

2017 City of Davis Water Quality Report

(Public Water System #5710001)

Important Information about Your Water Quality

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

此份有关你的食水报告,内有重要资料和讯息,请找他人帮你翻译及解释清楚。



Dear Davis Water Customer,

Last year was a banner year for the City as it was the first year that we were able to utilize our full surface water allotment of 10.2 million gallons per day. During 2017, we delivered 3.23 billion gallons of drinking water to the City. Of this amount, 87% was surface water from the Sacramento River.

In early 2017, some intermediate wells did not meet all state drinking water standards because of the then existing Hexavalent Chromium standard. That standard was repealed in September and now the City's source waters meet all drinking water standards. The deep aquifer wells typically used to augment surface water continue to meet all standards.

This report will go into more details about the quality of your drinking water and the source of your drinking water. On behalf of the staff of Public Works and other departments, thank you for partnering with us to continue to conserve and preserve our precious water resources.

Sincerely,
Bob Clarke, Public Works Department Director

Our Continuing Commitment to You

Our staff of highly trained and certified operators are available around the clock to provide service for any emergency related to the City's water supply. Through teamwork, professionalism, and hard work, the City of Davis Water Division provides drinking water that meets or exceeds all state and federal standards.

Water System Highlights

General information about this report and our water supply:

- This report contains updates and information about meeting all state and federal drinking water standards.
- Although only constituents that were detected in our water supplies are reported, our department conducts many routine tests and analyses beyond those presented in this report to monitor water quality.
- 2017 was the first full calendar year where the City utilized its full allotment of surface water, 10.2 million gallons per day.
- The City delivered 3.23 billion gallons of drinking water in 2017. Of this amount, 87% was surface water from the Sacramento River.
- The City connected a new groundwater supply well to the distribution system in August 2017.

To Our Water Customers

This report is prepared in accordance with the [United States Environmental Protection Agency \(USEPA\)](#) and the [State Water Resources Control Board](#) – Division of Drinking Water regulations under the [Safe Drinking Water Act](#) that requires water providers to report annual water quality information to their customers. This publication lists all constituents detected in your water supply and information about your water source, what it contains, how it compares to state and federal standards, and other related information.

For more information about this report, or for any questions relating to your drinking water, please contact Davis Public Works at PWWeb@CityofDavis.org or (530) 757-5686 and ask for Marie Graham, Heather Brown, Richard Tsai, or Stan Gryczko. If you ever have a problem with your water supply after hours, please call the non-emergency police number at (530) 747-5400.

Community Participation

The [Davis City Council](#) and the [Natural Resources Commission](#) (NRC) receive public comments at their regularly scheduled meetings. Please check the City's web site at [CityofDavis.org](#) or call (530) 757-5602 for Council dates or (530) 757-5686 for NRC dates.

Where Does Our Water Come From?

Surface Water

Since June 2016, the City has been delivering surface water from the Sacramento River.

Groundwater

During 2017, the City pumped water from 9 municipal wells. These wells draw water from aquifers beneath the City at depths ranging from 208 to 1,730 feet below ground surface. The groundwater is filtered naturally by sands and clays as it passes through geologic formations.

In 2017, the City responded to 252 leak checks and 194 water waste complaints



Distribution System Operations

The City's water distribution system delivers surface and groundwater to your tap. Surface water is taken in from the Sacramento River and is treated at the Regional Water Treatment Facility in Woodland. After treatment, the finished water is pumped into a transmission line and delivered to Davis. The City's allotment is 10.2 million gallons per day.

Drinking water is also supplied by groundwater wells located throughout Davis. These wells operate year round but primarily during the high demand months when usage exceeds our surface water allotment, typically late April to early November. Wells are operated periodically during the low demand months to ensure that they are exercised properly and for water quality testing.

The City's public works infrastructure consists of 191 miles of water lines, 5,385 main line valves, 1,749 fire hydrants, and 316 backflow assemblies.

Water Treatment Process

Groundwater: Each well has a designated chlorine tank that injects a 12.5 percent solution of liquid sodium hypochlorite at the well site. The City targets a dosage of 0.5 to 0.8 parts per million in the distribution system. No fluoride is added to the water. At Well 32, Manganese is removed from the source water before entering the distribution system.

Surface Water: Surface water from the Sacramento River is taken in at the Sacramento River Mile 70.5 marker (upstream of the I-5 bridge crossing at Veteran's Bridge) and pumped to the Regional Water Treatment Facility in Woodland. The raw water is treated by traditional surface water techniques, including flash mixing and granular media filtration to remove microorganisms and other contaminants. The finished water is dosed with chlorine and ortho-phosphate before it is delivered into the City's transmission line with a target residual of 1.0 ppm and 2.5 ppm, respectively.

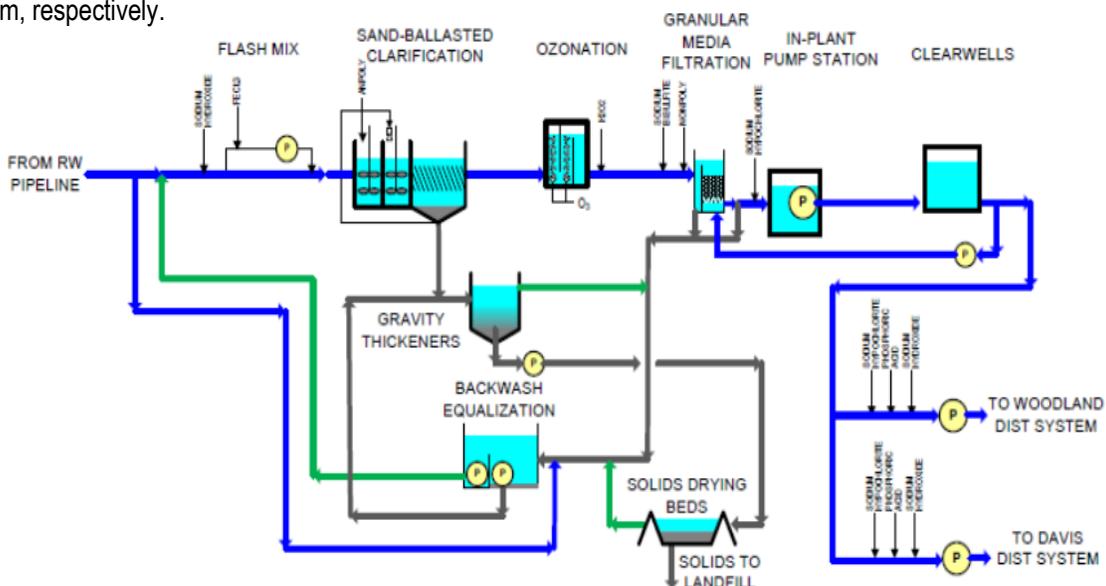
Source Water Assessment

Groundwater

A source water assessment for the City of Davis' groundwater wells was completed in 2002. The goal of this project was to determine the water system's vulnerability to possible sources of contamination. Our groundwater is most vulnerable to historic and present-day land use activities. These activities include agricultural and light industrial use. Additionally, the water source is vulnerable to naturally occurring contaminants such as selenium and chromium. Overall, there is a slight to moderate threat that the City's water source could become contaminated by these land use patterns and activities. For information on the summary of the assessment, contact City Water Quality Staff at (530) 757-5686 or e-mail PWWeb@cityofdavis.org.

Surface Water

The surface water assessment for the Sacramento River watershed was conducted by several agencies. The Sacramento River Watershed Sanitary Survey 2015 Update Report can be obtained at <https://www.wdcwa.com/project-history/>. The update stated that "Overall, the Sacramento River continued to provide good quality raw water. The raw water can currently be treated to meet all drinking water standards using conventional water treatment processes..." The report also identified eight key source water/watershed contaminant sources: Agricultural Drainage; Livestock; River Corridor and River Recreation; Homeless/Illegal Camping; Urban Runoff; Industrial NPDES Discharges; Wastewater Facilities; and Watershed Spills.



Schematic diagram of the surface water treatment process

Municipal Well 34

Well 34 is the City's newest groundwater well. The well depth is 1625 feet below ground surface (fbgs) and is screened between 712 and 1615 fbgs. The well is equipped with a variable frequency drive that allows the well to produce between 1700 and 2400 gallons per minute. The water from this well meets all drinking water standards and was accepted by the City in December 2017.



View of Well 34

Lead Sampling in Schools

The State Water Resources Control Board issued the City a permit amendment in early 2017. This amendment directed the City to take drinking water samples and test them for lead at any K – 12 school that requested this testing. The Davis Joint Unified School District (DJUSD) requested testing and the City conducted lead testing at fifteen schools during 2017. For more information about testing results, please contact the DJUSD.



Chromium Six

In 2014, the State established a primary drinking water standard for the previously unregulated contaminant, Hexavalent Chromium. A lawsuit was filed against the State and consequently on May 31, 2017, the court invalidated this rule. As of September 11, 2017, public water systems were no longer required to comply with this standard. The existing standard of 50 parts per billion (ppb) for Total Chromium still applies. For more information, visit:

https://www.waterboards.ca.gov/drinking_water/certlic/drinking_water/documents/chromium6/chrome_6_faqs.pdf.



View of East Area Tank

Long Term Water Use Efficiency

During the drought, many people in Davis instituted long-term changes in their water use by replacing turf areas with low-water use plantings, replacing older appliances and fixtures with water and energy efficient models, and making changes in everyday water use habits. Whether in a dry or wet year, there are actions we can take to increase long-term water use efficiency.

For more information on the State's long term water conservation framework, visit

https://www.water.ca.gov/LegacyFiles/wateruseefficiency/conservation/docs/20170407_EO_B-37-16_Final_Report.pdf.

For more information on water savings tips, information on water-wise landscaping, and links to helpful indoor and outdoor water use efficiency websites, visit www.SaveDavisWater.org.

The City delivered 3.23 billion gallons of drinking water in 2017



View of Elevated Storage Tank

Important Health Information

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

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 US EPA's Safe Drinking Water Hotline (1-800-426-4791).

What Does Our Water Contain?

The Safe Drinking Water Act requires all water purveyors to sample their source and treated water for biological, inorganic, organic, and radioactive constituents. The State Board allows systems to monitor for certain constituents less than once per year because the concentration of these contaminants do not change frequently.



Substances That Could Be in Water

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and groundwater. 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. In order to ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (U.S. EPA) and the State Water Resources Control Board (State Board) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. The State Board regulations also establish limits for contaminants in bottled water that provide the same protection for public health.

Contaminants That May Be Present in Source Water Include:

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

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

Pesticides and Herbicides that may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses;

Organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and which can also come from gas stations, urban storm water runoff, agricultural applications, and septic systems;

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



Definitions

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

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

MCLG (Maximum Contaminant Level Goal): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the USEPA.

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

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

NA: Not applicable.

NL (Notification Level): Health based advisory set by the Department for constituents without an MCL. This is not an enforceable standard, although requirements and recommendations may apply if detected above this level.

NS: No standard.

pCi/L (picocuries per liter): A measure of radioactivity.

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

PHG (Public Health Goal): The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the CA EPA.

ppb (parts per billion): One part substance per billion parts water (or micrograms per liter).

ppm (parts per million): One part substance per million parts water (or milligrams per liter).

SMCL (Secondary MCL): SMCLs are set to protect the odor, taste, and appearance of drinking water.

TT – Treatment Technique

µS/cm (microsiemens per centimeter): A unit expressing the amount of electrical conductivity of a solution.

CONSTITUENTS DETECTED IN OUR DRINKING WATER

DETECTION OF AN INORGANIC CONSTITUENT WITH A PRIMARY DRINKING WATER STANDARD	Unit	Regulatory Limits		Range Detected	Weighted Average	Major Sources in Drinking Water	
		MCL (AL) [MRDL]	PHG or (MCLG) [MRDLG]				
Arsenic	ppb	10	0.004	<2.0 – 7.3	<2	Erosion from natural deposits; runoff from orchards; glass & electrical production wastes	
Barium	ppm	1	(2)	<0.05 – 0.18	<0.05	Erosion from natural deposits; discharges of oil drilling wastes and from metal refineries	
Hexavalent Chromium*	ppb	10**	0.02	<0.25 - 53	0.5	Erosion from natural deposits; discharge from electroplating factories; leather tanneries, wood preservatives, chemical synthesis, refractory production and textile manufacturing facilities.	
Total Chromium*	ppb	50	(100)	<10 - 52	<10	Erosion from natural deposits; discharge from steel and pulp mills; chrome plating	
Fluoride	ppm	2.0	1	<0.1 - 0.41	<0.1	Erosion from natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories	
Lead	ppb	(15)	0.2	<1.0 - 11	<1.0	Internal corrosion of household water plumbing systems; discharges from industrial manufacturers; erosion of natural deposits	
Nickel	ppb	100	12	<10 - 57	<10	Erosion from natural deposits; discharge from metal factories	
Nitrate (as N)	ppm	10	10	<0.23 – 6	<0.23	Runoff from fertilizer, leaching from septic tanks and sewage, erosion from natural deposits	
Selenium	ppb	50	30	<2.0 - 37	<2	Erosion from natural deposits; discharge from petroleum, glass, and metal refineries; discharge from mines and chemical manufacturers; runoff from livestock lots	
ORGANIC CONSTITUENTS							
Total Trihalomethanes	ppb	80	NS	<0.50 – 9.5	6.9	By-product of water chlorination	
RADIOACTIVE CONSTITUENTS (TESTED IN 2015)							
Gross Alpha	pCi/L	15	(0)	<1.07 - 8.69	2.7	Erosion from natural deposits	
Gross Beta***	pCi/L	50	(0)	<2 – 7.72	4.4	Decay of natural and man-made deposits	
Combined Radium	pCi/L	5	(0)	<2 – 3.4	2.4	Erosion from natural deposits	
Uranium	pCi/L	20	0.43	1.2 - 3.4	<1	Erosion from natural deposits	
Sampled From the Distribution System	DISINFECTION BY-PRODUCTS			Range Detected	Maximum Concentration		
	Total Trihalomethanes	ppb	80	NS	4.7 – 37	N/A	By-product of water chlorination
	Total Haloacetic Acids	ppb	60	NS	1.5 - 10	N/A	By-product of water chlorination
	Residual Chlorine	ppm	[4.0]	[4.0]	0.05 – 1.4	N/A	By-product of water chlorination
	MICROBIAL RESULTS	% Positive	MCL	MCLG	Samples Collected		
Total Coliform Bacteria	0%	5%	0%	1006		Naturally occurring in the environment	

*Constituents in bold text were in exceedance, see below for more information.

**There is currently no MCL for Hexavalent Chromium. The previous MCL of 10 ppb was withdrawn on September 11, 2017.

***The State Water Resources Control Board considers 50 pCi/L to be the level of concern for beta particles.

DETECTION OF A CONSTITUENT WITH A SECONDARY DRINKING WATER STANDARD	Unit	SMCL	PHG	Range Detected	Weighted Average	Major Sources in Drinking Water
Chloride	ppm	500	NS	13 - 85	20	Runoff/leaching from natural deposits; seawater influence
Copper	ppb	1000	NS	<5 - 85	<5	Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Iron*	ppb	300	NS	<30 - 790	<30	Leaching from natural deposits; industrial wastes
Manganese*	ppb	50	NS	<10 - 54	<10	Leaching from natural deposits
Specific Conductance	µS/cm	1600	NS	203 - 1400	244	Substances that form ions when in water; seawater influence
Sulfate	ppm	500	NS	6 - 110	10	Runoff/leaching from natural deposits; industrial waste
Total Dissolved Solids	ppm	1000	NS	120 - 780	144	Runoff/leaching from natural deposits
Turbidity	Units	5	NS	<0.1 – 1.3	<0.1	Soil runoff
Zinc	ppb	5000	NS	<50 - 660	<50	Runoff/leaching from natural deposits; industrial wastes

*Constituents in bold text were in exceedance, see below for more information.

DETECTION OF A CONSTITUENT WITHOUT A DRINKING WATER STANDARD	Unit	Range Detected	Weighted Average
Alkalinity	ppm	63 - 550	81
Bicarbonate	ppm	63 - 550	80
Boron	ppb	<100 - 950	<100
Calcium	ppm	12 - 46	12
Carbonate	ppm	<3 - 14	<3
Hardness	ppm	55 - 510	60
Potassium	ppm	<2.0 - 2.6	<2.0
Magnesium	ppm	6 - 100	7
Sodium	ppm	20 - 120	28
pH	(No unit)	8.0 - 8.4	8.0



About Our Exceedances

The high range of Manganese, Iron, and Total Chromium were not considered violations because a violation occurs if the running annual average of the constituent exceeds the drinking water standards. The City monitored the wells that exceeded the Manganese and Total Chromium standards on a quarterly basis and as of December 31, 2017, the average was 43 parts per billion for Total Chromium at Well 27 and 45 ppb for Manganese at Well 33. The high levels of Iron were the first time that Iron was detected at two well sites. The City took these two wells off-line; one will be decommissioned and the other will be designated as stand-by.

If you have any additional questions, please contact the Public Works Department at 530-757-5686 or visit CityofDavis.org.

Lead in Drinking Water

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

Lead and Copper Rule

The City completed sampling requirements for the Lead and Copper Rule in early 2017. Sixty-four drinking water samples were collected from private residences and were tested for Lead and Copper. The federal government has established an Action Level of 15 parts per billion (ppb) for Lead and 1300 ppb for Copper. The 90th percentile for Lead was not detected and the 90th percentile for Copper was 80 ppb.

Tap water samples were also collected from seventy-six Davis homes in 2016. The 90th percentile for Lead was 5.9 ppb and 200 ppb for Copper.

Arsenic in Drinking Water

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 US EPA 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.

Nitrate in Drinking Water

Nitrate in drinking water at levels above 45 mg/L is a health risk for infants of less than six months of age. Such nitrate levels in drinking water can interfere with the capacity of the infant's blood to carry oxygen, resulting in a serious illness; symptoms include shortness of breath and blueness of the

Nitrate in Drinking Water cont.

skin. Nitrate levels above 45 mg/L may also affect the ability of the blood to carry oxygen in other individuals, such as pregnant women and those with certain enzyme deficiencies. If you are caring for an infant, or if you are pregnant, ask advice from your health care provider.

Testing for Cryptosporidium

Cryptosporidium is a microbial pathogen found in surface water throughout the United States. Cryptosporidium was detected in the untreated surface water eight times in 2017. However, the Regional Water Treatment Facility is designed to remove and/or deactivate these pathogens to the level that meets all drinking water standards.

Unregulated Contaminant Monitoring Rule 3

As part of the Safe Drinking Water Act Amendments of 1996, the U.S. Environmental Protection Agency (EPA) is required to create a list every five years of up to 30 unregulated contaminants to be monitored in public water supplies. This list is derived from the Candidate Contaminant List (CCL) and represents compounds for which the EPA may consider as candidates for regulation. The City sampled selected wells and sampling stations in 2014 and 2015 for organic and inorganic compounds. The table below lists the unregulated constituents that were detected in the source water and in the distribution system. Unregulated Contaminant Monitoring Rule 3 results must be reported for five years after the first sampling event.

Please contact the Public Works Department Works at PWWeb@CityofDavis.org or (530) 757-5686 if you have any questions about these results.

Unregulated Contaminants Rule 3 Results

Location	Unit	Total Chromium Jan. /Aug.	Molybdenum Jan. /Aug.	Strontium Jan. /Aug.	Vanadium Jan. /Aug.	Hexavalent Chromium Jan. /Aug.	Chlorate Jan. /Aug.	Chloromethane* Jan. /Apr. /Aug.
Well 14**	ppb	8.2/9.1	2.4/1.9	520/600	13/13	7.4/8.7	870/160	ND/NA/ND
Well 20	ppb	4.6/38	1.8/1.4	670/660	9.4/12	7/38	74/240	2.2/ND/ND
Well 21	ppb	6.4/6.1	2.4/1.7	790/1100	11/11	6.1/5.3	54/120	ND/NA/ND
Well 22	ppb	3.8/12	2.9/2.5	610/700	15/15	3.9/11	62/94	ND/NA/ND
Well 24***	ppb	31/8.4	1.6/1.9	610/580	11/8.6	30/10	83/170	ND/NA/ND
Well 26	ppb	15/20	1.8/1.5	640/720	11/11	14/20	37/110	ND/NA/ND
Well 27	ppb	20/18	2.3/2.3	600/580	12/12	19/17	28/40	ND/NA/ND
Well 30	ppb	6.7/8.2	2.1/2.1	350/370	9/16	5.8/8.6	100/63	ND/NA/ND
Well 32	ppb	ND/ND	3.6/3.5	190/180	1.3/1.1	0.71/ND	49/180	ND/NA/ND
Well 33	ppb	ND/ND	4/3.8	210/180	4.6/3	0.2/ND	ND/ND	ND/NA/ND
Well 7	ppb	26/26	1.6/1.6	860/850	12/12	27/25	640/690	ND/NA/ND
Well EM3	ppb	13/14	1.5/1.6	740/680	9.9/9.6	14/13	ND/ND	ND/NA/ND
SS-012	ppb	24/40	1.6/1.4	500/690	10/12	25/41	59/130	ND/NA/ND
SS-017	ppb	12/30	2.5/2.4	450/750	11/13	12/28	51/130	ND/NA/ND
SS-018	ppb	ND/ND	3.4/3.6	180/180	1.2/1.2	0.54/0.11	270/220	ND/NA/ND
SS-023	ppb	ND/9	3.6/2.5	190/480	1.3/7.8	ND/8.7	54/150	ND/NA/ND

ND (Not Detected): Indicates that the substance was not found by laboratory analysis.

NA: (Not Applicable): Indicates that no sampling occurred.

***Chloromethane** was detected at Well 20 in January 2014. A repeat sample was taken in April and a scheduled sample was taken in August. Chloromethane was not detected in either of these two samples. Chloromethane was not detected at any other well site.

****Well 14 Chlorate Notification:** Chlorate is an unregulated contaminant that was a candidate for the Unregulated Contaminant Monitoring Rule 3. Chlorate was tested at designated well heads after chlorination and was detected at a range from Non-Detected to 870 parts per billion. The State has set a notification at 800 ppb. Chlorate is used in the manufacturing of dyes, explosives, matches, printing fabrics, paper pulp processing, weed killers and is also a by-product of certain types of water disinfectants. The most likely source of Chlorate in the Davis water would be from our source water interacting with Sodium Hypochlorite which is used for disinfection purposes.

*****Well 24** was sampled in August 2014 and in January 2015.



City of Davis Public Works Department
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