUALITY REPORT

A Consumer Confidence Report for the Citizens of Sacramento

Congratulations! Your water meets or exceeds all federal and state drinking water standards

City of SACRAMENTO
Department of Utilities

03/14JH

WATER QUALITY ANALYSIS RESULTS FOR 2013

The following table shows the detected contaminants in your drinking water and compares them with drinking water standards set by the United States Environmental Protection Agency (USEPA) and the California Department of Public Health (CDPH). To request a complete report, including non-detected items, please call 311 or (916) 264-5011.

Your water meets or exceeds all current federal and state requirements.

DETECTED PRIMARY DRINKING WATER CONSTITUENTS regulated to protect your health

CONSTITUENT	UNITS	PHG or (MCLG) or [MRDLG]	MCL or [MRDL]	SURFACE WATER RANGE	SURFACE WATER AVERAGE	SURFACE WATER YEAR OF SAMPLING	GROUND WATER RANGE	GROUND WATER AVERAGE	GROUND WATER YEAR OF SAMPLING	MAJOR SOURCES
ALUMINUM	PPM	0.6	1	ND - ND	ND	2013	ND - 0.19	ND	2011	Erosion or leaching of natural deposits and water treatment chemicals added to water
ARSENIC	PPB	0.004	10	ND - ND	ND	2013	2.5 - 4.4	3.3	2011, 2013	Erosion or leaching of natural deposits
BARIUM	PPM	2	1	ND - ND	ND	2013	ND - 0.14	ND	2011, 2013	Erosion or leaching of natural deposits
CHROMIUM (TOTAL)	PPB	(100)	50	ND - ND	ND	2013	ND - 19	ND	2011, 2013	Erosion or leaching of natural deposits
FLUORIDE (a)	PPM	1	2.0	0.8 - 0.8	0.8	2013	0.7 - 1.0	0.9	2013	Water additive that promotes strong teeth
GROSS ALPHA	pCi/L	(0)	15	ND - ND	ND	2012	ND - 3.2	ND	2012	Erosion of natural deposits
NITRATE (AS NITRATE)	PPM	45	45	ND - ND	ND	2013	2.8 - 15	7.8	2013	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits
CONTROL OF DISINFECTION BY-PRODUCT PRECURSORS (TOC) (RAW) (b)	PPM	N/A	TREATMENT REQUIREMENT IF AVERAGE TOC>2.0	1.0 - 2.1	1.3	2013	N/A	N/A	N/A	Various natural and man-made sources

DISTRIBUTION SYSTEM	UNITS	PHG OR (MCLG)	MCL OR (MRDL)	RANGE	AVERAGE	YEAR OF SAMPLING	MAJOR SOURCES
CHLORINE	PPM	[4]	[4.0]	0.08 - 1.2	0.55	2013	Drinking water disinfectant added for treatment
TOTAL TRIHALOMETHANES	PPB	N/A	80	37 - 74	63	2013	By-product of drinking water disinfection
HALOACETIC ACIDS	PPB	N/A	60	19 - 46	34	2013	By-product of drinking water disinfection

	UNITS	PHG OR (MCLG)	MCL OR (MRDL)	LEVEL FOUND		MAJOR SOURCES
TOTAL COLIFORM BACTERIA (TOTAL COLIFORM RULE)	% SAMPLES POSITIVE	(0)	5.0%	0.79%	2013	Naturally present in the environment
TURBIDITY (c), (d)	NTU	N/A	TT= 1 NTU	0.33	2013	Soil runoff
		N/A	TT=95% OF SAMPLES ≤0.3 NTU	99.7%		

DETECTED SECONDARY DRINKING WATER CONSTITUENTS regulated for aesthetic qualities

CONSTITUENT	UNITS	PHG or (MCLG)	MCL	SURFACE WATER RANGE	SURFACE WATER AVERAGE	SURFACE WATER YEAR OF SAMPLING	GROUND WATER RANGE	GROUND WATER AVERAGE	GROUND WATER YEAR OF SAMPLING	MAJOR SOURCES
CHLORIDE	PPM	N/A	500	ND - 7.5	ND	2013	15 - 58	36	2011	Erosion or leaching of natural deposits
COLOR	COLOR UNIT	N/A	15	1 - 1	1	2013	1 - 10	2	2011	Naturally occurring organic materials
COPPER	PPM	N/A	1	ND - ND	ND	2013	ND - 0.075	ND	2011, 2013	Naturally occurring organic materials
IRON	PPB	N/A	300	ND - ND	ND	2013	ND - 303	ND	2011, 2013	Erosion or leaching of natural deposits
SPECIFIC CONDUCTANCE	µS/CM	N/A	1600	81 - 153	117	2013	238 - 519	397	2011	Substances that form ions when in water
SULFATE	PPM	N/A	500	4.1 - 63	5.2	2013	3.7 - 15	8.8	2011	Erosion or leaching of natural deposits
TOTAL DISSOLVED SOLIDS (TDS)	PPM	N/A	1000	54 - 111	83	2013	106 - 316	187	2011	Erosion or leaching of natural deposits
TURBIDITY	NTU	N/A	5	0.01 - 0.33	0.05	2013	0.04 - 14	1.2	2011	Soil runoff

DETECTED DRINKING WATER CONSTITUENTS

CONSTITUENT	UNITS	PHG or (MCLG)	MCL	SURFACE WATER RANGE	SURFACE WATER AVERAGE	SURFACE WATER YEAR OF SAMPLING	GROUND WATER RANGE	GROUND WATER AVERAGE	GROUND WATER YEAR OF SAMPLING	MAJOR SOURCES
HARDNESS	PPM	N/A	N/A	32 - 57	45	2013	65 - 190	137	2011	Hardness is the sum of polyvalent cations present in the water, generally naturally occurring magnesium and calcium.
SODIUM	PPM	N/A	N/A	2.0 - 6.2	4.1	2013	14 - 24	19	2011, 2013	Naturally occurring salt in the water
CALCIUM	PPM	N/A	N/A	8.8 - 13	11	2013	10 - 26	18	2011, 2013	Erosion or leaching of natural deposits
MAGNESIUM	PPM	N/A	N/A	1.5 - 4.6	3.1	2013	6.8 - 23	13	2011, 2013	Erosion or leaching of natural deposits

DETECTED UNREGULATED DRINKING WATER CONSTITUENTS (e)

CONSTITUENT	UNITS	PHG or (MCLG)	MCL	SURFACE WATER RANGE	SURFACE WATER AVERAGE	SURFACE WATER YEAR OF SAMPLING	GROUND WATER RANGE	GROUND WATER AVERAGE	GROUND WATER YEAR OF SAMPLING	MAJOR SOURCES
CHROMIUM VI (HEXAVALENT CHROMIUM)	PPB	0.02	N/A	0.11 - 0.38	0.20	2013	3.2 - 8.0	5.6	2013	Erosion or leaching of natural deposits

LEAD AND COPPER

CONSTITUENT	UNITS	PHG or (MCLG)	AL	# OF SAMPLES COLLECTED	90TH PERCENTILE LEVEL DETECTED	# OF SITES EXCEEDING AL	YEAR OF SAMPLING	MAJOR SOURCES
LEAD	PPB	0.2	15	53	ND	0	2011	Internal corrosion of household water plumbing systems; discharge from industrial manufacturing; erosion of natural deposits.
COPPER	PPM	0.30	1.3	53	0.07	0	2011	Internal corrosion of household water plumbing systems; erosion of natural deposits; leaching from wood preservatives.

(a) -- The City's fluoridation program provides the addition of fluoride to all the City's drinking water. The City adjusts the natural levels of fluoride in our water supplies to the California DPH recommended optimal level.

(b) -- Only surface water sources must monitor for Disinfection By-Product Precursors in raw water.

(c) -- Only surface water sources must comply with Primary Drinking Water Standard for turbidity.

(d) --Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system.

(e) -- Unregulated contaminant monitoring helps determine where certain water constituents occur and whether they need to be regulated.

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 Quality Table Abbreviations

AL: Action Level
DLR: Detection Limits for purposes of Reporting
DPH: Department of Public Health
MCL: Maximum Contaminant Level
MCLG: Maximum Contaminant Level Goal
PPB: parts per billion, or micrograms per liter (µg/L)
PPM: parts per million, or milligrams per liter (mg/L)
N/A: Not Applicable
ND: Not Detected
NTU: Nephelometric Turbidity Units
pCi/L: Picocuries per Liter
PHG: Public Health Goal
TOC: Total Organic Carbon
TT: Treatment Technique
µS/cm: microsiemens per centimeter; or micromhos per centimeter (µmhos/cm)
MRDL: Maximum Residual Disinfectant Level
MRDLG: Maximum Residual Disinfectant Level Goal

Important Definitions

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

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 the U.S. Environmental Protection Agency.

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.

Maximum Residual Disinfectant Level Goal (MRDLG): The level of 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.

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

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.

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

What you should know about…

Lead
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 Sacramento Department of Utilities 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 cooking or drinking. 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.

Chromium VI
Chromium VI is a drinking water contaminant that occurs primarily in ground water. It is important to note that 89 percent of the City's drinking water comes from local rivers, not ground water, where chromium VI is typically found.

In July 2011, the California Office of Environmental Health Hazard Assessment (OEHHA) established a PHG for chromium VI of 0.02 micrograms per liter. On August 23, 2013, the California Department of Public Health (CDPH) proposed an MCL for chromium VI of 10 micrograms per liter. In the absence of any major delays, an enforceable MCL is anticipated to be established in 2014. Once that level is established, the City will work to maintain chromium VI levels below the mandated level.

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In order to ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (USEPA) and the California State Water Resources Control Board Division of Drinking Water (DDW) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Department regulations also establish limits for contaminants in bottled water that must provide the same protection for public health.

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As California faces an unprecedented drought, water is more precious than ever. The City of Sacramento has limited watering days for residents and businesses. Find your watering days, tips to save water and available water conservation services and rebates at www.SpareSacWater.org

Here are some ways that you can help preserve and conserve our water resources.

Fill It Up. Use your dishwasher and washing machine only for full loads.
Go Green. Purchase household and garden products that are "least toxic" to the environment.
Look for Leaks. Inspect and maintain your car regularly to prevent leaks of oil, antifreeze and other fluids. Also, conserve water by fixing leaks around your home and yard within 48 hours.
Apply When Dry. Do not apply lawn or garden products when rain is forecasted and do not over-water your lawn.
Pick Up After Yourself and Your Pets. Pick up your trash and put recycling in an appropriate bin. Shovel up animal wastes, seal it in bags and throw it away in a garbage can. Also, when visiting our rivers, be sure to use a public restroom or if your boat has a restroom, be sure to use a pumpout station to dispose of sewage safely.
Slow the Flow. Use a low-flow hose nozzle when landscaping and only water on your assigned day. Also use a low-flow showerhead and take showers instead of baths.
Spend Time in the Gutter. Keep the gutters clear of debris and lawn clippings to prevent clogging of storm drains. If you are putting out yard clippings for pick up during leaf season, sweep them into the street. Using a yard waste container can protect our local waterways by keeping yard waste out of the storm drain. Call 311 or (916) 264-5011 to request a container.

Information You Should Know About Water

This Consumer Confidence Report (CCR) is a summary of results of tests conducted to detect contaminants in your drinking water. It has been provided to educate you, our customer, about the quality of your drinking water. Many tests were conducted and only those constituents detected are listed in this report.

The CCR includes a comparison of the detected chemicals in the City of Sacramento Department of Utilities' drinking water to the standards set by the California State Water Resources Control Board Division of Drinking Water (DDW) and the United States Environmental Protection Agency (USEPA).

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 1-800-426-4791.

Your water meets or exceeds all federal and state drinking water standards.

Special Information Available

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/Centers 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).

FOR MORE INFORMATION VISIT:
www.cityofsacramento.org/utilities

www.facebook.com/SacramentoCityUtilities
www.twitter.com/saccityutility

Helpful Phone Numbers and Information

The City of Sacramento Department of Utilities is dedicated to providing our customers dependable, high quality water, storm drainage, and wastewater services in a fiscally and environmentally sustainable manner.

City of Sacramento Department of Utilities
(24 hours a day, 7 days a week)
311 or 264-5011
www.cityofsacramento.org/utilities

USEPA Safe Drinking Water Hotline
(800) 426-4791
http://water.epa.gov/drink/

The City Council holds public meetings most Tuesdays at 6 p.m. in the City Council Chambers at 915 I Street, Sacramento. You can access Council agendas at www.cityofsacramento.org/clerk.

本報告有關於您的飲用水的重要資料。請找人為您翻譯，或與能明白該報告的人交談。

Phúc trình này có các chi tiết quan trọng về nước uống của quý vị. Hãy nhờ người dịch cho quý vị, hoặc hỏi người nào hiểu rõ các chi tiết này.

Este informe contiene información importante sobre el agua que usted bebe. Pida a alguien que se lo traduzca o hable con alguien que lo entienda.

ລາຍງານນີ້ມີຂໍ້ມູນສຳຄັນກ່ຽວກັບນ້ຳປະປາຂອງທ່ານ. ຈົ່ງໃຫ້ຄົນອື່ນແປຄວາມໃຫ້ທ່ານ, ຫລືໃຫ້ປຶກສາກັບຄົນໃດຄົນໜຶ່ງທີ່ເຂົ້າໃຈເລື່ອງ.

この報告書には私達の飲料水に関する重要な情報が記載されています。貴方のために翻訳してくれる人、あるいは内容を理解し説明してくれる人を見つけてください。

Tsab ntawv (report) no muaj cov kev qhia tseemceeb txog koj cov dej haus. Thov ib tus tibneeg pab txhais rau koj lossis nrog tej tus tibneeg uas totaub txog tsab ntawv no tham.

Ang report na ito ay naglalaman ng mahalagang impormasyon tungkol sa tubig na inyong iniinum. Magpatulong sa taong maaring magsalin, o makipag-usap sa taong nakakaunawa nito.

Данный рапорт содержит важную информацию о вашей питьевой воде. Переведите его или проконсультируйтесь с тем, кто его понимает.

CALL 916-264-5011
我們講中文 · Hablamos Español
Мы говорим по-русски · พวกเราเว้าพาสาลาวได้
Peb hais lus Hmoob · Chúng tôi nói tiếng Việt

2014 WATER QUALITY REPORT

A Consumer Confidence Report for the Citizens of Sacramento

Congratulations! Your water meets or exceeds all federal and state drinking water standards

City of SACRAMENTO Department of Utilities

03/15JH

WATER QUALITY ANALYSIS RESULTS FOR 2014

The following table shows the detected contaminants in your drinking water and compares them with drinking water standards set by the United States Environmental Protection Agency (USEPA) and the California State Water Resources Control Board Division of Drinking Water (DDW).
To request a complete report, including non-detected items, please call 311 or (916) 264-5011.

Your water meets or exceeds all current federal and state requirements.

DETECTED PRIMARY DRINKING WATER CONSTITUENTS regulated to protect your health

CONSTITUENT	UNITS	PHG or (MCLG) or [MRDLG]	MCL or [MRDL]	SURFACE WATER			GROUND WATER			MAJOR SOURCES
				RANGE	AVERAGE	YEAR OF SAMPLING	RANGE	AVERAGE	YEAR OF SAMPLING	
ALUMINUM	PPM	0.6	1	ND - 0.05	ND	2014	ND - ND	ND	2014	Erosion or leaching of natural deposits and water treatment chemicals added to water
ARSENIC	PPB	0.004	10	ND - ND	ND	2014	2.3 - 3.8	2.9	2014	Erosion or leaching of natural deposits
BARIUM	PPM	2	1	ND - ND	ND	2014	ND - 0.19	ND	2014	Erosion or leaching of natural deposits
FLUORIDE (a)	PPM	1	2.0	0.8 - 0.8	0.8	2014	0.7-1.2	0.9	2014	Water additive that promotes strong teeth
GROSS ALPHA (b)	pCi/L	(0)	15	ND - ND	ND	2012	ND - 7.8	ND	2012 - 2014	Erosion of natural deposits
HEXAVALENT CHROMIUM	PPB	0.02	10	ND - ND	ND	2014	ND - 8.4	5.2	2014	Discharge from electroplating factories, leather tanneries, wood preservation, chemical synthesis, refractory production, and textile manufacturing facilities; erosion of natural deposits
NITRATE (AS NITRATE)	PPM	45	45	ND - ND	ND	2014	ND - 19.8	8.8	2014	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits
CONTROL OF DISINFECTION BY-PRODUCT PRECURSORS (TOC) (RAW) (c)	PPM	N/A	treatment required if average TOC>2.0	0.9 - 2.4	1.3	2014	N/A	N/A	N/A	Various natural and man-made sources
TURBIDITY	NTU	N/A	TT = 1	0.36 (d)		2014	N/A	N/A	N/A	Soil runoff
		N/A	TT =95% of samples <0.3	99.7% (e)		2014	N/A	N/A	N/A	

DISTRIBUTION SYSTEM	UNITS	PHG or (MCLG)	AL	# OF SAMPLES COLLECTED	90TH PERCENTILE LEVEL DETECTED	# OF SITES EXCEEDING AL	YEAR OF SAMPLING	MAJOR SOURCES
LEAD	PPB	0.2	15	53	ND	0	2014	Internal corrosion of household water plumbing systems; discharge from industrial manufacturing; erosion of natural deposits.
COPPER	PPM	0.30	1.3	53	ND	0	2014	Internal corrosion of household water plumbing systems; erosion of natural deposits; leaching from wood preservatives.

DISTRIBUTION SYSTEM	RANGE	AVERAGE	YEAR OF SAMPLING	MAJOR SOURCES
CHLORINE	ND - 1.4	0.6	2014	Drinking water disinfectant added for treatment
COLOR (f)	1 - 4	1	2014	Naturally occurring organic materials
TOTAL TRIHALOMETHANES	10 - 123 (g)	73	2014	By-product of drinking water disinfection
HALOACETIC ACIDS	5 - 60	39	2014	By-product of drinking water disinfection
TURBIDITY (f)	0.04 - 1.1	0.12	2014	Soil runoff

CONSTITUENT	UNITS	PHG OR (MCLG)	MCL OR (MRDL)	LEVEL FOUND	YEAR OF SAMPLING	MAJOR SOURCES
TOTAL COLIFORM BACTERIA (TOTAL COLIFORM RULE)	% SAMPLES POSITIVE	(0)	5.0%	1.65%	2014	Naturally present in the environment

DETECTED SECONDARY DRINKING WATER CONSTITUENTS regulated for aesthetic qualities

CONSTITUENT	UNITS	PHG or (MCLG)	MCL	SURFACE WATER			GROUND WATER			MAJOR SOURCES
				RANGE	AVERAGE	YEAR OF SAMPLING	RANGE	AVERAGE	YEAR OF SAMPLING	
CHLORIDE	PPM	N/A	500	5.2 - 6.5	5.9	2014	18 - 66	41	2014	Erosion or leaching of natural deposits
SPECIFIC CONDUCTANCE	µS/CM	N/A	1600	100 - 160	130	2014	305 - 691	426	2014	Substances that form ions when in water
SULFATE	PPM	N/A	500	8.2 - 13	11	2014	5.1 - 31	11	2014	Erosion or leaching of natural deposits
TOTAL DISSOLVED SOLIDS (TDS)	PPM	N/A	1000	50 - 79	64	2014	239 - 430	308	2014	Erosion or leaching of natural deposits

DETECTED UNREGULATED DRINKING WATER CONSTITUENTS (h)

CONSTITUENT	UNITS	SURFACE WATER			GROUND WATER			DISTIRBUTION SYSTEM		
		RANGE	AVERAGE	YEAR OF SAMPLING	RANGE	AVERAGE	YEAR OF SAMPLING	RANGE	AVERAGE	YEAR OF SAMPLING
HARDNESS	PPM	49 - 67	58	2014	86 - 260	153	2014	N/A	N/A	N/A
SODIUM	PPM	2.7 - 6.7	4.7	2014	18 - 36	27	2014	N/A	N/A	N/A
1,4-DIOXANE	PPB	ND - ND	ND	2014	ND - 0.2	ND	2014	N/A	N/A	N/A
CHLORATE	PPB	ND - ND	ND	2014	ND - ND	ND	2014	ND - 61	ND	2014
MOLYBDENUM	PPB	ND - ND	ND	2014	ND - ND	ND	2014	ND - 1	ND	2014
STRONTIUM	PPB	48 - 130	76	2014	190 - 380	265	2014	48 - 370	181	2014
VANADIUM	PPB	0.4 - 3.0	1.4	2014	15 - 32	22	2014	0.4 - 35	13	2014

(a) -- The City's fluoridation program provides the addition of fluoride to all the City's drinking water. The City adjusts the natural levels of fluoride in our water supplies to the California DDW recommended optimal level.

(b) -- Gross alpha results are used to screen for other constituents, including uranium. During 2014, uranium monitoring was triggered on one well with a result of 4.0 pCi/L.

(c) -- Only surface water sources must monitor for Disinfection By-Product Precursors in raw water.

(d) -- Maximum individual value used for MCL comparison.

(e) -- Minimum monthly value used for MCL comparison.

(f) -- Secondary detected drinking water constituent regulated for aesthetic qualities.

(g) -- Compliance is based on the Locational Running Annual Average. The highest level reported in the range is the result of an individual sample.

(h) -- Unregulated constituents include general water quality parameters such as Hardness and Sodium, as well as contaminants monitored under the Unregulated Contaminant Monitororing Rule (UCMR) which helps determine where certain water contaminants occur and whether they need to be regulated.

Water Quality Table Abbreviations

AL: Action Level
DLR: Detection Limits for purposes of Reporting
DDW: Division of Drinking Water
MCL: Maximum Contaminant Level
MCLG: Maximum Contaminant Level Goal
MRDL: Maximum Residual Disinfectant Level
MRDLG: Maximum Residual Disinfectant Level Goal
PPB: parts per billion, or micrograms per liter (µg/L)
PPM: parts per million, or milligrams per liter (mg/L)
N/A: Not Applicable
ND: Not Detected
NTU: Nephelometric Turbidity Units
pCi/L: Picocuries per Liter
PHG: Public Health Goal
TOC: Total Organic Carbon
TT: Treatment Technique
µS/cm: microsiemens per centimeter

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.

Important Definitions

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

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

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 the U.S. Environmental Protection Agency.

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.

Maximum Residual Disinfectant Level Goal (MRDLG): The level of 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.

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

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.

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

What you should know about Lead

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 Sacramento Department of Utilities 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 cooking or drinking. 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.

CITY OF SACRAMENTO DEPARTMENT OF UTILITIES

2015 WATER QUALITY REPORT

A Consumer Confidence Report for the Citizens of Sacramento

DROUGHT ALERT

As California faces an unprecedented drought, water is more precious than ever. The City of Sacramento has limited watering days for residents and businesses. Find your watering days, tips to save water and available water conservation services and rebates at www.SpareSacWater.org

Congratulations! Your water meets or exceeds all federal and state drinking water standards.

TRADITION OF EXCELLENCE

Since its founding in 1849, the City of Sacramento has considered water quality of the utmost importance. This Consumer Confidence Report is presented to enhance your understanding of where your water comes from, what it contains, and to confirm that your drinking water continues to meet or exceed all state and federal drinking water standards.

The City of Sacramento Department of Utilities is dedicated to providing our customers with dependable, high quality water, storm drainage and wastewater services in a fiscally and environmentally sustainable manner. In doing so, we work to conserve and preserve our water sources.

TEAMWORK: TOGETHER WE CAN PROTECT OUR WATER RESOURCES

The City of Sacramento Department of Utilities works hard to bring you quality drinking water. Please be careful as you live, work and play to limit what goes into the storm drains and rivers, so we can continue to preserve the quality of the water and our diverse river ecosystem.

City of SACRAMENTO
Department of Utilities

WATER QUALITY ANALYSIS RESULTS FOR 2015

Your water meets or exceeds all federal and state drinking water standards.

The following tables show the measured amount of constituents detected in 2015 or in the most recent year sampling was required. Although the City of Sacramento tests for more than 100 substances, this report only lists those detected at or above the federal or state level for reporting.

Important Definitions

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

Constituent: A chemical or parameter measured in the water supply.

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. Secondary MCLs are set to protect the odor, taste and appearance of drinking water.

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 the U.S. Environmental Protection Agency.

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.

Maximum Residual Disinfectant Level Goal (MRDLG): The level of 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.

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

Abbreviations

µS/cm	microsiemens per centimeter
DBP	Disinfection By-products
NA	Not Applicable
ND	Not Detected
NTU	Nephelometric Turbidity Units; measures cloudiness of water
oocysts/L	oocysts per liter; count of organisms
pCi/L	picocuries per liter; measures radiation
ppb	parts per billion; one ppb is like 3 seconds in 100 years
ppm	parts per million; one ppm is like 32 seconds in one year
ppt	parts per trillion; one ppt is like 3 seconds in 100,000 years
TOC	Total Organic Carbon

1 Regulated for Public Health - Primary MCL

Constituent	Units	Year Sampled[a]	State or Federal Goal PHG	Highest Amount Allowed MCL	Water Treatment Plants		Wells		Typical Sources
					Range	Average	Range	Average	
Aluminum[b]	ppm	2011 - 2015	0.6	1	ND - 0.06	ND	ND	ND	Erosion of natural deposits; water treatment chemicals added to water
Arsenic	ppb	2011 - 2015	0.004	10	ND	ND	2.2 - 3.9	3.0	Erosion of natural deposits
Barium	ppm	2011 - 2015	2	1	ND	ND	ND - 0.2	ND	Erosion of natural deposits
Control Of DBP Precursors / TOC	ppm	2015	NA	Avg. < 2.0 (TT)	1.1 - 1.6	1.3	NA	NA	Various natural and man-made sources
Cryptosporidium in source water	oocysts/L	2015	0 (MCLG)	2-log removal required (TT)	ND - 0.2	ND	NA	NA	Naturally present in the environment
Fluoride in source water[c]	ppm	2014 - 2015	1	2.0	ND	ND	ND - 0.2	0.1	Erosion of natural deposits
Gross Alpha[d]	pCi/L	2012 - 2014	0 (MCLG)	15	ND	ND	ND - 7.8	ND	Erosion of natural deposits
Hexavalent Chromium	ppb	2014 - 2015	0.02	10	ND	ND	ND - 9.7[e]	5.4	Erosion of natural deposits; industrial wastes
Nitrate (as Nitrogen)	ppm	2011 - 2015	10	10	ND	ND	ND - 4.5	1.7	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits
Turbidity	NTU	2015	NA	1 (TT)	0.11[f]		NA	NA	Soil runoff
				Mininum 95% of samples <0.3	100%[g]		NA	NA	

Constituent	Units	Year Sampled[a]	State or Federal Goal PHG	Highest Amount Allowed MCL	Distribution System		Typical Sources
					Range	Average	
Chlorine	ppm	2015	4 (MRDLG)	4.0 (MRDL)	ND[h] - 1.4	0.6	Drinking water disinfectant added for treatment
E. Coli (Total Coliform Rule)	detections	2015	0 (MCLG)	A routine sample and a repeat sample are total coliform positive, and one of these is also fecal coliform or E. coli positive	1 detection out of 2,903 routine samples[i]		Human and animal fecal waste
Fluoride[c]	ppm	2015	1	2.0	ND - 1.1	0.7	Water additive that promotes strong teeth
Haloacetic Acids	ppb	2015	NA	60	10 - 56	46	By-product of drinking water disinfection
Total Coliform Bacteria	% samples positive	2015	0 (MCLG)	5.0%	1.9%[j]		Naturally present in the environment
Trihalomethanes	ppb	2015	NA	80	15 - 73[k]	74[l]	By-product of drinking water disinfection

Constituent	Units	Year Sampled[a]	State or Federal Goal PHG	Action Level	# Of Samples Collected	90th Percentile Level	# Of Sites Exceeding AL	Typical Sources
Lead	ppb	2014	0.2	15	53	ND	0	Internal corrosion of household water plumbing systems; discharge from industrial manufacturing; erosion of natural deposits
Copper	ppm	2014	0.3	1.3	53	ND	0	Internal corrosion of household water plumbing systems; erosion of natural deposits; leaching from wood preservatives

NOTES: (a) 2011 results were used for one well which was not fully monitored in 2015 since it was taken out of service due to electrical issues. (b) Aluminum is also regulated by a Secondary MCL of 0.2 ppm. (c) In accordance with State law, the City of Sacramento adjusts the natural levels of fluoride in our water supplies to the optimal level determined by the Centers for Disease Control. More information about fluoridation is available at http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Fluoridation.shtml (d) Gross alpha is used as a general indicator for the presence of radiological constituents. The gross alpha result for one well was slightly over half the MCL. As required, the well was then tested for uranium and the result was 4 pCi/L, which is less than the uranium MCL of 20 pCi/L. (e) The well which had the range maximum value of 9.7 ppb was removed from service. (f) Value given is the highest indivual value measured during year. (g) Value given is the lowest monthly % compliance achieved. (h) Distribution samples with no detectable chlorine residual undergo further analysis to ensure compliance with microbiological water quality regulations. (i) E. Coli was detected in one routine sample. There was no MCL violation, as the detection was not confirmed by 3 repeat samples taken in accordance with the Total Coliform Rule. (j) Value given is the maximum % positive of any month during 2015. (k) Range is based on all individual sample values from 2015. (l) Average is the highest Locational Running Annual Average, which is higher than the range due to the inclusion of 2014 data in calculations.

2 Regulated for Drinking Water Aesthetics - Secondary MCL

Constituent	Units	Year Sampled[a]	State or Federal Goal PHG	Highest Amount Allowed MCL	Water Treatment Plants		Wells		Typical Sources
					Range	Average	Range	Average	
Chloride	ppm	2011 - 2015	NA	500	5 - 7	6	7 - 66	37	Erosion or leaching of natural deposits
Specific Conductance	µS/cm	2011 - 2015	NA	1600	96 - 148	122	305 - 691	425	Substances that form ions when in water
Sulfate	ppm	2011 - 2015	NA	1000	65 - 99	11	5 - 31	11	Erosion or leaching of natural deposits
Total Dissolved Solids	ppm	2011 - 2015	NA	500	9-13	82	239 - 430	304	Erosion or leaching of natural deposits

Constituent	Units	Year Sampled	State or Federal Goal PHG	Highest Amount Allowed MCL	Distribution System		Typical Sources
					Range	Average	
Color	color units	2015	NA	15	1 - 4	1	Naturally occurring organic materials
Turbidity	NTU	2015	NA	5	0.06 - 0.91	0.13	Soil runoff

3 Constituents With No Established MCL

Unregulated constituent monitoring helps determine where certain water constituents occur and whether they should be regulated

Constituent	Units	Year Sampled	Surface Water		Groundwater		Distribution System	
			Range	Average	Range	Average	Range	Average
Androstene	ppb	2014	ND - 0.00034	ND	ND	ND	NA	NA
Chlorate	ppb	2014	ND	ND	ND	ND	ND - 61	ND
1,4-dioxane	ppb	2014	ND	ND	ND - 0.2	ND	NA	NA
Molybdenum	ppb	2014 - 2015	ND	ND	ND	ND	ND - 1	ND
Strontium	ppb	2014 - 2015	48 - 130	76	180 - 430	273	48 - 370	192
Testosterone	ppb	2014	ND - 0.00026	ND	ND	ND	NA	NA
Vanadium	ppb	2014 - 2015	0.4 - 3	1.4	15 - 41	25	0.4 - 38	14

4 Other Parameters of Interest to Customers

Constituent	Units	Year Sampled[a]	Surface Water		Ground Water	
			Range	Average	Range	Average
Alkalinity	ppm	2011 - 2015	27 - 52	40	90 - 210	139
Bicarbonate Alkalinity	ppm	2011 - 2015	27 - 50	39	90 - 210	139
Calcium	ppm	2011 - 2015	15 - 23	19	15 - 43	26
Hardness	ppm	2011 - 2015	40 - 62	51	86 - 260	153
Magnesium	ppm	2011 - 2015	2 - 5	4	9 - 37	19
Sodium	ppm	2011 - 2015	3 - 7	5	18 - 36	27

WATER QUALITY REGULATIONS

In order to ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (USEPA) and the California State Water Resources Control Board (State Board) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Department regulations also establish limits for contaminants in bottled water that must provide the same protection for public health.

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 the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and it can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

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

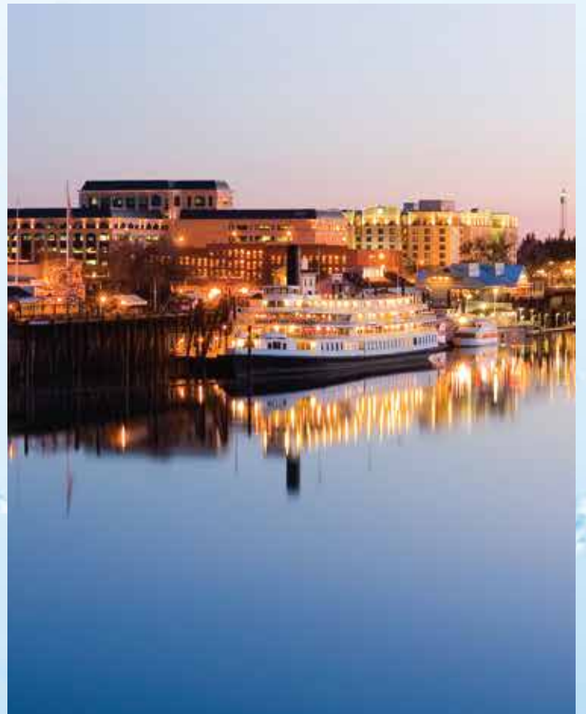
Inorganic contaminants, such as salts and metals, that can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.

Pesticides and herbicides, that may come from a variety of sources such as agriculture, urban stormwater 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 stormwater runoff, agricultural applications and septic systems.

Radioactive contaminants, that can be naturally-occurring or be the result of oil and gas production and mining activities.

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 1-800-426-4791.



SACRAMENTO'S WATER SOURCE ASSESSMENT

The City of Sacramento has two independent water sources. Our primary water source is river water from the American and Sacramento Rivers, which provides 84 percent of our water supply. Groundwater provides the remaining 16 percent. Assessments of potential contaminating activities for the City's Sacramento River and American River water sources were most recently completed in 2016 and 2013 respectively. These reports indicated that both rivers are most vulnerable to contaminants from recreational activities and that the Sacramento River is also most susceptible to agricultural contaminants. The City of Sacramento, along with several other water utilities, updates assessments of the river water sources every five years.

An assessment of the City's groundwater wells was completed in December 2002. Due to the proximity to potential contaminant sources, the wells north of the American River are considered most vulnerable to sewage collection systems, leaking underground storage tanks, known contaminant plumes, agricultural drainage, gas stations, dry cleaners, metal plating and chemical processing storage facilities, electrical/electronic manufacturing, and automobile repair and body shops. Wells south of the American River are considered vulnerable to leaking underground storage tanks and sewage collection systems.

Copies of the complete assessments are available for review at the City of Sacramento, Department of Utilities, 1395 35th Avenue, or call 916-808-5454 to request a summary of the assessments.

WHAT YOU SHOULD KNOW ABOUT LEAD

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 Sacramento Department of Utilities 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 cooking or drinking. 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.

POPULATIONS WITH LOW RESISTANCE

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/Centers 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).

CRYPTOSPORIDIUM

Cryptosporidium is a microbial pathogen found in surface water throughout the U.S. Although filtration removes cryptosporidium, the most commonly-used filtration methods cannot guarantee 100-percent removal. Our monitoring indicates the presence of these organisms in our source water in one out of 18 samples. The City's treatment process ensures that the 2-log removal treatment technique MCL required by regulation is met. Current test methods do not allow us to determine if the organisms are dead or if they are capable of causing disease. Ingestion of cryptosporidium may cause cryptosporidiosis, an abdominal infection. Symptoms of infection include nausea, diarrhea and abdominal cramps. Most healthy individuals can overcome the disease within a few weeks; however, immuno-compromised people, infants and small children, and the elderly are at greater risk of developing life-threatening illness. We encourage immuno-compromised individuals to consult their doctor regarding appropriate precautions to take to avoid infection. Cryptosporidium must be ingested to cause disease, and it may be spread through means other than drinking water.

CYANOBACTERIA

Cyanobacteria, common to freshwater ecosystems, can under certain conditions form scum or "blooms" at the surface of a water body. These blooms are capable of producing compounds, some of which can be harmful to human health and others which affect the taste and odor of drinking water. While none of these compounds are presently regulated in drinking water, the City of Sacramento did voluntarily monitor for several of them during 2015.

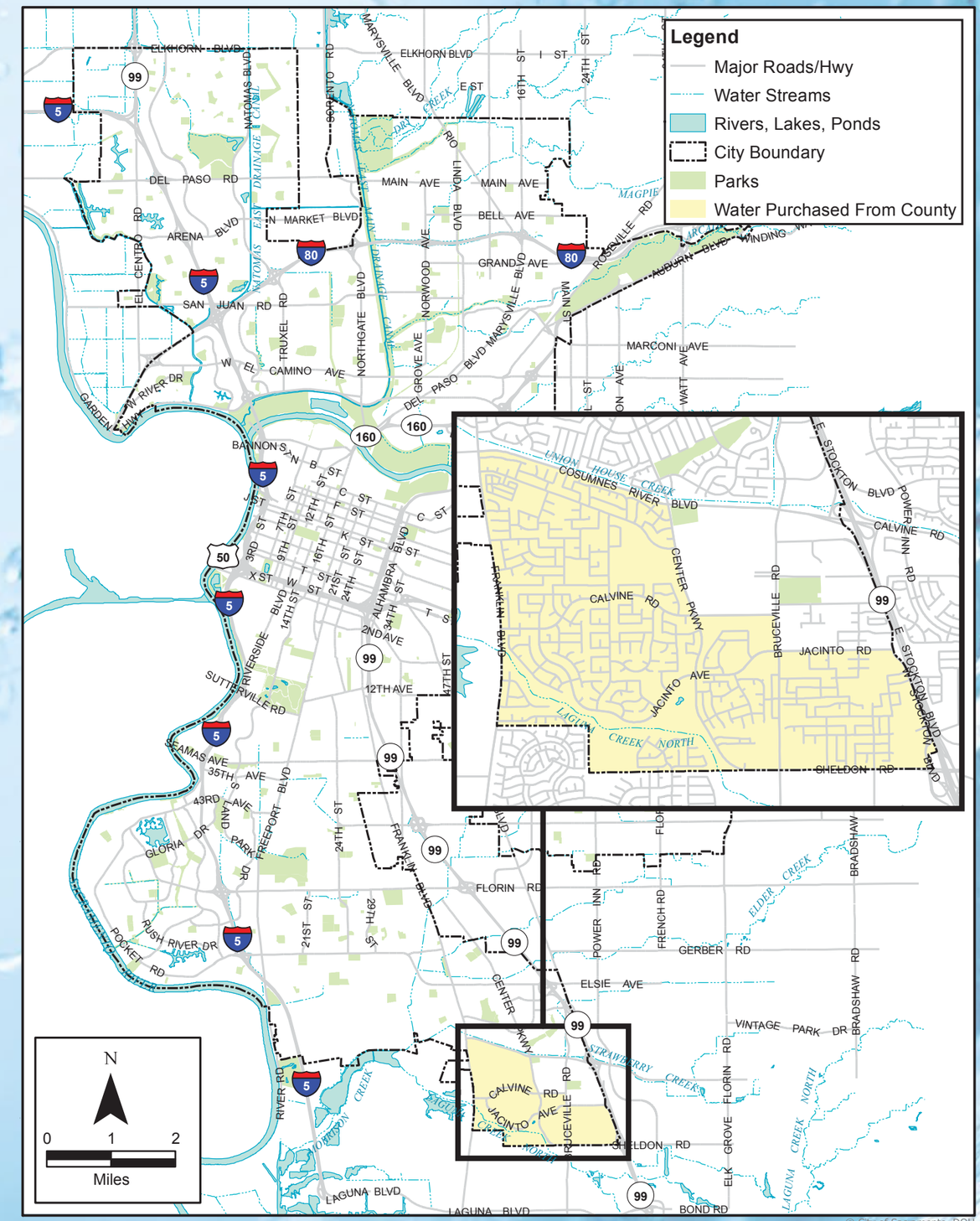
Microcystins and cylindrospermopsin, which were subject to USEPA Health Advisories, were monitored throughout 2015 but were not detected. Geosmin and 2-Methylisoborneol (MIB) are considered an aesthetic issue; they can give water an earthy, musty taste, even at very low levels and are not removed by conventional treatment processes. Geosmin levels ranged between non-detect and 26 parts per trillion while MIB results ranged between non-detect and 8.3 parts per trillion in our source water.

Sacramento County Water

The City of Sacramento purchased water from Sacramento County Water Agency (SCWA) for a period of 90 days from 12/31/14 to 4/2/15. This water was served to customers in the area highlighted in yellow in the map to the right. We use chlorine to control pathogens in drinking water; however, chlorine is also known to combine with natural organic matter in the water to form disinfection byproducts (DBPs) such as trihalomethanes (THMs). THMs are regulated in drinking water based on evidence that cancer risk is increased with exposure to elevated levels of THMs over an average lifespan of 70 years. In winter of 2014, it was determined that the highlighted area was at risk for receiving elevated levels of trihalomethanes during the next quarter. In light of this information, the decision was made to obtain water for this area from SCWA for the next 90 days. Because SCWA's water is primarily sourced from groundwater, it is not as susceptible to DBP formation. Additional monitoring performed during this period confirmed that DBP levels were lowered. The City is in the process of establishing a new potable groundwater well for this area, which is expected to mitigate seasonal DBP concerns. For customers in the affected area, the following tables from SCWA show SCWA's water quality information for 2015.

LOCATION MAP

Water Purchased from County



SACRAMENTO COUNTY WATER AGENCY

2015 WATER QUALITY REPORT - LAGUNA / VINEYARD / CCE / GRANTLINE 99 (See Note #1)

DETECTED PRIMARY STANDARDS - Mandatory Health-Related Standards
Established by the State Water Resources Control Board (State Board)

CONSTITUENT	SAMPLE DATE	UNITS	PHG or (MCLG) or [MRDLG]	MCL OR [MRDL]	MAJOR SOURCES IN DRINKING WATER	SURFACE WATER (see #2) RANGE (LO-HI)	SURFACE WATER (see #2) WEIGHTED AVERAGE	GROUNDWATER RANGE (LO-HI)	GROUNDWATER WEIGHTED AVERAGE
INORGANIC CONTAMINANTS									
Arsenic	2007 - 2015	PPB	0.004	10	Erosion of natural deposits; runoff from orchards; glass and electronics production wastes.	ND - 3.3	ND	ND - 6.3	ND
Barium	2007 - 2015	PPM	2	1	Discharges of oil drilling wastes and from metal refineries; erosion of natural deposits.	ND	ND	ND - 0.39	ND
Chromium (Total Cr)	2014 - 2015	PPB	(100)	50	Discharge from steel and pulp mills and chrome plating; erosion of natural deposits.	ND	ND	ND - 11	ND
3 Hexavalent Chromium	2006 - 2015	PPB	0.02	10	Discharge from electroplating factories, leather tanneries, wood preservation, chemical synthesis, refractory production, and textile manufacturing facilities; erosion of natural deposits.	ND	ND	ND - 8.9	1.4
Fluoride (Natural Source)	2014 - 2015	PPM	1	2	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories.	ND	ND	ND - 0.4	0.1
Nitrate (as NO3)	2014 - 2015	PPM	45	45	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits.	ND	ND	ND - 15	ND
Nitrate + Nitrite as Nitrogen (N)	2006 - 2015	PPB	10000	10000	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits.	ND	ND	ND - 3400	431
REGULATED ORGANIC CHEMICALS									
4 Total Trihalomethanes	2006 - 2015	PPB	n/a	80	Byproduct of drinking water disinfection.	ND	ND	ND - 52	0.35
RADIOACTIVE CONTAMINANTS									
Gross Alpha Activity	2005 - 2015	pCi/l	(0)	15	Erosion of natural deposits.	ND	ND	ND - 6.1	ND
5 Uranium	2005 - 2015	pCi/l	0.43	20	Erosion of natural deposits.	ND	ND	ND - 6.7	ND
Radium 226	2005 - 2009	pCi/l	0.05	n/a	Erosion of natural deposits.	ND	ND	ND - 2.42	ND
Radium 228	2005 - 2009	pCi/l	0.019	n/a	Erosion of natural deposits	ND	ND	ND - 3.18	ND
DISTRIBUTION SYSTEM						**RANGE**		**AVERAGE**	
Chlorine Residuals	2015	PPM	[4]	[4.0]	Drinking water disinfectant added for treatment.	0.87 - 1.3		1.12	
Total Trihalomethanes	2015	PPB	n/a	80	Byproduct of drinking water disinfection.	ND - 41		20.6	
6 Haloacetic Acids	2015	PPB	n/a	60	Byproduct of drinking water disinfection.	ND - 26		11.3	
7 Fluoride (Treated - Distribution)	2015	PPM	1	2	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories.	0.64 - 0.79		0.72	
8 Control of DBP Precursors (TOC)	2015	PPM	n/a	TT	Various natural and manmade sources	0.89 - 1.5		1.1	
MICROBIOLOGICAL CONTAMINANTS						**LEVEL FOUND**			
9 Total Coliform Bacteria	2015	% of Positive Samples	(0)	> 5% of Monthly Samples are Positive	Naturally present in the envirionment.	0.81%			
			n/a	TT = 1 NTU		0.171 NTU			
10 Turbidity	2015	NTU	n/a	TT = 95% of Samples ≤ 0.3 NTU	Soil Runoff	100%			

SECONDARY STANDARDS - Aesthetic Standards Established by the State Water Resources Control Board (State Board)	SAMPLE DATE	UNITS	PHG or (MCLG) or [MRDLG]	MCL OR [MRDL]	MAJOR SOURCES IN DRINKING WATER	SURFACE WATER RANGE	SURFACE WATER WTD. AVG.	GROUNDWATER RANGE	GROUNDWATER WTD. AVG.
Color	2007 - 2015	Units	n/a	15	Naturally-occurring organic materials.	ND	ND	ND - 5	2.9
11 Iron	2007 - 2015	PPB	n/a	300	Leaching from natural deposits; industrial wastes.	ND	ND	ND - **400**	ND
12 Manganese	2007 - 2015	PPB	n/a	50	Leaching from natural deposits.	ND	ND	ND - **300**	ND
Odor-Threshold	2007 - 2015	Units	n/a	3	Naturally-occurring organic materials.	ND	ND	ND - 3	1
13 Turbidity	2007 - 2015	Units	n/a	5	Soil runoff.	1.8 - 3.2	2.5	ND - 0.54	0.1
Zinc	2007 - 2015	PPM	n/a	5	Runoff/leaching from natural deposits; industrial wastes.	ND	ND	ND - 0.08	ND
Total Dissolved Solids	2007 - 2015	PPM	n/a	1000	Runoff/leaching from natural deposits.	97 - 120	109	160 - 330	211
Specific Conductance (E.C.)	2007 - 2015	umhos/cm	n/a	1600	Substances that form ions when in water; seawater influence.	150 - 200	175	200 - 520	279
Chloride	2007 - 2015	PPM	n/a	500	Runoff/leaching from natural deposits; seawater influence.	6.4 - 7.8	7.1	3 - 200	13
Sulfate	2007 - 2015	PPM	n/a	500	Runoff/leaching from natural deposits; industrial wastes.	5 - 7.1	6.1	ND - 11	2
Aggressive Index	2005 - 2009	AI	n/a	non-corrosive		11 - 12	11.5	11 - 12.2	12
Corrosivity (Langelier Index at 60° C)	2005 - 2009	LI	n/a	non-corrosive	Natural or industrially-influenced balance of hydrogen, carbon and oxygen in the water; affected by temperature and other factors.	-0.7 / -0.21	-0.46	-.09 / 0.7	-0.2
OTHER CONSTITUENTS ANALYZED									
pH	2007 - 2015	Units	n/a	MO		7.9 - 8.2	8.0	7.9 - 8.2	8.1
Total Hardness (as CaCO3)	2007 - 2015	PPM	n/a	MO	Due to chemicals naturally occuring in the soil below the earth's surface.	59 - 74	67	13 - 420	71
14 Total Hardness (as CaCO3)	2007 - 2015	Grains	n/a	MO	Due to chemicals naturally occuring in the soil below the earth's surface.	3.5 - 4.3	3.9	0.8 - 24.6	4.2
Total Alkalinity (as CaCO3)	2007 - 2015	PPM	n/a	MO	Due to chemicals naturally occuring in the soil below the earth's surface.	51 - 81	69	88 - 230	118
Bicarbonate (as HCO3)	2007 - 2015	PPM	n/a	MO	Due to chemicals naturally occuring in the soil below the earth's surface.	63 - 99	85	100 - 280	136
Sodium	2007 - 2015	PPM	n/a	MO	Due to chemicals naturally occuring in the soil below the earth's surface.	10 - 15	13	15 - 63	30
Calcium	2007 - 2015	PPM	n/a	MO	Due to chemicals naturally occuring in the soil below the earth's surface.	12 - 15	14	3.3 - 97	14
Magnesium	2007 - 2015	PPM	n/a	MO	Due to chemicals naturally occuring in the soil below the earth's surface.	7.1 - 8.7	7.9	ND - 42	8

LEAD & COPPER (See Note 15)

CONTAMINANT	SAMPLE DATE	UNITS	PHG or (MCLG)	ACTION LEVEL	MAJOR SOURCES IN DRINKING WATER	NUMBER OF SAMPLES	90TH % LEVEL DETECTED	NUMBER EXCEEDING AL
Lead	2013	PPB	(0.2)	15	Internal corrosion of household water plumbing systems; discharges from industrial manufactures; erosion of natural deposits.	51	ND	0
Copper	2013	PPM	(0.3)	1.3	Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives.	51	0.17	0

UNREGULATED CONTAMINANT MONITORING RULE (UCMR 3) - Established by USEPA (See Note 16)

CHEMICAL	SAMPLE DATE	UNITS	Notification Level	HEALTH EFFECTS LANGUAGE	DISTRIBUTION SYSTEM RANGE	DISTRIBUTION SYSTEM AVERAGE	SURFACE WATER RANGE	SURFACE WATER WTD. AVG.	GROUNDWATER RANGE	GROUNDWATER WTD. AVG.
Molybdenum	2013 - 2014	PPB	n/a		ND	ND	ND	ND	ND - 2	0.3
Strontium	2013 - 2014	PPB	n/a		68 - 140	107	68 - 140	101	40 - 500	218
Vanadium	2013 - 2014	PPB	50	The babies of some pregnant women who drink water containing vanadium in excess of the notification level may have an increased risk of developmental effects, based on studies in laboratory animals.	ND - 4	ND	ND	ND	ND - 34	15
17 Chlorate	2013 - 2014	PPB	800		100 - 300	157	100 - 300	163	31 - **1200**	179
Bromomethane	2013 - 2014	PPB	n/a		NA	NA	ND	ND	ND - 2.1	ND
Chloromethane	2013 - 2014	PPB	n/a		NA	NA	ND	ND	ND - 1	ND

EXCEEDENCE:
Last year, we conducted more than 40 test to analyze over 40 contaminants per test. The following contaminants exceeded the secondary standards maximum contaminant level.

CONTAMINANT:	SAMPLE DATE:	UNITS	MCL	RESULT	LOCATION:	QUALITY EFFECTS / SOURCE OF CONTAMINANT:
Iron	7/27/15	PPB	300	400	Wildhawk WTP (WT-03)	Leaching from natural deposits.
Manganese	11/23/15	PPB	50	300	East Park WTP (WF-03)	Leaching from natural deposits.

LEGEND

AI.....Aggressive Index
AL.....Regulatory Action Level
LI.....Langelier Index
MFL.....Million Fibers Per Liter
MO.....Monitored Only
MPN.....Most Probable Number
NA.....Not Analyzed
n/a.....Not Applicable
ND.....Non Detectable
NL.....Notification Level
NR.....Not Required
NTU.....Nephelometric Turbidity Units
pCi/l.....Pico Curies per liter
PPB.....Parts per billion (ug/l)
PPM.....Parts per million (mg/l)
PPT.....Parts per trillion, or Nanograms per liter
TOC.....Total Organic Carbon
TT.....Treatment Technique
WTP.....Water Treatment Plant

DEFINITIONS

Average: The annual average of all tests for a particular substance.
Detection Limit for Reporting: The limit at or above which a contaminant is detected.
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. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.
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 the U.S. Environmental Protection Agency.
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.
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.
Primary Drinking Water Standards (PDWS): MCLs and MRDLs for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements
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.
Range (Lo - HI): The range between the lowest and highest values of a specific substance measured throughout the course of the year.
Regulatory Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.
Treatment Technique (TT): A required process intended to reduce the level of a contaminant in drinking water.
Weighted Average (WTD AVG): An average of water quality samples in which each sample is assigned a weight. Each sample's contribution (or weight) is based on the amount of water the corresponding water source produces for the whole system. Instead of each of the sample results contributing equally to the final average, some of the results contribute more than others.

NOTES:

1.....The state allows SCWA to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently.
2.....Surface Water is from SCWA's Vineyard Surface Water Treatment Plant (VSWTP). VSWTP came online in September 2011 and provided 27.23% of the water distributed to customers in the Laguna, Vineyard, CCE & Grantline-99 area in 2015. SCWA received no water from the City of Sacramento. For more information regarding the City of Sacramento's water quality data, go online (http://portal.cityofsacramento.org/Utilities/Education/water-quality) or call (916) 808-5371 or (916) 808-5426.
3.....The State of California has set 10 PPB as the MCL for chromium-6, beginning July 1, 2014. Chromium-6 is one of the forms of chromium making up total chromium which has a California MCL of 50 PPB. For more information about Chromium-6, please visit the State Water Resources Control Board's website: www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Chromium6.
4.....Total Trihalomethanes = sum of results for Chloroform, Bromoform, Dibromochloromethane, & Bromodichloromethane.
5.....The State Water Resources Control Board allows the measurement of gross alpha radiation as a surrogate for Uranium.
6.....Haloacetic Acids = sum of results for Bromochloroacetic acid, Dibromoacetic acid, Dichloroacetic acid, Monochloroacetic acid, & Trichloroacetic acid
7.....The Laguna-Vineyard water system's facilities are all fluoridated and the system is currently at optimal levels. The Optimal Fluoride Level and Control Range for the system is based on an annual average of maximum daily air temperatures in the Laguna-Vineyard area. In accordance with Title 22, Section 64433.2 of the State Water Resources Control Board (State Board) regulations, the Optimal Fluoride Level is 0.8 mg/L and the Fluoride Control Range is from 0.7 mg/L - 1.3 mg/L. Information about fluoridation, oral health, and current issues is available from www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Fluoridation.shtml.
8.....Only Surface water sources must monitor for Disinfection By-Product precursors. Treatment Technique is not required if the raw or treated water TOC is < 2 mg/L.
9.....On Systems that collect more than 40 samples per month, the Total Coliform Bacteria MCL is 5% of the monthly samples return total coliform positive, per the Total Coliform Rule (TCR). A positive TC sample triggers collection of samples for E. coli at the source (i.e., groundwater wells) per the federal Ground Water Rule (GWR). In 2015, all samples taken per the GWR returned negative (absent) for E. coli.
10.....Turbidity is a measure of the cloudiness of the water. 0.171 NTU is the highest individual measurement in 2015. 100% is the lowest percentage of monthly samples which were in compliance below the 0.3 NTU range. SCWA monitors turbidity because it is a good indicator of the effectiveness of its filtration systems. Only surface water sources must comply with PDWS for turbidity.
11.....Iron exceeded the MCL of 300 PPB; however the weighted average for iron in the Laguna/ Vineyard/ CCE/ Grantline99 water system is Non-Detect. Small quantities of iron are naturally found in some water sources. The presence of iron in drinking water may produce an undesirable taste, stain laundry and plumbing fixtures, and promote microbial growth in water distribution systems.
12.....Manganese exceeded the MCL of 50 PPB; however, the re-sample taken a week later returned Non-detect. The weighted average for manganese in the Laguna/ Vineyard/ CCE/ Grantline99 water system is Non-Detect. Water naturally contains small amounts of manganese. Manganese in food or drinking water presents few adverse effects; however, elevated concentrations of manganese in water may stain laundry, produce an undesireable odor and taste, contribute to microbial growth and turbidity, or form a coating inside pipes which can peel off as solid precipitates.
13.....This reading of turbidity is taken at the raw source for surface water (Freeport Regional Water Project) and source water for the groundwater.
14.....Hardness units are PPM. Most commercial companies use "grain" units. Conversion: 17.1 PPM = 1 grain
15.....The levels for Lead and Copper concentrations were obtained from the 90th percentile of fifty-one (51) tap water samples taken throughout the Laguna-Vineyard system. The MCLs for lead and copper are set at "Action Levels." None of the samples in Laguna-Vineyard exceeded the Action Levels for Lead and Copper. Please refer to the educational information on Lead in drinking water.
16.....Unregulated Contaminants Monitoring Rule (UCMR 3 / 2013 - 2015 Monitoring) with notification Levels help to determine where certain contaminants occur and whether they need to be regulated.
17.....SCWA completed its UCMR3 Monitoring Program between 2013-2014, within that time, one well exceeded the Notification Level (NL) for chlorate: Equine Well (W-63). Chlorate is an anion that can enter drinking water from several potential sources, including from hypochlorite or chlorine dioxide disinfectant use, ozone oxidation of hypochlorite or chlorite and source water contamination from pesticide runoff or papermill discharges. This well has since been taken off-line due to its chlorate exceedance and for repairs. A confirmation sample will be taken when all repairs have been completed for this well source.

In 2015, SCWA received surface water from its Vineyard Surface Water Treatment Plant (<28 %).

For more detailed water quality information, call (916) 875-5815.

State Mandated Information for Arsenic & Lead:

Arsenic:
While your drinking water meets the federal and state standard for arsenic, it does contain low levels of arsenic. The arsenic standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. The U.S. Environmental Protection Agency 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.

Lead:
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 Sacramento County Water Agency 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 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 (1-800-426-4791) or at *http://www.epa.gov/safewater/lead*.

Cryptosporidium:
Cryptosporidium is a microbial pathogen found in surface water (e.g., rivers, lakes and streams) throughout the United States. SCWA's raw surface water source is the Sacramento River. Our monitoring of the source water indicates the presence of these organisms. From 2005 to 2007, SCWA took monthly Cryptosporidium samples. Of the 24 samples taken, only four detected the pathogen in the raw water. The results ranged from non-detect (ND) to 0.2 Oocycsts/ 10 liters. The average analysis result was 0.2 Oocycsts/ 10Liters. SCWA's surface water is highly treated with a thorough disinfection and filtration process to remove Cryptosporidium before distribution to the customer; however, the most commonly used filtration methods cannot guarantee 100 percent removal. Ingestion of Cryptosporidium may cause cryptosporidiosis, and abdominal infection, the symptoms of which include nausea, cramps, diarrhea, and associated headaches. We encourage immune-compromised individuals to consult their doctor regarding appropriate precautions to take to avoid infection.

City of
SACRAMENTO
Department of Utilities

For water quality questions or to report a concern

City of Sacramento Department of Utilities
311 or 916-264-5011
(24 hours a day, 7 days a week)
www.cityofsacramento.org/utilities

Additional water quality information is available

USEPA Safe Drinking Water Hotline
(800) 426-4791
http://water.epa.gov/drink/

Notice of opportunity for public participation

The Sacramento City Council holds public meetings most Tuesdays at 6 p.m. in the City Council Chambers at 915 I Street, Sacramento. You can access Council agendas at www.cityofsacramento.org/clerk.

本報告有關於您的飲用水的重要資料。請找人為您翻譯，或與能明白該報告的人交談。

Phúc trình này có các chi tiết quan trọng về nước uống của quý vị. Hãy nhờ người dịch cho quý vị, hoặc hỏi người nào hiểu rõ các chi tiết này.

Este informe contiene información importante sobre el agua que usted bebe. Pida a alguien que se lo traduzca o hable con alguien que lo entienda.

ລາຍງານນີ້ມີຂໍ້ມູນສຳຄັນກ່ຽວກັບນ້ຳປະປາຂອງທ່ານ. ຈົ່ງໃຫ້ຄົນອື່ນແປຄວາມໃຫ້ທ່ານ, ຫລືໃຫ້ປຶກສາກັບຄົນໃດຄົນໜຶ່ງທີ່ເຂົ້າໃຈເລື່ອງ.

この報告書には私達の飲料水に関する重要な情報が記載されています。貴方のために翻訳してくれる人、あるいは内容を理解し説明してくれる人を見つけてください。

Tsab ntawv (report) no muaj cov kev qhia tseemceeb txog koj cov dej haus. Thov ib tus tibneeg pab txhais rau koj lossis nrog tej tus tibneeg uas totaub txog tsab ntawv no tham.

Ang report na ito ay naglalaman ng mahalagang impormasyon tungkol sa tubig na inyong iniinum. Magpatulong sa taong maaring magsalin, o makipag-usap sa taong nakakaunawa nito.

Данный рапорт содержит важную информацию о вашей питьевой воде. Переведите его или проконсультируйтесь с тем, кто его понимает.

CITY OF SACRAMENTO · FOUNDED IN 1849

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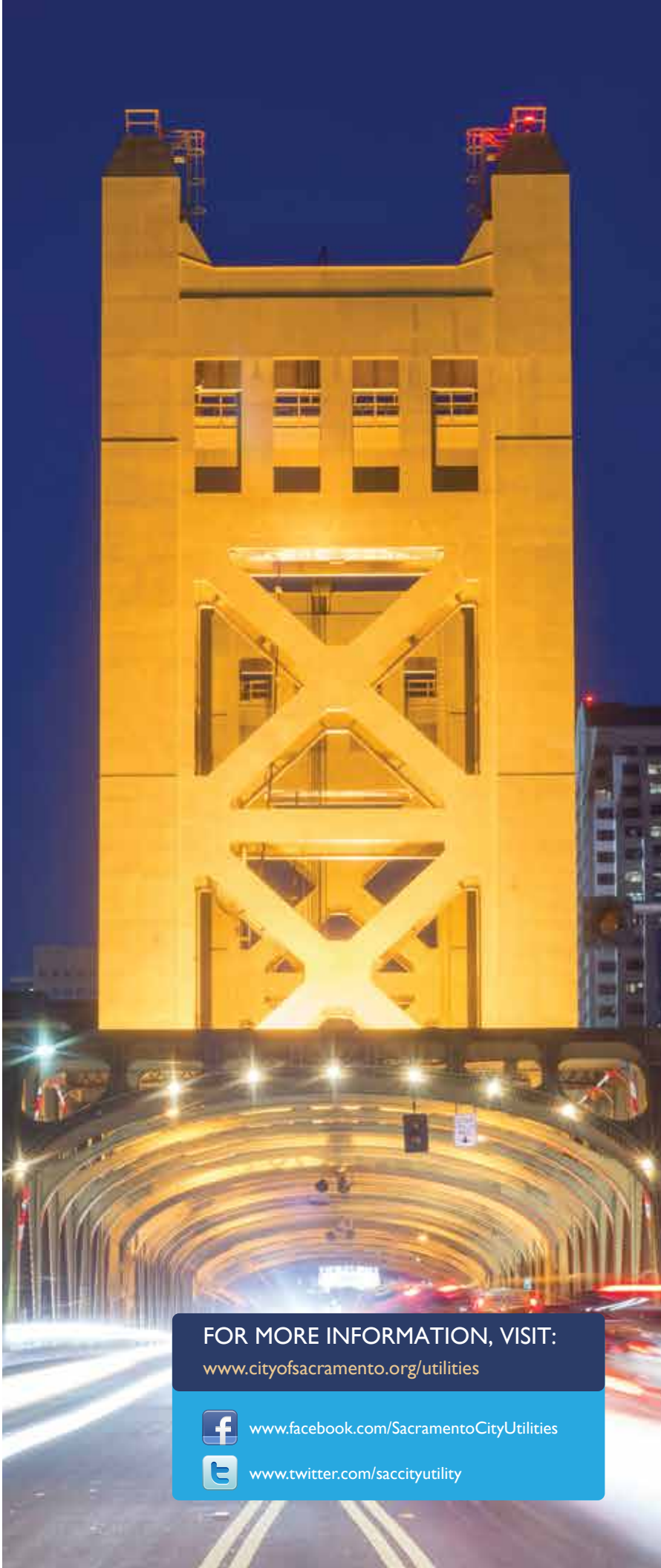
Peb hais lus Hmoob · Chúng tôi nói tiếng Việt



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