SACRAMENTO SUBURBAN WATER DISTRICT

2019 PUBLIC HEALTH GOAL REPORT

JUNE 26, 2019

Background

Effective July 1, 1998, Section 116470(b) of the California Health and Safety Code (Attachment 1) requires all public water systems with more than 10,000 service connections to prepare a Public Health Goal (PHG) Report every three years by July 1st. This report satisfies Sacramento Suburban Water District's (SSWD) requirement for 2019. This PHG Report contains information concerning the health risks, treatment technologies, and estimated treatment costs associated with drinking water contaminants that have a primary drinking water standard and were detected at levels greater than their respective PHGs. PHGs are non-enforceable goals established by the California Environmental Protection Agency's (Cal-EPA) Office of Environmental Health Hazard Assessment (OEHHA). Section 116470(b) also requires public water systems to use the Maximum Contaminant Level Goal (MCLG) adopted by United States Environmental Protection Agency (USEPA) for a contaminant where OEHHA has not yet adopted a PHG.

The State Water Resources Control Board, Division of Drinking Water (DDW) adopts primary drinking water standards, or maximum contaminant levels (MCLs) for constituents. MCLs are enforceable regulatory standards to which all public water systems in the state must adhere. Conversely, PHGs and MCLGs are non-enforceable health-based goals that do not consider the limits of detection and available treatment technologies. As such, many PHGs and MCLGs are set at a level that water systems cannot meet.

The purpose of the legislative requirement behind this report is to give public water system customers in California access to information about levels of contaminants below their enforceable (mandatory) MCLs. This information includes: the numerical public health risk associated with the MCL and PHG or MCLG, the category or type of risk to health that could be associated with each constituent, the best treatment technology available that could be used to reduce the constituent level and an estimate of the cost of that treatment.

This report is required in addition to the extensive public reporting of water quality information that public water systems are required to provide in the federally mandated Consumer Confidence Report (CCR). Hence, SSWD has also prepared the CCR, which covers more water quality data and in greater depth.

OEHHA and the USEPA have not yet established PHGs or MCLGs for some constituents that are routinely detected in public water systems. Those constituents will be addressed in a future PHG Report after a PHG or MCLG has been adopted.

In response to inquiries concerning the exclusion of selected contaminants from the 2016 PHG Report, the following lists some contaminants of interest that are not discussed in the 2019 PHG Report, and the reason why they are omitted.

- Hexavalent Chromium (Cr+6): Cr+6 was discussed 2016 PHG Report as having been detected in numerous wells throughout the system. Even though the 0.02

micrograms per liter µg/L or parts per billion (ppb) PHG remains unchanged, DDW rescinded the Maximum Contaminant Level (MCL) on September 11, 2017. As such, it does not meet one of the primary criteria for it to be included in the 2019 PHG Report.
- 1,2,3-Trichloropropane (1,2,3-TCP): DDW established the 0.005 ppb MCL for 1,2,3-TCP on December 14, 2017. The MCL is based in part, on the 0.0007 ppb PHG. The two wells (Well 58 and Well 31A) with reportable detections of 1,2,3-TCP were removed from service before compliance monitoring was completed. As indicated previously, only wells used to support the system that exceeded the PHG of a regulated contaminant are discussed in the 2019 PHG Report.
- Manganese: Several wells throughout SSWD's system are known to produce low levels of manganese. As it accumulates in the system over time, sudden, significant changes in pressure may suspend the manganese and result in discolored water. Because the MCL is based on a consumer acceptance level and not a health-based standard, there is no PHG for manganese.

PHGs, MCLGs, and DLRs

PHGs are based solely on public health risk considerations. They represent the level of a contaminant in drinking water below which there is no known or expected significant risk to health. None of the practical risk-management factors that are considered by the DDW or USEPA in setting drinking water MCLs are considered in setting PHGs. These factors include: analytical detection capability, available treatment technologies, and benefits and costs of operating the treatment. MCLGs are the federal equivalent to PHGs, however, in cases where a contaminant is a known or suspected carcinogen, the MCLG is set to zero. PHGs and MCLGs are not enforceable and are not required to be met by public water systems. A constituent's DLR is the designated minimum level at or above which any analytical result for drinking water must be reported to DDW. PHG report guidance recommends considering results that are above their PHG or MCLG and less than their DLR to be zero. A list published by DDW of regulated constituents with the MCLs, DLRs and PHGs for Regulated Drinking Water Contaminants is included as Attachment 2.

Water Quality Data Considered

The previous PHG Report was prepared and submitted to SSWD's Board in 2016. It included water quality data from samples collected primarily in 2013, 2014, and 2015. The 2019 PHG Report includes water quality data from samples primarily collected during 2016, 2017, and 2018 at sources that were used to support the system. That data is also summarized in SSWD's 2016, 2017, and 2018 CCRs that are included as Attachment 3[SW1].

Guidelines Followed

This report has been prepared in accordance with the April 2019, Association of California Water Agencies (ACWA) guidance document titled, "Suggested Guidelines for

Preparation of Required Reports on Public Health Goals (PHGs) to Satisfy Requirements of California Health and Safety Code Section 116470(b)." No other guidance was available from state regulatory agencies.

Best Available Treatment Technology and Cost Estimates

Both the USEPA and DDW adopt what are known as best available technologies (BAT) which are considered the best available treatment methods approved by the regulatory agencies for reducing specific contaminants to levels below their respective MCLs. Although costs can be estimated for such technologies, many PHGs and all MCLGs are set much lower than their MCLs. It is not always possible, nor feasible, to determine what treatment is needed to further reduce the concentration of a constituent to the PHG or MCLG levels. This is especially true for known or suspected carcinogens that do not have a PHG where the MCLG is zero. Estimating the costs to reduce a constituent to zero is difficult, if not impossible, because it is not possible to verify by analytical means that the level has been lowered to zero. In some cases, installing treatment to try and further reduce very low levels of one constituent may have adverse effects on other aspects of water quality.

Treatment cost estimates for constituents listed are derived from the "Cost Estimates for Treatment Technologies" (included as Attachment 4) that were included as part of the ACWA guidance. Where provided, treatment costs are calculated using the information in Attachment 4 and each source's production capacity with the well operating 12 hours per day, 365 days per year. The estimates for specific treatment technologies do not include other factors such as permitting and waste disposal. Furthermore, before any treatment system is approved by DDW, SSWD is required to conduct a California Environmental Quality Act (also known as CEQA) review to assess potential environmental impacts that may be related to the project. The results of that assessment could add significant costs to mitigate potential concerns, or could preclude using a specific treatment technology altogether. Waste disposal costs associated with various treatment technologies vary widely. Some waste disposal costs are known and can be estimated as part of the routine operations and maintenance of the system. Others requiring direct discharge to the sanitary sewer or hauling of potentially hazardous waste would have to be determined on a case-by-case basis.

Constituents Detected That Exceed a PHG or MCLG

The following contaminants were detected in one or more of SSWD's active drinking water sources or distribution system at levels above the PHG or MCLG: E. coli (see following discussion), arsenic, gross alpha particle activity, combined radium, uranium, and tetrachloroethylene. The contaminants, number of sources impacted, range of detections, associated health risks, treatment technologies and treatment costs are discussed below.

E. coli Bacteria

Contaminant Name	Health Risk	MCL	PHG (MCLG)	DLR	Numerical Health Risk at MCL	Numerical Health Risk at PHG
E. coli Bacteria	Short-term effects such as diarrhea, cramps, nausea, headaches and other symptoms	Any sample following one present for E. coli that is present for either E. coli or Total Coliform in any one month	(0 in any one month)	0	NA	NA

E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause the short-term health effects indicated above. E. coli sample detections may result from structural deficiencies in sources and/or distribution systems, the presence of unsanitary hazards in close proximity to the preceding, improper maintenance, and backflow into the distribution system. As is the case with the June 2018 detection reported by the lab, E. coli may also result from improper sampling technique and/or laboratory contamination.

During the 2016-2018 reporting period, SSWD collected 120 to 150 samples per month for total coliform and E. coli analysis. None of the Total Coliform Rule (TCR) samples collected in 2016 or 2017 were reported present for E. coli (or total coliform). In June 2018, one sample was reported positive for the presence of E. coli. As indicated in the 2018 CCR, following the reported presence of E. coli, SSWD performed repeat sampling and a thorough investigation of the sources and distribution system. The results of the investigation indicated that the E. coli reported by the lab was not representative of the water in the distribution system when the sample was collected. It was instead most likely the result of unsanitary and improper sampling technique by the contract lab.

SSWD adds chlorine to the water supply at each source to ensure that the water served is microbiologically safe. SSWD carefully controls chlorine residual levels to protect the public health without causing the water to have undesirable taste and odor, or significantly increasing disinfection byproducts. This careful balance of the treatment process is essential to continue supplying SSWD's customers with clean, wholesome drinking water.

SSWD already implements the steps described by DDW as BATs for mitigating E. coli and Total Coliform detections including:

- Disinfection using chlorine and maintaining a chlorine residual throughout the distribution system.
- Monitoring throughout the distribution system to verify the absence of total coliform and the presence of a protective chlorine residual.

- A flushing program in which water pipelines known to have little use are flushed to remove stagnant water and bring in fresh water with a chlorine residual.
- An effective cross-connection control program that prevents the accidental entry of potentially contaminated water into the drinking water system.
- Maintaining positive pressures in the distribution system.

Under the circumstances described above, providing additional treatment to prevent E. coli sample results does not address the cause. Instead, the contract lab no longer performs TCR sampling. In-house Production Operators now collect the weekly TCR samples.

Arsenic

Chemical Name	Health Risk	MCL	PHG/ (MCLG)	DLR	Numerical Health Risk at MCL	Numerical Health Risk at PHG/(MCLG)
		(ppb)				
Arsenic	Increased risk of cancer	10	0.004	2	2.5×10^{-3}	1×10^{-6}

Arsenic (As) is a naturally occurring element in the earth's crust and is very widely distributed in the environment. In general, humans are exposed to microgram (µg) quantities of As (inorganic and organic) largely from food (25 to 50 µg per day) and to a lesser degree from drinking water and air. Arsenic is used in industry as a component in wood preservatives, pesticides, paints, dyes and semiconductors. In most areas, erosion of rocks and minerals is considered the primary source of As in groundwater. Environmental contamination may result from anthropogenic sources such as: urban runoff, treated wood, pesticides, fly ash from power plants, smelting and mining wastes.

The table above shows that the MCL for As is 10 ppb with a corresponding PHG of 0.004 ppb. OEHHA's April 2004, Fact Sheet titled: "Public Health Goal for Arsenic" summarizes the non-carcinogenic and carcinogenic health effects observed from studies involving drinking water with high levels of As. Studies cited have associated chronic intake of As in drinking water with the following non-carcinogenic health effects including: heart attack, stroke, diabetes mellitus, and hypertension. Other effects also include decreased production of erythrocytes and leukocytes, abnormal cardiac function, blood vessel damage, liver and/or kidney damage, and impaired nerve function in hands and feet (paresthesia). Characteristic skin abnormalities are also seen appearing as dark or light spots on the skin and small "corns" on the palms, soles, and trunk. Some of the corns may ultimately progress to skin cancer. Carcinogenic health effects involve an increased risk of cancer at internal sites, especially lung, urinary bladder, kidney, and liver. The health effects language in Appendix 64465-D of Title 22, California Code of Regulations states that: "Some people who drink water containing arsenic in excess of the MCL over many years may experience skin damage or circulatory system problems, and may have an increased risk of getting cancer." As shown in the table above, the numerical health (cancer) risk for drinking water with As at the MCL is 2.5 in 1,000. The numerical health (cancer) risk for drinking water with As at the PHG is 1 in 1,000,000.

The levels of As detected are well below the regulatory standard. Because the DLR for As is 2 ppb, SSWD is limited in its ability to report the presence of As only down to that level. As such, any As that may be present in sources at levels between the 0.004 ppb PHG and the 2 ppb DLR is unknown and not considered in this report. Water quality data from samples collected at sources used to support the system shows that As was detected in five North Service Area (NSA) wells and 17 South Service Area (SSA) wells. Levels of As detected in the NSA wells ranged from 2.3 to 4.1 ppb and from 2.2 to 4.8 ppb in the SSA wells. One of the SSA wells is off-line and scheduled for destruction; therefore, it is not included in the following treatment discussion.

The approved BAT for treating As includes the following treatment techniques:

1. Activated Alumina
2. Coagulation/Filtration
3. Electrodialysis
4. Ion Exchange
5. Lime Softening
6. Oxidation Filtration
7. Reverse Osmosis

Since the As levels in SSWD wells shows that As is already below the MCL, reverse osmosis (RO) would likely be required to effectively decrease the amount of As from each source. The cost estimates for RO range from $0.86 to $7.33 per 1,000 gallons of water treated. If RO treatment were considered for 21 of the wells discussed above, the annualized capital and operation and maintenance (O&M) costs could range from approximately $5.9 million to $50.7 million per year. That would result in an assumed increased cost for each customer ranging from $129 to $1,096 per year.

Gross Alpha Particle Activity

Chemical Name	Health Risk	MCL	PHG/ (MCLG)	DLR	Numerical Health Risk at MCL	Numerical Health Risk at PHG/(MCLG)
		(picoCuries/liter)				
Gross Alpha Particle Activity	Increased risk of cancer	15	(Zero)	3	Up to 1 x 10^{-3}	(Zero)

Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Gross alpha particle activity (GA) is a measurement of the overall alpha radiation emitted when certain elements such as uranium and radium undergo radioactive decay. Alpha radiation exists in the air, soil and water. Naturally occurring alpha radiation in groundwater results mainly from the dissolution of minerals as the water seeps into the ground, and as water moves through aquifers. Detectable levels of

GA above the DLR are used to determine when additional radionuclide speciation (monitoring) is required.

The table above shows that the MCL for GA is 15 pico Curies/liter (pCi/L). Because GA is associated with a group of radioactive elements rather than an individual contaminant, OEHHA determined it is not practical to establish a PHG for it. GA is known to cause cancer; therefore, USEPA established the MCLG at zero pCi/L. The actual cancer risk from radionuclides emitting alpha radiation in drinking water depends on the particular radionuclide present and the average consumption over a lifetime. Alpha radiation loses energy rapidly and doesn't pass through the skin therefore, it is not a health hazard outside of the body. Typical exposure routes for alpha radiation include: eating, drinking and inhaling alpha-emitting particles. General, non-carcinogenic health effects associated with ingesting elevated levels of alpha radiation include kidney damage, damage to cells and DNA, and damage to other vital organs. Specific cancers that may result from exposure to elevated levels of alpha radiation include: bone cancer and cancer of particular organs, each of which are associated with specific alpha-radiation emitters. The health effects language in Appendix 64465-C of Title 22, California Code of Regulations states that: "Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer." As shown in the table above, the numerical health (cancer) risk for drinking water with the most radiotoxic alpha particle emitter at the MCL is: 1 in 1,000. The numerical health (cancer) risk for drinking water with GA at the MCLG is zero.

The levels of GA detected are below the regulatory standard. Because the DLR for GA is 3 pCi/L, SSWD is limited to reporting the presence of GA only down to that level. As such, any GA that may be present in sources at levels between the zero pCi/L MCLG and the 3 pCi/L DLR is unknown and not considered in this report. Water quality data from samples collected at sources used to support the system shows that GA has been detected in one NSA well and two SSA wells. Levels of GA detected in the NSA well ranged from 3.58 to 3.95 pCi/L and from 3.31 to 3.86 pCi/L in the SSA wells.

The BAT identified to treat GA is RO. The most effective method to reduce GA is to install RO treatment at select groundwater wells where results exceed the MCLG, and are detectable at levels above the DLR. Cost estimates for RO range from $0.86 to $7.33 per 1,000 gallons of water treated. If RO treatment were considered for the three wells discussed above, the annualized capital and O&M costs could range from approximately $1.1 million to $9.5 million per year. That would result in an assumed increased cost for each customer ranging from $24 to $206 per year.

Combined Radium

Chemical Name	Health Risk	MCL	PHG/ (MCLG)	DLR	Numerical Health Risk at MCL	Numerical Health Risk at PHG/(MCLG)
		(picoCuries/liter)				
Radium	Increased risk of cancer	5	Ra226: 0.05 Ra228: 0.019	1	Ra226: 1×10^{-4} Ra228: 3×10^{-4}	1×10^{-6}

Radium (Ra) is one of several naturally occurring radioactive metals that emits alpha (as well as gamma and beta) radiation. Combined Ra is the sum of two different isotopes, Ra226 and Ra228. Ra is formed by the radioactive decay of uranium and thorium in the environment. All isotopes of Ra are radioactive with Ra226 and Ra228 being the most common. Radioactive decay of Ra produces radon gas. Ra occurs at trace levels in most rocks, soil, water, air, and plants and animals. Elevated levels of naturally occurring Ra in the environment are associated with specific types of igneous rocks and deposition of their weathered components. Anthropogenic sources are typically associated with uranium mining and improper handling or disposal radioactive waste. Ra has been used historically in medical treatments, medical devices and for illumination of aircraft gauges.

The table above shows that the MCL for (combined) Ra (Ra226 and Ra228) is 5 pCi/L. At specific concentrations, the toxicological effects of each isotope differ. Therefore, the PHGs for Ra226 (at 0.05 pCi/L) and Ra228 (at 0.019 pCi/L) differ as well. OEHHA's March 2006, "Public Health Goals for Chemicals in Drinking Water; Radium-226 and -228" summarizes the health effects observed from studies involving drinking water with high levels of Ra. Non-carcinogenic effects include: mutagenic effects, benign bone growths, growth retardation in children, tooth breakage, kidney and liver disease and cataracts. Bone sarcomas and head sarcomas are the two main types of cancer associated with exposure to high levels of Ra. The health effects language in Appendix 64465-C of Title 22, California Code of Regulations states that: "Some people who drink water containing radium 226 or 228 in excess of the MCL over many years may have an increased risk of getting cancer." As shown in the table above, the numerical health (cancer) risks for drinking water with Ra226 and Ra228 at the MCL is 1 in 10,000 and 3 in 10,000, respectively. The numerical health (cancer) risk for drinking water with Ra226 and Ra228 at their respective PHGs is 1 in 1,000,000.

The levels of Ra detected are below the regulatory standard. Because the DLR for Ra is 1 pCi/L, SSWD is limited to reporting the presence of Ra only down to that level. As such, any Ra that may be present in sources at levels between the 0.05 pCi/L and 0.019 pCi/L PHGs for Ra226 and Ra228 and the 1 pCi/L DLR is unknown and not considered in this report. Water quality data from samples collected at sources used to support the system shows that Ra has been detected in one NSA well and six SSA wells. Levels of Ra detected in the NSA well ranged from 2.72 to 3.34 pCi/L and from 1.03 to 2.11 pCi/L in the SSA wells. One of the SSA wells is off-line and scheduled for destruction; therefore, it is not included in the following treatment discussion.

The approved BATs for treating Ra include the following treatment techniques:

1. Ion Exchange
2. Reverse Osmosis
3. Lime Softening

The most effective method to reduce Ra is to install RO treatment at select groundwater wells where results exceed the PHGs for Ra226 and Ra228, and are detectable at levels above the DLR. Cost estimates for RO range from $0.86 to $7.33 per 1,000 gallons of water treated. If RO treatment were considered for six of the wells discussed above, the annualized capital and O&M costs could range from approximately $1.9 million to $16.2 million per year. That would result in an assumed increased cost for each customer ranging from $41 to $351 per year.

<u>Uranium</u>

Chemical Name	Health Risk	MCL	PHG/ (MCLG)	DLR	Numerical Health Risk at MCL	Numerical Health Risk at PHG/(MCLG)
		(picoCuries/liter)				
Uranium	Increased risk of cancer	20	0.43	1	5×10^{-5}	1×10^{-6}

Uranium (U) is one of several naturally occurring radioactive metals that emit alpha (and beta) radiation. U has three (U234, U235 and U238) primary naturally occurring isotopes. All three isotopes of U are radioactive with U238 (approximately 99%) being the most common. Radioactive decay of U produces Ra, which in turn decays to radon gas. U occurs at trace levels in most rocks, soil, water, plants and animals. U is weakly radioactive and therefore, contributes to low levels of radioactivity in the environment. Elevated levels of U found in the environment are typically associated with U mining and the techniques used to remove it. Concentrations of U may also occur in the environment as a result of improper handling or disposal practices. U is enriched before it is used for power generation in nuclear reactors or for use in weapons. Before the radioactive properties of U were known, it was used as a yellow coloring for pottery and glassware.

The table above shows that the MCL for U is 20 pCi/L with a corresponding PHG of 0.43 pCi/L. Unlike Ra, the individual isotopes of U do not have their own specific PHG. OEHHA's August 2001, "Public Health Goals for Chemicals in Drinking Water: Uranium" summarizes the health effects observed from studies involving human exposure to high levels of U. Non-carcinogenic effects include kidney and liver disease. Lung cancer is the main type of cancer associated with exposure to high levels of U. USEPA has classified U as a "Class A" carcinogen, even though there is no direct evidence that it is carcinogenic in humans. The health effects discussed above appear to be associated with the emission of ionizing radiation from radioactive daughter products. The health effects language in Appendix 64465-C of Title 22, California Code of Regulations states that: "Some people who drink water containing uranium in excess of the MCL over many years may have kidney problems or an increased risk of getting cancer." As shown in the table above, the numerical health (cancer) risk for drinking water with U at the MCL is 5 in 100,000. The numerical health (cancer) risk for drinking water with U at the PHG is 1 in 1,000,000.

The levels of U detected are below the regulatory standard. Because the DLR for U is 1 pCi/L, SSWD is limited in its ability to report the presence of U only down to that level. As such, any U that may be present in sources at levels between the 0.43 pCi/L PHG and the 1 pCi/L DLR is unknown and not considered in this report. Water quality data from samples collected at sources used to support the system shows that U has been detected in two NSA wells and two SSA wells. Levels of U in the NSA wells ranged from 1.08 to 4.97 pCi/L and from 2.0 to 3.2 pCi/L in the SSA wells.

The approved BATs for treating U include the following treatment techniques:

1. Ion Exchange
2. Reverse Osmosis
3. Lime Softening
4. Coagulation/Filtration

The most effective method to reduce U and the other radionuclides discussed previously is to install RO treatment at select groundwater wells where results exceed the PHG and are detectable at levels above the DLR. Cost estimates for RO range from $0.86 to $7.33 per 1,000 gallons of water treated. If RO treatment were considered for the four wells discussed above, the annualized capital and O&M costs could range from approximately $1.2 million to $10 million per year. That would result in an assumed increased cost for each customer ranging from $25 to $216 per year.

<u>Tetrachloroethylene (PCE)</u>

Chemical Name	Health Risk	MCL	PHG/ (MCLG)	DLR	Numerical Health Risk at MCL	Numerical Health Risk at PHG/(MCLG)
		(ppb)				
PCE	Increased risk of cancer	5	0.06	0.5	8×10^{-5}	1×10^{-6}

Tetrachloroethylene, also known as perchloroethylene or PCE, is primarily used as a chemical intermediate for the production of chlorofluorocarbons and as a solvent used in cleaning operations (metal cleaning, vapor degreasing, and dry cleaning). PCE has also been used in electric transformers as an insulating fluid and cooling gas. In addition, numerous household products contain some level of PCE. The high volatility of PCE results in a high potential for release into the environment during use. As a result of its widespread use and inadequate handling and disposal practices, PCE has become a common environmental contaminant.

The table above shows that the MCL for PCE is 5 ppb with a corresponding PHG of 0.06 ppb. OEHHA's August 2001, "Public Health Goal for Tetrachloroethylene in Drinking Water" summarizes the health effects observed from studies involving human exposure to high levels of PCE. Non-carcinogenic health effects include: kidney disease, developmental and reproductive toxicity, neurotoxicity and genetic mutations. Carcinogenic health effects include: kidney, liver, cervix, lymphatic system cancers. Due to the low levels typically involved, exposures to PCE in drinking water are not expected to result in any acute health effects. Exposure from drinking water can be in the form of household airborne exposures from showering, flushing of toilets, and other contact with water. PCE is readily absorbed through the lungs and gastrointestinal tract, and to a lesser extent, it can be absorbed through the skin. The health effects language in Appendix 64465-E of Title 22, California Code of Regulations states that: "Some people who use water containing tetrachloroethylene in excess of the MCL over many years may experience liver problems, and may have an increased risk of getting cancer." As shown in the table above, the numerical health (cancer) risk for drinking water with PCE at the MCL is 8 in 100,000. The numerical health (cancer) risk for drinking water with PCE at the PHG is 1 in 1,000,000.

The levels of PCE detected are below the regulatory standard. Because the DLR for PCE is 0.5 ppb, SSWD is limited in its ability to report the presence of PCE only down to that level. As such, any PCE that may be present in sources at levels between the 0.06 ppb PHG and the 0.5 ppb DLR is unknown and not considered in this report. Water quality data from samples collected at sources used to support the system shows that PCE has been detected in six NSA wells and one SSA well. Levels of PCE detected in the NSA wells ranged from 0.54 to 2.7 ppb and up to 0.97 ppb in the SSA well.

The approved BATs for treating PCE include the following treatment techniques:

1. Granular Activated Carbon (GAC)
2. Packed Tower Aeration

If GAC were selected as the BAT to reduce PCE in the seven SSWD wells discussed above, the cost could range from $ 0.29 to $2.47 per 1,000 gallons of water treated. The annualized capital and O&M costs could range from approximately $772,000 to $6.6 million per year. That would result in an assumed increased cost for each customer ranging from $17 to $142 per year.

RECOMMENDATIONS FOR FURTHER ACTION

The quality of SSWD's drinking water meets state and federal drinking water standards set to protect public health. Additional costly treatment processes would be required to reduce the levels of arsenic, gross alpha particle activity combined radium, uranium, and tetrachloroethylene to levels below their respective PHGs or MCLGs. The effectiveness of the treatment processes to provide any significant reductions in constituent levels is uncertain. The health protection benefits of these hypothetical reductions are not at all clear and may not be quantifiable. Any funds that may be available for the additional treatment processes might provide greater public health protection benefits if spent on other water system operations, surveillance, and monitoring programs. Therefore, no further action is recommended.

ACRONYMS USED

ACWA....................................Association of California Water Agencies
AL...Action Level
As...Arsenic
BAT.......................................Best Available Technology
Cal-EPA.................................California Environmental Protection Agency
CCR......................................Consumer Confidence Report
CEQA....................................California Environmental Quality Act
DDW......................................State Water Resources Control Board, Division of Drinking Water (formerly known as the California Department of Public Health, Drinking Water Program)
DLR.......................................Detection Limit for the Purposes of Reporting
GAC......................................Granular Activated Charcoal
GA...Gross Alpha particle activity
IX...Ion Exchange
MCL.......................................Maximum Contaminant Level
MCLG....................................Maximum Contaminant Level Goal
NSA.......................................North Service Area
OEHHA..................................Office of Environmental Health Hazard Assessment
ppb..parts per billion, or equivalent to micrograms per liter
PCE.......................................Tetrachloroethylene, also known as perchloroethylene
pCi/L......................................picoCuries per liter
PHG.......................................Public Health Goal
Ra...Radium
RO...Reverse Osmosis
SSA.......................................South Service Area
TCE.......................................Trichloroethylene
TCR.......................................Total Coliform Rule
U..Uranium
USEPA..................................United States Environmental Protection Agency

ATTACHMENTS

1. Excerpt from California Health and Safety Code Section 116470(b)
2. MCLs, DLRs and PHGs for Regulated Drinking Water Contaminants
3. 2016, 2017 and 2018 Consumer Confidence Reports
4. ACWA Cost Estimates for Treatment Technologies

ATTACHMENT 1

Excerpt from California Health and Safety Code Section 116470(b)

California Health and Safety Code 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.

ATTACHMENT 2

MCLs, DLRs and PHGs for Regulated Drinking Water Contaminants

MCLs, DLRs, and PHGs for Regulated Drinking Water Contaminants

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

Last Update: December 26, 2018

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, the PHG for NDMA (which is not yet regulated) is included at the bottom of this table.

Regulated Contaminant	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	0.001	2016
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 - 0.01-mg/L MCL & 0.001-mg/L DLR repealed September 2017	--	--	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)	2018
Nitrite (as N)	1 as N	0.4	1 as N	2018
Nitrate + Nitrite (as N)	10 as N	--	10 as N	2018
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	0.013	2018
trans-1,2-Dichloroethylene	0.01	0.0005	0.05	2018
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	0.0007	2016
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	0.006	2016
Endothal	0.1	0.045	0.094	2014
Endrin	0.002	0.0001	0.0003	2016
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	0.166	2016
Polychlorinated biphenyls (PCBs)	0.0005	0.0005	0.00009	2007
Simazine	0.004	0.001	0.004	2001
Thiobencarb	0.07	0.001	0.042	2016
Toxaphene	0.003	0.001	0.00003	2003
1,2,3-Trichloropropane	0.000005	0.000005	0.0000007	2009
2,3,7,8-TCDD (dioxin)	$3x10^{-8}$	$5x10^{-9}$	$5x10^{-11}$	2010
2,4,5-TP (Silvex)	0.05	0.001	0.003	2014
Chemicals with MCLs in 22 CCR §64533—Disinfection Byproducts				
Total Trihalomethanes	0.080	--	--	--
Bromodichloromethane	--	0.0010	0.00006	2018 draft

Bromoform	--	0.0010	0.0005	2018 draft
Chloroform	--	0.0010	0.0004	2018 draft
Dibromochloromethane	--	0.0010	0.0001	2018 draft
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
*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

2016, 2017 and 2018 Consumer Confidence Reports

2016 Consumer Confidence Report

Important Water Information

SACRAMENTO SUBURBAN WATER DISTRICT

Sacramento Suburban Water District (District) is pleased to present this detailed report on 2016 water quality. Results of samples collected during 2014, 2015 and 2016, as well as other water quality information, were used to prepare this report. As always, providing a high quality, reliable supply of water and superior customer service at the lowest responsible water rate are the District's top priorities.

Sources of Water

The District has two service areas; North and South. The North Service Area (NSA) is supplied with water from local groundwater wells and, when available, with surface water treated by the San Juan Water District (SJWD). The South Service Area (SSA) is supplied with water from local groundwater wells and, when available, with treated surface water from the City of Sacramento. In 2016, the District supplemented the supply of both service areas with surface water.

Water pumped from the wells is chlorinated per State Water Resources Control Board Division of Drinking Water (DDW) requirements to protect you from potential microbiological contaminants. All facilities are operated by state-certified operators. To ensure that your water meets state and federal regulations, the District conducts routine water quality testing at the wells and in the distribution system.

Overview of Drinking Water

The sources of drinking water (both tap 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.

In order to ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (USEPA) and the DDW prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. The U.S. Food and Drug Administration regulations and California laws establish limits for contaminants in bottled water that also provide protection for public health. Additional information on bottled water is available on the California Department of Public Health website (https://archive.cdph.ca.gov/programs/pages/fdbBVW.aspx).

Drinking water, including bottled water may reasonably be expected to contain at least minor 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 (1.800.426.4791).

Drinking water, including bottled water may reasonably be expected to contain at least minor 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 (1.800.426.4791).

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Important Information About...

Nitrate: Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. Nitrate (as nitrogen) in drinking water at levels above 10 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 serious illness; symptoms include shortness of breath and blueness of the skin. Nitrate levels above 10 mg/L may also affect the ability of the blood to carry oxygen in other individuals, such as pregnant women and those with certain specific enzyme deficiencies. If you are caring for an infant, or you are pregnant, you should ask advice from your health care provider.

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 District is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at: **www.epa.gov/lead**.

Source Water Assessments

An assessment of the District's groundwater wells was completed in December 2002. The results of the assessment indicated that wells in both the NSA and SSA are considered most vulnerable to: dry cleaners, gas stations, leaking underground storage tanks, petroleum transmission pipelines, sewer collection systems, contamination caused by illegal activities or dumping, and general urban commercial activities such as automobile repair facilities and photo processors. Both service areas are also vulnerable to industrial activities such as: electronic, plastic and metal manufacturing, petroleum storage facilities and known groundwater contamination plumes. The NSA is also considered vulnerable to historic activities at the former McClellan Air Force Base. The SSA may also be vulnerable to recreational activities associated with the American River. A copy of the complete Source Water Assessment is available at the District's office.

Contaminants That May Be Present in Source Water Include:

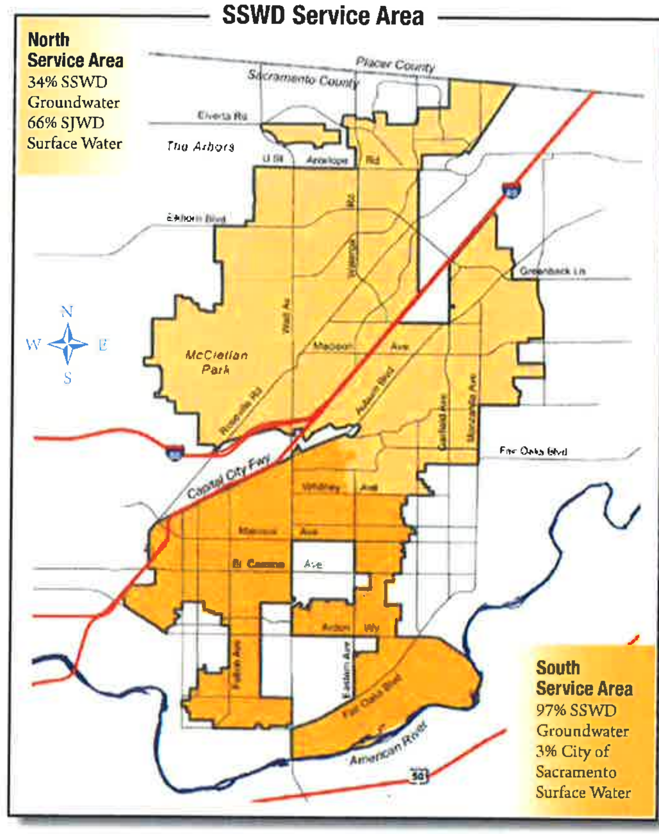
Microbial Contaminants such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

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

Pesticides and Herbicides which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

Organic Chemical Contaminants including synthetic and volatile organic chemicals, that are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.

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



SSA Water Fluoridation

The District supplements the natural levels of fluoride in the SSA water to levels within DDW's prescribed Fluoride Control Range (0.6 mg/L to 1.2 mg/L). Parents of children that reside in the District's SSA should let their children's pediatricians and dentists know that their drinking water is fluoridated. According to the USEPA/ Centers for Disease Control and Prevention (CDC), drinking water with the right amount of fluoride is a safe and effective way to help keep the surface of teeth strong and help prevent tooth decay. Community water fluoridation is supported by the American Dental Association, American Academy of Pediatrics, U.S. Public Health Service and the World Health Organization.

Information About Hard Water

A common concern for many customers is water hardness because it can cause scaling and other issues. Water hardness is comprised of naturally-occurring minerals, particularly calcium and magnesium. Though hard water can be a nuisance, it is not known to cause adverse health effects, and thus is not regulated by DDW or USEPA. Effects of hard water may include: scale on plumbing fixtures and appliances; soap scum on shower walls, bathtubs, sinks and faucets; and reduced lathering of soaps, shampoos and household cleaners. Additional information may be found on the District's website at: **sswd.org** under the 'Education' tab.

Water Main Flushing

The District flushes water mains to remove sediments or other contaminants that can accumulate in pipes over time and lead to taste and odor problems. Flushing dead-end lines also improves disinfectant residual levels. In addition to protecting water quality, flushing helps reduce corrosive conditions associated with biofilm growth that has a potential to lead to pipeline leaks and breaks.

2016 Summary of Detected Constituents

SACRAMENTO SUBURBAN WATER DISTRICT

How to Use This Table

1. Find your service area along the top of the table
2. Compare levels from your system's water to the state and federal standards (MCL), if applicable.
3. See page 6 for definitions, abbreviations, and additional information.

DETECTED PRIMARY DRINKING WATER CONSTITUENTS - Regulated to protect your health

				NORTH Service Area						SOUTH Service Area							
				SSWD (groundwater)			San Juan Water District (surface water)			SSWD (groundwater)			City of Sacramento (surface water)				
CONSTITUENT	UNITS	MCL	PHG or (MCLG)	RANGE	AVG.	SAMPLE DATE	RANGE	AVG.	SAMPLE DATE	RANGE	AVG.	SAMPLE DATE	RANGE	AVG.	SAMPLE DATE	VIOLATION	MAJOR SOURCES
Aluminum	PPM	1	0.6	ND	ND	2016	ND	ND	2016	ND-0.17	ND	2014	ND	ND	2014-2016	No	Erosion of natural deposits
Arsenic	PPB	10	0.004	ND-4.1	ND	2016	ND	ND	2016	ND-4.0	ND	2014-2016	ND	ND	2014-2016	No	Erosion of natural deposits
Barium	PPM	1	2	ND-0.14	ND	2016	0.14	0.14	2016	ND-0.12	ND	2014	ND	ND	2014-2016	No	Erosion of natural deposits
Control of Disinfection By-Product Precursors (TOC) (treated water) {A}	PPM	TT = 2	NA	NR	NR	NA	1.1-1.5	1.2	2016	NR	NR	NA	1.1-2.2	1.4	2016	No	Various natural and manmade sources
Fluoride	PPM	2	1	ND-0.26	0.17	2016	ND	ND	2016	See Fluoride in Distribution System section below						No	Erosion of natural deposits
Hexavalent Chromium {B}	PPB	10	0.02	2.8	2.8	2016	ND	ND	2016	5.4-6.6	6.0	2014	ND	ND	2014-2016	No	Erosion of natural deposits; discharge from electroplating factories, leather tanneries, wood preservation, chemical synthesis, refractory production, and textile and manufacturing facilities
Nitrate (as Nitrogen)	PPM	10	10	ND-6.3	1.6	2016	ND	ND	2016	ND-6.4	1.7	2016	ND	ND	2014-2016	No	Leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits
Tetrachloroethylene (PCE)	PPB	5	0.06	ND-2.7	ND	2016	ND	ND	2016	ND-0.97	ND	2014-2016	ND	ND	2015-2016	No	Discharge from factories, dry cleaners, and auto shops (metal degreaser)
Gross Alpha	pCi/L	15	(0)	ND-3.58	ND	2014-2016	ND	ND	2008	ND-3.86	ND	2014	ND	ND	2012-2016	No	Erosion of natural deposits
Combined Radium (Ra226 + Ra228)	pCi/L	5	(0)	ND	ND	2014-2016	NR	NR	NA	ND-2.11	ND	2014	NR	NR	NA	No	Erosion of natural deposits
Uranium	pCi/L	20	0.43	ND-2.7	ND	2014-2016	NR	NR	NA	ND-3.2	ND	2014	NR	NR	NA	No	Erosion of natural deposits

				NORTH Service Area				SOUTH Service Area					
				SSWD (groundwater)		San Juan Water District (surface water)		SSWD (groundwater)		City of Sacramento (surface water)			
CONSTITUENT	UNITS	MCL	PHG or (MCLG)	LEVEL FOUND	SAMPLE DATE	LEVEL FOUND	SAMPLE DATE	LEVEL FOUND	SAMPLE DATE	LEVEL FOUND	SAMPLE DATE	VIOLATION	MAJOR SOURCES
Turbidity {A}	NTU	TT = 1 NTU	NA	NR	NA	0.064	2016	NR	NA	0.14	2016	NA	Soil runoff
	% Samples	TT = 95% of Samples ≤0.3 NTU	NA			100%				100%			

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2016 Summary of Detected Constituents (continued)

SACRAMENTO SUBURBAN WATER DISTRICT

How to Use This Table

1. Find your service area along the top of the table 2. Compare levels from your system's water to the state and federal standards (MCL), if applicable. 3. See page 6 for definitions, abbreviations, and additional information.

DISTRIBUTION SYSTEM

CONSTITUENT	UNITS	AL	PHG or (MCLG)	90TH PERCENTILE RESULT	NO. OF SAMPLES/ NO. EXCEEDING ACTION LEVEL	SAMPLE DATE	VIOLATION	MAJOR SOURCES
Copper (at tap)	PPM	1.3	0.3	0.230	62/0	2016	No	Internal corrosion of household plumbing systems; discharge from refineries and factories; erosion of natural deposits
CONSTITUENT	UNITS	MCL [MRDL]	PHG or [MRDLG]	RANGE	AVERAGE	SAMPLE DATE	VIOLATION	MAJOR SOURCES
Chlorine Residual	PPM	[4]	[4]	0.63-0.80	0.71	2016	No	Drinking water disinfectant added for treatment
Fluoride {C}	PPM	2	1	0.6-1.0	0.8	2016	No	Water additive that promotes strong teeth
Trihalomethanes	PPB	80	NA	ND-54	Highest LRAA = 35{D}	2016	No	By-product of drinking water chlorination
Haloacetic Acids	PPB	60	NA	ND-52	Highest LRAA = 28{D}	2016	No	By-product of drinking water chlorination

DETECTED SECONDARY DRINKING WATER CONSTITUENTS - Regulated for aesthetic qualities

			NORTH Service Area						SOUTH Service Area							
			SSWD (groundwater)			San Juan Water District (surface water)			SSWD (groundwater)			City of Sacramento (surface water)				
CONSTITUENT	UNITS	MCL	RANGE	AVG.	SAMPLE DATE	RANGE	AVG.	SAMPLE DATE	RANGE	AVG.	SAMPLE DATE	RANGE	AVG.	SAMPLE DATE	VIOLATION	MAJOR SOURCES
Aluminum	PPB	200	ND	ND	2016	ND	ND	2016	ND-170	ND	2014	ND	ND	2014-2016	No	Erosion of natural deposits
Chloride	PPM	500	8.4-82	39	2016	2.8	2.8	2016	2.8-53	20	2014	ND	ND	2014-2016	No	Runoff/leaching from natural deposits
Color	CU	15	ND-5	ND	2016	ND	ND	2016	ND	ND	2014	ND	ND	2014-2016	No	Naturally-occurring organic materials
Iron	PPB	300	ND-160	ND	2016	ND	ND	2016	ND	ND	2014-2016	ND	ND	2014-2016	No	Leaching from natural deposits; industrial wastes
Manganese	PPB	50	ND-52	ND	2016	ND	ND	2016	ND	ND	2014-2016	ND	ND	2014-2016	No	Leaching from natural deposits
Specific Conductance	µS/cm	1600	210-600	378	2016	68-100	81	2016	140-520	314	2014	96-160	126	2014-2016	No	Substances that form ions when in water. Leaching from natural deposits
Sulfate	PPM	500	2.0-25.0	8.0	2016	7.5	7.5	2016	ND-21.0	7.1	2014	7.2-11	9.2	2014-2016	No	Runoff/leaching from natural deposits; industrial wastes
Total Dissolved Solids	PPM	1000	180-380	270	2016	39	39	2016	120-370	231	2014	65-99	82	2014-2016	No	Runoff/leaching from natural deposits
Turbidity	NTU	5	ND-1.2	0.16	2016	See Primary Constituents table above			ND-0.15	ND	2014	See Primary Constituents table above			No	Suspended organic and inorganic particles

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2016 Summary of Detected Constituents (continued)

SACRAMENTO SUBURBAN WATER DISTRICT

How to Use This Table

1. Find your service area along the top of the table
2. Compare levels from your system's water to the state and federal standards (MCL), if applicable.
3. See page 6 for definitions, abbreviations, and additional information.

DETECTED UCMR3 MONITORING CONSTITUENTS {E}

		NORTH Service Area			SOUTH Service Area			
CONSTITUENT	UNITS	RANGE	AVERAGE	SAMPLE DATE	RANGE	AVERAGE	SAMPLE DATE	PRIMARY SOURCES/USES
1,1-Dichloroethane	PPB	ND	ND	2014-2015	ND-0.038	ND	2014-2015	Halogenated alkane; used as a solvent
1,4-Dioxane	PPB	ND-0.11	ND	2014-2015	ND-0.17	ND	2014-2015	Cyclic aliphatic ether; used as a solvent or solvent stabilizer in manufacture and processing of paper, cotton, textile products, automotive coolant, cosmetics, and shampoos
17-beta-Estradiol	PPB	ND-0.0008	ND	2014-2015	ND	ND	2014-2015	Estrogenic hormone naturally produced in the human body; used in pharmaceuticals
Chlorate	PPB	ND-2500	244	2014-2015	ND-890	218	2014-2015	Decomposition of Sodium Hypochlorite; disinfection by-product
Chlorodifluoromethane	PPB	ND-15	0.9	2014-2015	ND	ND	2014-2015	Chlorofluorocarbon; occurs as a gas and used as a refrigerant, as a low-temperature solvent and in fluorocarbon resins, especially tetrafluoroethylene polymers
Chromium (total)	PPB	ND-8.5	3.8	2014-2015	ND-8.2	3.3	2014-2015	Naturally-occurring element; used in making steel and other alloys; Chromium-3 or -6 forms are used for chrome plating, dyes and pigments, leather tanning, and wood preservation
Hexavalent Chromium (dissolved)	PPB	ND-8.2	4.0	2014-2015	ND-8.2	3.6	2014-2015	Naturally-occurring element; used in making steel and other alloys; Chromium-3 or -6 forms are used for chrome plating, dyes and pigments, leather tanning, and wood preservation
Molybdenum	PPB	ND	ND	2014-2015	ND-2.8	ND	2014-2015	Naturally-occurring element found in ores and present in plants, animals, and bacteria; commonly used form molybdenum trioxide used as a chemical reagent
Strontium	PPB	120-710	277	2014-2015	140-630	276	2014-2015	Naturally-occurring element; historically, commercial use of strontium has been in the faceplate glass of cathode-ray tube televisions to block x-ray emissions
Vanadium	PPB	0.2-85	15.8	2014-2015	4.9-21	11.8	2014-2015	Naturally-occurring elemental metal; used as vanadium pentoxide which is a chemical intermediate and a catalyst

ADDITIONAL DRINKING WATER CONSTITUENTS {F}

		NORTH Service Area						SOUTH Service Area						
		SSWD (groundwater)			San Juan Water District (surface water)			SSWD (groundwater)			City of Sacramento (surface water)			
CONSTITUENT	UNITS	RANGE	AVERAGE	SAMPLE DATE	RANGE	AVERAGE	SAMPLE DATE	RANGE	AVERAGE	SAMPLE DATE	RANGE	AVERAGE	SAMPLE DATE	MAJOR SOURCES
Alkalinity	PPM	82-170	114	2016	14	14	2016	60-200	111	2014	22-66	44	2016	Leaching from natural deposits
Calcium	PPM	16-51	25	2016	5.4	5.4	2016	14-51	25	2014	9.9-13	11	2014-2016	Erosion of natural deposits
Hardness	grains/gallon	4.5-14.6	7.1	2016	1.2	1.2	2016	3.0-12.9	7.3	2014	2.3-3.6	3.0	2014-2016	Leaching from natural deposits; hardness is the sum of polyvalent cations present in the water, generally naturally-occurring magnesium and calcium
	PPM	77-250	121	2016	20	20	2016	51-220	125	2014	40-62	51	2014-2016	
Magnesium	PPM	9-29	14	2016	1.5	1.5	2016	0.9-25	15.1	2014	1.5-3.5	2.5	2014-2016	Erosion of natural deposits
pH	NONE	7.4-8.4	7.9	2016	7.72-8.76	8.17	2016	7.4-8.2	7.8	2014	6.9-8.6	7.4	2014-2016	Leaching from natural deposits; a measurement of hydrogen ion activity
Sodium	PPM	12-58	30	2016	2.3	2.3	2016	7.8-62	16	2014	2.1-4.1	3.1	2014-2016	Erosion of natural deposits

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2016 Summary of Detected Constituents (continued)

Water Quality Definitions

Locational Running Annual Average (LRAA): The LRAA is a calculation used to determine compliance with a primary drinking water standard (or MCL) at a specific monitoring location.

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 USEPA.

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 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.

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

Total Organic Carbon (TOC): Organically-derived carbon that can be naturally occurring or result from human activities.

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

Measurements

PPM (parts per million):
3 drops in 42 gallons
1 second in 12 days
1 inch in 16 miles

PPB (parts per billion):
1 drop in 14,000 gallons
1 second in 32 years
1 inch in 16,000 miles

Key to Abbreviations

CU	Color Units
NA	Not Applicable
ND	Not Detected
NR	Not Required
NTU	Nephelometric Turbidity Units (a measure of clarity)
pCi/L	Picocuries per liter (a measure of radiation)
PPM	Parts per million or milligrams per liter (mg/L)
PPB	Parts per billion or micrograms per liter (µg/L)
µS/cm	Microsiemens per centimeter
TON	Threshold Odor Number

{A} Only surface water sources must comply with PDWS for Control of Disinfection By-Product Precursors and Turbidity. Turbidity is a measure of the cloudiness of water. It is a good indicator of filtration process effectiveness for water systems that treat surface water.

{B} The District screens for hexavalent chromium using total chromium monitoring. However, three wells had been monitored for hexavalent chromium more recently than total chromium.

{C} The District's fluoridation program provides the addition of fluoride to the District's SSA drinking water. The District adjusts the natural levels of fluoride to be within the DDW's Fluoride Control Range (0.6-1.2 mg/L).

{D} Calculation of the LRAA for the first three quarters of 2016 includes data from 2015.

{E} Unregulated contaminant monitoring helps USEPA and DDW to determine where certain contaminants occur and whether they need to be regulated. Both distribution and source water were monitored.

{F} Constituents listed under "Additional Drinking Water Constituents" are of interest to some consumers, however, they have no regulatory thresholds.

DDW allows the District to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of the data, though representative, is more than one year old.

SACRAMENTO SUBURBAN WATER DISTRICT

A Note for Sensitive Populations

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 their drinking water from their health care providers. CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (1.800.426.4791).

SSWD Board of Directors

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Monthly Board Meetings

3rd Monday of every month, 6:30 p.m.
3701 Marconi Ave., Suite 100
Sacramento, CA 95821

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Need More Information?

For questions about this report, or to request additional copies:

Call David Armand at 916.679.2888

EPA Drinking Water Information:

www.epa.gov/your-drinking-water

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

此份有關你的食水報告,內有重要資料和訊息,請找他人為你翻譯及解釋清楚。

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

Once again, your drinking water continues to meet all state and federal drinking water standards.

Please Conserve Water!

The District remains committed to providing its customers with as much information as possible about using water efficiently. Regardless of changing weather conditions, it is important to consider the future of our water supply when making decisions about how we use water today. In an effort to help customers use water more efficiently, the District has assembled a variety of programs, ideas, and references that are designed to reduce water use at home. If you are interested in learning more about what you can do to use water more efficiently inside and outside your home, please visit our website, **www.sswd.org/conservation-tips**, or call the District office at 916.972.7171 to schedule a Water-Wise House Call. Please help us preserve tomorrow's water supply by conserving water today.

2017 Consumer Confidence Report

Important Water Information

SACRAMENTO SUBURBAN WATER DISTRICT

Sacramento Suburban Water District (District) is pleased to present this detailed report on 2017 water quality. Results of samples collected during 2015, 2016 and 2017, as well as other water quality information, were used to prepare this report. As always, providing a high quality, reliable supply of water and superior customer service at the lowest responsible water rate are the District's top priorities.

Sources of Water

The District has two service areas; North and South. The North Service Area (NSA) is supplied with water from local groundwater wells and, when available, with surface water treated by the San Juan Water District (SJWD). The South Service Area (SSA) is supplied with water from local groundwater wells and, when available, with treated surface water from the City of Sacramento. In 2017, the District supplemented the supply of both service areas with surface water.

Water pumped from the wells is chlorinated per State Water Resources Control Board Division of Drinking Water (DDW) requirements to protect you from potential microbiological contaminants. All facilities are operated by state-certified operators. To ensure that your water meets state and federal regulations, the District conducts routine water quality testing at the wells and in the distribution system.

Overview of Drinking Water

The sources of drinking water (both tap 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.

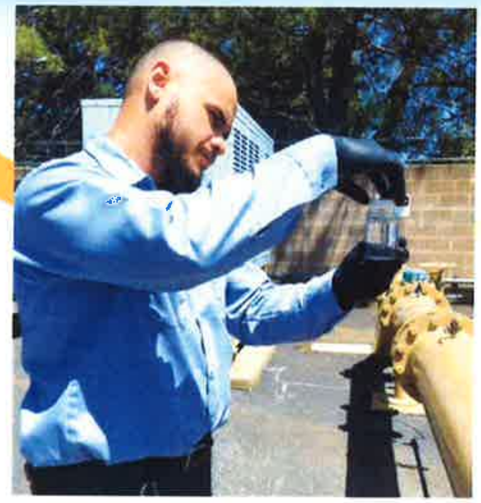
In order to ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (USEPA) and DDW prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration regulations and California law also establish limits for contaminants in bottled water that provide the same protection for public health. Additional information on bottled water is available on the California Department of Public Health website (**www.cdph.ca.gov/programs/CEH/DFDCS/pages/FDBprograms/foodsafetyprogram/water.aspx**).

Drinking water, including bottled water, may reasonably be expected to contain at least minor 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 (1.800.426.4791).

Important Information About...

Nitrate: Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. Nitrate (as nitrogen) in drinking water at levels above 10 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 serious illness; symptoms include shortness of breath and blueness of the skin. Nitrate levels above 10 mg/L may also affect the ability of the blood to carry oxygen in other individuals, such as pregnant women and those with certain specific enzyme deficiencies. If you are caring for an infant, or you are pregnant, you should ask advice from your health care provider.

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 District is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at: **www.epa.gov/lead**.



Source Water Assessments

An assessment of the District's groundwater wells was completed in December 2002. The results of the assessment indicated that wells in both the NSA and SSA are considered most vulnerable to: dry cleaners, gas stations, leaking underground storage tanks, petroleum transmission pipelines, sewer collection systems, contamination caused by illegal activities or dumping, and general urban commercial activities such as automobile repair facilities and photo processors. Both service areas are also vulnerable to industrial activities such as: electronic, plastic and metal manufacturing, petroleum storage facilities and known groundwater contamination plumes. The NSA is also considered vulnerable to historic activities at the former McClellan Air Force Base. The SSA may also be vulnerable to recreational activities associated with the American River. A copy of the complete Source Water Assessment is available at the District's office.

SSA Water Fluoridation

The District supplements the natural levels of fluoride in the SSA water to levels within DDW's prescribed Fluoride Control Range (0.6 mg/L to 1.2 mg/L). Parents of children that reside in the District's SSA should let their children's pediatricians and dentists know that their drinking water is fluoridated. According to the USEPA/ Centers for Disease Control and Prevention (CDC), drinking water with the right amount of fluoride is a safe and effective way to help keep the surface of teeth strong and help prevent tooth decay. Community water fluoridation is supported by the American Dental Association, American Academy of Pediatrics, U.S. Public Health Service and the World Health Organization.

Information About Hard Water

A common concern for many customers is water hardness because it can cause scaling and other issues. Water hardness is comprised of naturally-occurring minerals, particularly calcium and magnesium. Though hard water can be a nuisance, it is not known to cause adverse health effects, and thus is not regulated by DDW or USEPA. Effects of hard water may include: scale on plumbing fixtures and appliances; soap scum on shower walls, bathtubs, sinks and faucets; and reduced lathering of soaps, shampoos and household cleaners. Additional information may be found on the District's website at: **sswd.org** under the 'Departments' tab.

Lead Sampling in Schools

In January 2017, DDW directed Community Water Systems to perform drinking water lead monitoring at K-12 schools within their service areas when requested by a school administrator. In response to those requests, the District initiated and subsequently completed drinking water lead monitoring at a total of 44 schools in 2017.

Water Quality Testing

Please note! The drinking water the District supplies to customers has been tested for over 130 contaminants. In accordance with USEPA requirements, the table in the CCR only includes results for contaminants that were detected.

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 storm-water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

Pesticides and Herbicides which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

Organic Chemical Contaminants including synthetic and volatile organic chemicals, that are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.

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

Summary of Detected Constituents

How to Use This Table

1. Find your service area along the top of the table
2. Compare levels from your system's water to the state and federal standards (MCL), if applicable.
3. See page 6 for definitions, abbreviations, and additional information.

DETECTED PRIMARY DRINKING WATER CONSTITUENTS - Regulated to protect your health

CONSTITUENT	UNITS	MCL	PHG or (MCLG)	NORTH Service Area: SSWD (groundwater) RANGE	AVG.	SAMPLE DATE	NORTH Service Area: San Juan Water District (surface water) RANGE	AVG.	SAMPLE DATE	SOUTH Service Area: SSWD (groundwater) RANGE	AVG.	SAMPLE DATE	SOUTH Service Area: City of Sacramento (surface water) RANGE	AVG.	SAMPLE DATE	VIOLATION	MAJOR SOURCES
Arsenic	PPB	10	0.004	ND-4.1	ND	2016	ND	ND	2016	ND-4.8	2.2	2017	ND	ND	2016-2017	No	Erosion of natural deposits
Barium	PPM	1	2	ND-0.14	ND	2016-2017	0.14	0.14	2016	ND-0.13	ND	2017	ND	ND	2016-2017	No	Erosion of natural deposits
Control of Disinfection By-Product Precursors (TOC)(treated water) {A}	PPM	TT = 2	NA	NR	NR	NA	1.0-1.3	1.1	2017	NR	NR	NA	0.9-1.4	1.4	2017	No	Various natural and manmade sources
Dichloromethane	PPB	5	4	ND	ND	2016-2017	ND	ND	2016	ND-2.4	ND	2017	ND	ND	2017	No	Discharge from pharmaceutical and chemical factories; insecticide
Fluoride	PPM	2	1	ND-0.28	0.18	2016	ND	ND	2016	See Fluoride in Distribution System section below						No	Erosion of natural deposits
Hexavalent Chromium {B}	PPB	NA	0.02	2.8	2.8	2016	ND	ND	2016	NR	NR	NA	ND	ND	2017	No	Erosion of natural deposits; discharge from electroplating factories, leather tanneries, wood preservation, chemical synthesis, refractory production, and textile and manufacturing facilities
Nitrate (as Nitrogen)	PPM	10	10	ND-6.1	1.7	2017	ND	ND	2017	ND-7.3	2.4	2017	ND	ND	2017	No	Leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits
Tetrachloroethylene (PCE)	PPB	5	0.06	ND-2.3	ND	2016-2017	ND	ND	2016	ND-1.2	ND	2017	ND	ND	2017	No	Discharge from factories, dry cleaners, and auto shops (metal degreaser)
Trichloroethylene (TCE)	PPB	5	1.7	ND	ND	2016-2017	ND	ND	2016	ND-0.5	ND	2017	ND	ND	2017	No	Discharge from metal degreasing sites and other factories
Gross Alpha	pCi/L	15	(0)	ND-3.95	ND	2014-2017	ND	ND	2017	ND-3.86	ND	2014	ND	ND	2012-2017	No	Erosion of natural deposits
Combined Radium (Ra226 + Ra228)	pCi/L	5	(0)	ND-3.34	ND	2014-2017	ND	ND	2017	ND-2.11	ND	2014	ND	ND	2012	No	Erosion of natural deposits
Uranium	pCi/L	20	0.43	ND-4.97	ND	2014-2017	ND	ND	2017	ND-3.2	ND	2014	ND	ND	2012	No	Erosion of natural deposits

CONSTITUENT	UNITS	MCL	PHG or (MCLG)	NORTH Service Area: SSWD (groundwater) LEVEL FOUND	SAMPLE DATE	NORTH Service Area: San Juan Water District (surface water) LEVEL FOUND	SAMPLE DATE	SOUTH Service Area: SSWD (groundwater) LEVEL FOUND	SAMPLE DATE	SOUTH Service Area: City of Sacramento (surface water) LEVEL FOUND	SAMPLE DATE	VIOLATION	MAJOR SOURCES
Turbidity {A}	NTU	TT = 1 NTU	NA	NR	NA	0.079	2017	NR	NA	0.14	2017	No	Soil runoff
	% Samples	TT = 95% of Samples ≤0.3 NTU	NA			100%				100%			

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Summary of Detected Constituents (continued)

SACRAMENTO SUBURBAN WATER DISTRICT

How to Use This Table

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DISTRIBUTION SYSTEM

CONSTITUENT	UNITS	AL	PHG or (MCLG)	90TH PERCENTILE RESULT	NO. OF SAMPLES/ NO. EXCEEDING ACTION LEVEL	SAMPLE DATE	VIOLATION	MAJOR SOURCES
Copper (at tap)	PPM	1.3	0.3	0.230	62/0	2016	No	Internal corrosion of household plumbing systems; discharge from refineries and factories; erosion of natural deposits
CONSTITUENT	**UNITS**	**MCL [MRDL]**	**PHG or MRDLG**	**RANGE**	**AVERAGE**	**SAMPLE DATE**	**VIOLATION**	**MAJOR SOURCES**
Chlorine Residual	PPM	[4]	[4]	0.63-0.80	0.74	2017	No	Drinking water disinfectant added for treatment
Fluoride {C}	PPM	2	1	0.6-1.0	0.8	2017	No	Water additive that promotes strong teeth
Trihalomethanes	PPB	80	NA	ND-57	Highest LRAA = 44{D}	2017	No	By-product of drinking water chlorination
Haloacetic Acids	PPB	60	NA	ND-39	Highest LRAA = 37{D}	2017	No	By-product of drinking water chlorination

DETECTED SECONDARY DRINKING WATER CONSTITUENTS - Regulated for aesthetic qualities

			NORTH Service Area						SOUTH Service Area							
			SSWD (groundwater)			San Juan Water District (surface water)			SSWD (groundwater)			City of Sacramento (surface water)				
CONSTITUENT	UNITS	MCL	RANGE	AVG.	SAMPLE DATE	RANGE	AVG.	SAMPLE DATE	RANGE	AVG.	SAMPLE DATE	RANGE	AVG.	SAMPLE DATE	VIOLATION	MAJOR SOURCES
Chloride	PPM	500	8.4-82	37	2016-2017	2.8	2.8	2016	2.4-53	19.4	2017	ND	ND	2016-2017	No	Runoff/leaching from natural deposits
Color	CU	15	ND-5	ND	2016	ND	ND	2016	ND	ND	2017	ND	ND	2016-2017	No	Naturally-occurring minerals and organic materials
Copper	PPB	1000	ND-170	ND	2016	ND	ND	2016	ND	ND	2017	ND	ND	2016-2017	No	Internal corrosion of household plumbing; erosion of natural deposits
Iron	PPB	300	ND	ND	2016-2017	ND	ND	2016	ND-250	ND	2017	ND	ND	2016-2017	No	Leaching from natural deposits; industrial wastes
Manganese	PPB	50	ND-33	ND	2016-2017	ND	ND	2016	ND-57	ND	2017	ND	ND	2016-2017	No	Leaching from natural deposits
Odor	TON	3	ND	ND	2016	ND	ND	2016	ND-2	ND	2017	ND	ND	2016-2017	No	Naturally-occurring organic materials
Specific Conductance	µS/cm	1600	210-600	367	2016-2017	68-100	81	2016	150-530	320	2017	64-128	96	2016-2017	No	Substances that form ions when in water. Leaching from natural deposits
Sulfate	PPM	500	2-25	7.4	2016	7.5	7.5	2016	1.5-30	9	2017	5.9-13	9	2016-2017	No	Runoff/leaching from natural deposits; industrial wastes
Total Dissolved Solids	PPM	1000	180-380	263	2016	39	39	2016	110-350	227	2017	47-86	67	2016-2017	No	Runoff/leaching from natural deposits
Turbidity	NTU	5	ND-0.42	0.12	2016	See Primary Constituents table above			ND-0.45	ND	2017	See Primary Constituents table above			No	Suspended organic and inorganic particles

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Summary of Detected Constituents (continued)

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1. Find your service area along the top of the table
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DETECTED UCMR3 MONITORING CONSTITUENTS {E}

		NORTH Service Area			SOUTH Service Area			
CONSTITUENT	UNITS	RANGE	AVERAGE	SAMPLE DATE	RANGE	AVERAGE	SAMPLE DATE	PRIMARY SOURCES/USES
1,1-Dichloroethane	PPB	ND	ND	2014-2015	ND-0.038	ND	2014-2015	Halogenated alkane; used as a solvent
1,4-Dioxane	PPB	ND-0.11	ND	2014-2015	ND-0.17	ND	2014-2015	Cyclic aliphatic ether; used as a solvent or solvent stabilizer in manufacture and processing of paper, cotton, textile products, automotive coolant, cosmetics, and shampoos
17-beta-Estradiol	PPB	ND-0.0008	ND	2014-2015	ND	ND	2014-2015	Estrogenic hormone naturally produced in the human body; used in pharmaceuticals
Chlorate	PPB	ND-2500	244	2014-2015	ND-890	218	2014-2015	Decomposition of Sodium Hypochlorite; disinfection by-product
Chlorodifluoromethane	PPB	ND-15	0.9	2014-2015	ND	ND	2014-2015	Chlorofluorocarbon; occurs as a gas and used as a refrigerant, as a low-temperature solvent and in fluorocarbon resins, especially tetrafluoroethylene polymers
Chromium (total)	PPB	ND-8.5	3.8	2014-2015	ND-8.2	3.3	2014-2015	Naturally-occurring element; used in making steel and other alloys; Chromium-3 or -6 forms are used for chrome plating, dyes and pigments, leather tanning, and wood preservation
Hexavalent Chromium (dissolved)	PPB	ND-8.2	4.0	2014-2015	ND-8.2	3.6	2014-2015	Naturally-occurring element; used in making steel and other alloys; Chromium-3 or -6 forms are used for chrome plating, dyes and pigments, leather tanning, and wood preservation
Molybdenum	PPB	ND	ND	2014-2015	ND-2.8	ND	2014-2015	Naturally-occurring element found in ores and present in plants, animals, and bacteria; commonly used form molybdenum trioxide used as a chemical reagent
Strontium	PPB	120-710	277	2014-2015	140-630	276	2014-2015	Naturally-occurring element; historically, commercial use of strontium has been in the faceplate glass of cathode-ray tube televisions to block x-ray emissions
Vanadium	PPB	0.2-85	15.8	2014-2015	4.9-21	11.8	2014-2015	Naturally-occurring elemental metal; used as vanadium pentoxide which is a chemical intermediate and a catalyst

ADDITIONAL DRINKING WATER CONSTITUENTS {F}

		NORTH Service Area						SOUTH Service Area						
		SSWD (groundwater)			San Juan Water District (surface water)			SSWD (groundwater)			City of Sacramento (surface water)			
CONSTITUENT	UNITS	RANGE	AVERAGE	SAMPLE DATE	RANGE	AVERAGE	SAMPLE DATE	RANGE	AVERAGE	SAMPLE DATE	RANGE	AVERAGE	SAMPLE DATE	MAJOR SOURCES
Alkalinity	PPM	82-170	111	2016	14	14	2016	64-190	115	2017	19-43	31	2016-2017	Leaching from natural deposits
Calcium	PPM	16-51	24	2016	5.4	5.4	2016	14-43	25	2017	8.8-17	13	2016-2017	Erosion of natural deposits
Hardness	grains/gallon	4.5-14.6	6.7	2016	1.2	1.2	2016	3.2-12.9	7.5	2017	1.4-3.0	2.2	2016-2017	Leaching from natural deposits; hardness is the sum of polyvalent cations present in the water, generally naturally-occurring magnesium and calcium
	PPM	77-250	115		20	20		55-220	128		24-51	38		
Magnesium	PPM	8.9	13.6	2016	1.5	1.5	2016	4.8-29	15.8	2017	1.1-3.9	2.5	2016-2017	Erosion of natural deposits
pH	NONE	7.6-8.4	7.9	2016	7.72-8.76	8.17	2016	7.3-8.1	7.7	2017	NA	NA	NA	Leaching from natural deposits; a measurement of hydrogen ion activity
Sodium	PPM	12-58	29	2016-2017	2.3	2.3	2016	7.8-23	14	2017	1.8-5.8	3.8	2016-2017	Erosion of natural deposits

continued on next page

Summary of Detected Constituents (continued)

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Key to Abbreviations

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ND	Not Detected
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NTU	Nephelometric Turbidity Units (a measure of clarity)
pCi/L	Picocuries per liter (a measure of radiation)
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PPB	Parts per billion or micrograms per liter (µg/L)
µS/cm	Microsiemens per centimeter
TON	Threshold Odor Number

Table Notes

{A} Only surface water sources must comply with PDWS for Control of Disinfection By-Product Precursors and Turbidity. Turbidity is a measure of the cloudiness of water. It is a good indicator of filtration process effectiveness for water systems that treat surface water.

{B} DDW rescinded the 10 ppb MCL for hexavalent chromium on September 11, 2017. For more information see: **www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Chromium6.html**. The hexavalent chromium data shown is from one NSA well.

{C} The District's fluoridation program provides the addition of fluoride to the District's SSA drinking water. The District adjusts the natural levels of fluoride to be within DDW's Fluoride Control Range (0.6-1.2 mg/L).

{D} Calculation of the LRAA for the first three quarters of 2017 includes data from 2016.

{E} Unregulated contaminant monitoring helps USEPA and DDW to determine where certain contaminants occur and whether they need to be regulated. Both distribution and source water were monitored.

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SSWD Board of Directors

Monthly Board Meetings

3rd Monday of every month, 6:00 p.m.
3701 Marconi Ave., Suite 100
Sacramento, CA 95821

Visit Our Website at:

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Call David Armand at 916.679.2888

EPA Drinking Water Information:
www.epa.gov/your-drinking-water

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

此份有關你的食水報告,內有重要資料和訊息,請找他人為你翻譯及解釋清楚。

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

Once again, your drinking water continues to meet all state and federal drinking water standards.

Please Conserve Water!

In an effort to help customers use water more efficiently, the District has assembled a variety of programs, ideas and references that are designed to reduce water use at home. If you are interested in learning more about the District's conservation programs and what you can do to use water more efficiently inside and outside your home, please visit our website at **www.sswd.org/conservation-tips**. You may also schedule a Water Wise House Call by calling the District office at 916.972.7171. Please help us preserve tomorrow's water supply by conserving water today.

2018 Consumer Confidence Report

Important Water Information

SACRAMENTO SUBURBAN WATER DISTRICT

Sacramento Suburban Water District (SSWD) is pleased to present this detailed report on 2018 water quality. Results of samples collected during 2016, 2017, and 2018, as well as other water quality information, were used to prepare this report. As always, providing a high quality, reliable supply of water and superior customer service at the lowest responsible water rate are SSWD's top priorities.

Sources of Water

SSWD has two service areas, North and South. The North Service Area (NSA) is supplied with water from local groundwater wells and, when available, with surface water treated by the San Juan Water District (SJWD). The South Service Area (SSA) is supplied with water from local groundwater wells and, when available, with treated surface water from the City of Sacramento. In 2018, SSWD supplemented the NSA water supply with surface water, while the SSA was supplied solely with groundwater.

Water pumped from the wells is chlorinated per State Water Resources Control Board, Division of Drinking Water (DDW) requirements to protect you from potential microbiological contaminants. All facilities are operated by state-certified operators. To ensure that your water meets state and federal regulations, SSWD conducts routine water quality testing at the wells and in the distribution system.

Overview of Drinking Water

The United States Environmental Protection Agency (USEPA) and DDW require the educational language below to be included in all public water system's Consumer Confidence Reports. For a complete list of detected contaminants and their potential sources, please see the tables in the section titled, "2018 Summary of Detected Constituents."

The sources of drinking water (both tap 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.

In order to ensure that tap water is safe to drink, the USEPA and DDW prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration regulations and California law also establish limits for contaminants in bottled water that provide the same protection for public health. Additional information on bottled water is available on the California Department of Public Health website (**https://www.cdph.ca.gov/Programs/CEH/DFDCS/Pages/FDBPrograms/FoodSafetyProgram/Water.aspx**).

Drinking water, including bottled water, may reasonably be expected to contain at least minor 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 (1.800.426.4791).

Important Information About...

Nitrate: Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. Nitrate (as nitrogen) in drinking water at levels above 10 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 serious illness; symptoms include shortness of breath and blueness of the skin. Nitrate levels above 10 mg/L may also affect the ability of the blood to carry oxygen in other individuals, such as pregnant women and those with certain specific enzyme deficiencies. If you are caring for an infant, or you are pregnant, you should ask advice from your health care provider.

Nitrate levels in water supplied by SSWD are below 10 mg/L. Nitrate monitoring is performed at least annually and, in many cases, quarterly. If there is an indication the nitrate level in a well may reach the 10 mg/L regulatory threshold, it is immediately removed from service.

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

As noted above, due to the variety of materials used in some customer's plumbing systems (including home water treatment units) lead results may vary. If you are concerned about the potential impact the internal plumbing system in your home or business may have on lead levels in your drinking water, SSWD will refer you to a laboratory that you can utilize to test your water.

Source Water Assessments

An assessment of SSWD's groundwater wells was completed in December 2002. The results of the assessment indicated that wells in both the NSA and SSA are considered most vulnerable to: dry cleaners, gas stations, leaking underground storage tanks, petroleum transmission pipelines, sewer collection systems, contamination caused by illegal activities or dumping, and general urban commercial activities such as automobile repair facilities and photo processors. Both service areas are also vulnerable to industrial activities such as: electronic, plastic and metal manufacturing, petroleum storage facilities, and known groundwater contamination plumes. The NSA is also considered vulnerable to historic activities at the former McClellan Air Force Base. The SSA may also be vulnerable to recreational activities associated with the American River. A copy of the complete Source Water Assessment is available at SSWD's office.

SSA Water Fluoridation

SSWD supplements the natural levels of fluoride in the SSA water to levels within DDW's prescribed Fluoride Control Range (0.6 mg/L to 1.2 mg/L). Parents of children that reside in SSWD's SSA should let their children's pediatricians and dentists know that their drinking water is fluoridated. According to the USEPA/ Centers for Disease Control and Prevention (CDC), drinking water with the right amount of fluoride is a safe and effective way to help keep the surface of teeth strong and help prevent tooth decay. Community water fluoridation is supported by the American Dental Association, American Academy of Pediatrics, U.S. Public Health Service, and the World Health Organization.

Information About Hard Water

A common concern for many customers is water hardness because it can cause scaling and other aesthetic issues. Water hardness is comprised of naturally-occurring minerals, particularly calcium and magnesium. Though hard water can be a nuisance, it is not known to cause adverse health effects, and thus is not regulated by DDW or USEPA. Effects of hard water may include: scale on plumbing fixtures and appliances; soap scum on shower walls, bathtubs, sinks and faucets; and reduced lathering of soaps, shampoos, and household cleaners. Additional information may be found on SSWD's website at: **sswd.org** under the 'Departments' heading.

Lead Sampling in Schools

In early 2017, SSWD began drinking water lead monitoring at K-12 schools in accordance with DDW requirements. In January 2018, the California Health and Safety Code (Section 116277) expanded those requirements to include preschool and child day care facilities on public school property. SSWD has performed monitoring at 44 schools through the end of 2018. If you would like to know if monitoring was performed at your child's school or day care facility (and if so, the results), please visit DDW's "Lead Sampling of Drinking Water in California Schools" web page at: **https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/leadsamplinginschools.html**, or contact your child's school. SSWD will continue working closely with K-12 schools, preschools, and child day care facilities on this important project into 2019 when the monitoring requirements sunset.

Water Quality Testing

Please note! The drinking water SSWD supplies to customers has been tested for over 130 contaminants. In accordance with USEPA requirements, the table in the CCR only includes results for contaminants that were detected.

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 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 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 application, and septic systems.

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

2018 Summary of Detected Constituents

How to Use This Table

1. Find your service area along the top of the table. **2.** Compare levels from your system's water to the state and federal standards (Maximum Contaminant Level [MCL]), if applicable.

DETECTED PRIMARY DRINKING WATER CONSTITUENTS - Regulated to protect your health

				NORTH Service Area						SOUTH Service Area				
				SSWD (groundwater)			San Juan Water District (surface water)			SSWD (groundwater)				
CONSTITUENT	UNITS	MCL	PHG or (MCLG)	RANGE	AVG.	SAMPLE DATE	RANGE	AVG.	SAMPLE DATE	RANGE	AVG.	SAMPLE DATE	VIOLATION	MAJOR SOURCES
Aluminium	PPM	1	0.6	ND	ND	2016	ND	ND	2016	ND-0.15	ND	2017	No	Erosion of natural deposits; residue from some surface water treatment processes
Arsenic	PPB	10	0.004	ND-4.1	ND	2016	ND	ND	2016	ND-4.8	2.2	2017-2018	No	Erosion of natural deposits
Barium	PPM	1	2	ND-0.14	ND	2016-2018	ND	ND	2016	ND-0.13	ND	2017	No	Discharges of oil drilling wastes and from metal refineries; erosion of natural deposits
Control of Disinfection By-Product Precursors (TOC)(treated water) {A}	PPM	TT = 2	NA	NR	NR	NA	0.9-1.63	1.14	2018	NR	NR	NA	No	Various natural and manmade sources
Fluoride	PPM	2	1	ND-0.28	0.15	2016	ND	ND	2016	See Fluoride in Distribution System section below			No	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories
Hexavalent Chromium {B}	PPB	NA	0.02	2.8	2.8	2016	ND	ND	2016	NR	NR	NA	No	Erosion of natural deposits; discharge from electroplating factories, leather tanneries, wood preservation, chemical synthesis, refractory production, and textile and manufacturing facilities
Nitrate (as Nitrogen)	PPM	10	10	ND-6.1	1.8	2018	ND	ND	2018	ND-6.5	2.0	2018	No	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits
Tetrachloroethylene (PCE)	PPB	5	0.06	ND-2.5	ND	2016-2018	ND	ND	2016	ND	ND	2017-2018	No	Discharge from factories, dry cleaners, and auto shops (metal degreaser)
Gross Alpha	pCi/L	15	(0)	ND-3.95	ND	2014-2017	ND	ND	2017	ND-3.86	ND	2014	No	Erosion of natural deposits
Combined Radium (Ra226 + Ra228)	pCi/L	5	(0)	ND-3.34	ND	2014-2017	ND	ND	2017	ND-2.11	ND	2014	No	Erosion of natural deposits
Uranium	pCi/L	20	0.43	ND-4.97	ND	2014-2017	NR	NR	NA	ND-3.2	ND	2014	No	Erosion of natural deposits

				NORTH Service Area				SOUTH Service Area			
				SSWD (groundwater)		San Juan Water District (surface water)		SSWD (groundwater)			
CONSTITUENT	UNITS	MCL	PHG or (MCLG)	LEVEL FOUND	SAMPLE DATE	LEVEL FOUND	SAMPLE DATE	LEVEL FOUND	SAMPLE DATE	VIOLATION	MAJOR SOURCES
Turbidity {A}	NTU	TT = 1 NTU	NA	NR	NA	0.049	2018	NR	NA	No	Soil runoff
	% Samples	TT = 95% of Samples ≤0.3 NTU	NA	NR	NA	100%	2018	NR	NA		

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2018 Summary of Detected Constituents (continued)

How to Use This Table

1. Find your service area along the top of the table. **2.** Compare levels from your system's water to the state and federal standards (Maximum Contaminant Level [MCL]), if applicable.

DISTRIBUTION SYSTEM

CONSTITUENT	UNITS	AL	PHG or (MCLG)	90TH PERCENTILE RESULT	NO. OF SAMPLES/ NO. EXCEEDING ACTION LEVEL	SAMPLE DATE	VIOLATION	MAJOR SOURCES
Copper (at tap)	PPM	1.3	0.3	0.230	62/0	2016	No	Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives

CONSTITUENT	UNITS	MCL [MRDL]	PHG or (MCLG)	HIGHEST MONTHLY RESULT	# MONTHS WITH POSITIVE RESULTS	SAMPLE DATE	VIOLATION	MAJOR SOURCES
Total Coliform Bacteria {C}	% Positive Tests	5.0% of monthly samples are positive	(0)	0.81	1	June 2018	No	Naturally present in the environment

CONSTITUENT	UNITS	MCL	PHG or (MCLG)	TOTAL POSITIVE SAMPLES	SAMPLE DATE	VIOLATION	MAJOR SOURCES
E. coli {C}	#Positive Samples	A routine sample and a repeat sample are total coliform positive, and one of these is also fecal coliform or E. coli positive	0	1	June 2018	No	Human and animal fecal waste

CONSTITUENT	UNITS	MCL [MRDL]	PHG or [MRDLG]	RANGE	AVERAGE	SAMPLE DATE	VIOLATION	MAJOR SOURCES
Chlorine Residual	PPM	[4]	[4]	0.67-0.86	0.73	2018	No	Drinking water disinfectant added for treatment
Fluoride {D}	PPM	2	1	0.6-1.1	0.8	2018	No	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories
Trihalomethanes	PPB	80	NA	ND-40	Highest LRAA = 28{E}	2018	No	By-product of drinking water disinfection
Haloacetic Acids	PPB	60	NA	ND-34	Highest LRAA = 23{E}	2018	No	By-product of drinking water disinfection

DETECTED SECONDARY DRINKING WATER CONSTITUENTS - Regulated for aesthetic qualities

			NORTH Service Area						SOUTH Service Area				
			SSWD (groundwater)			San Juan Water District (surface water)			SSWD (groundwater)				
CONSTITUENT	UNITS	MCL	RANGE	AVG.	SAMPLE DATE	RANGE	AVG.	SAMPLE DATE	RANGE	AVERAGE	SAMPLE DATE	VIOLATION	MAJOR SOURCES
Aluminium	PPB	200	ND	ND	2016	ND	ND	2016	ND-150	ND	2017	No	Erosion of natural deposits; residue from some surface water treatment processes
Chloride	PPM	500	8.4-82	37	2016-2018	2.8	2.8	2016	2.4-53	20.3	2017	No	Runoff/leaching from natural deposits
Color	CU	15	ND-5	ND	2016	ND	ND	2016	ND	ND	2017	No	Naturally-occurring organic materials
Copper	PPM	1	ND-0.17	ND	2016	ND	ND	2016	ND	ND	2017	No	Internal corrosion of household plumbing; erosion of natural deposits; leaching from wood preservatives
Iron	PPB	300	ND	ND	2016-2017	ND	ND	2016	ND-250	ND	2017-2018	No	Leaching from natural deposits; industrial wastes
Manganese	PPB	50	ND-36	ND	2016-2018	ND	ND	2016	ND-43	ND	2017-2018	No	Leaching from natural deposits
Odor	TON	3	ND	ND	2016	ND	ND	2016	ND-2	ND	2017	No	Naturally-occurring organic materials
Specific Conductance	µS/cm	1600	210-600	369	2016-2017	68-100	81	2016	150-530	325	2017	No	Substances that form ions when in water
Sulfate	PPM	500	2-25	7.5	2016	7.5	7.5	2016	1.5-30	9	2017	No	Runoff/leaching from natural deposits; industrial wastes
Total Dissolved Solids	PPM	1000	180-380	266	2016	39	39	2016	110-350	230	2017	No	Runoff/leaching from natural deposits
Turbidity	NTU	5	ND-0.42	0.12	2016	See Primary Constituents table above			ND-0.66	ND	2017	No	Soil runoff

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SACRAMENTO SUBURBAN WATER DISTRICT

2018 Summary of Detected Constituents (continued)

How to Use This Table

1. Find your service area along the top of the table. 2. Compare levels from your system's water to the state and federal standards (Maximum Contaminant Level [MCL]), if applicable.

DETECTED UCMR3 MONITORING CONSTITUENTS {F}

		NORTH Service Area			SOUTH Service Area			
CONSTITUENT	UNITS	RANGE	AVERAGE	SAMPLE DATE	RANGE	AVERAGE	SAMPLE DATE	PRIMARY SOURCES/USES
1,4-Dioxane	PPB	ND-0.11	ND	2014-2015	ND-0.17	ND	2014-2015	Cyclic aliphatic ether; used as a solvent or solvent stabilizer in the manufacture and processing of paper, cotton, textile products, automotive coolant, cosmetics, and shampoos
17-beta-Estradiol	PPB	ND-0.0008	ND	2014-2015	ND	ND	2014-2015	Estrogenic hormone naturally produced in the human body; used in pharmaceuticals
Chlorate	PPB	ND-660	179	2014-2015	ND-890	218	2014-2015	Decomposition of sodium hypochlorite; disinfection by-product
Chlorodifluoromethane	PPB	ND-15	1.1	2014-2015	ND	ND	2014-2015	Chlorofluorocarbon; occurs as a gas and used as a refrigerant, as a low-temperature solvent and in fluorocarbon resins, especially tetrafluoroethylene polymers
Chromium (total)	PPB	ND-8.5	3.9	2014-2015	ND-8.2	3.3	2014-2015	Naturally-occurring element; used in making steel and other alloys; Chromium-3 or -6 forms are used for chrome plating, dyes and pigments, leather tanning, and wood preservation
Hexavalent Chromium	PPB	ND-8.2	4.2	2014-2015	ND-8.2	3.6	2014-2015	Naturally-occurring element; used in making steel and other alloys; Chromium-3 or -6 forms are used for chrome plating, dyes and pigments, leather tanning, and wood preservation
Molybdenum	PPB	ND	ND	2014-2015	ND-2.8	ND	2014-2015	Naturally-occurring element found in ores and present in plants, animals, and bacteria; commonly used form molybdenum trioxide used as a chemical reagent
Strontium	PPB	120-560	263	2014-2015	140-630	276	2014-2015	Naturally-occurring element; historically, commercial use of strontium has been in the faceplate glass of cathode-ray tube televisions to block x-ray emissions
Vanadium	PPB	9.3-85	16.6	2014-2015	4.9-21	11.8	2014-2015	Naturally-occurring elemental metal; used as vanadium pentoxide which is a chemical intermediate and a catalyst

DETECTED UCMR4 MONITORING CONSTITUENTS {F,G}

		NORTH Service Area			SOUTH Service Area			
CONSTITUENT	UNITS	RANGE	AVERAGE	SAMPLE DATE	RANGE	AVERAGE	SAMPLE DATE	PRIMARY SOURCES/USES
Germanium	PPB	ND-0.43	ND	2018	ND	ND	2018	Naturally-occurring element; a byproduct of zinc ore processing; used in infrared optics, fiber-optic systems, electronics and solar applications
Manganese	PPB	ND-36	3.79	2018	ND-26.2	1.05	2018	Naturally-occurring element; used in steel production, fertilizer, batteries and fireworks; drinking water and waste water treatment chemical; essential nutrient

		DISTRIBUTION SYSTEM			
CONSTITUENT	UNITS	RANGE	AVERAGE	SAMPLE DATE	PRIMARY SOURCES/USES
HAA5	PPB	0-34.6	19.3	2018	Byproduct of drinking water disinfection
HAA6Br	PPB	0-2.91	1.08	2018	Byproduct of drinking water disinfection
HAA9	PPB	0-35.99	20.37	2018	Byproduct of drinking water disinfection

ADDITIONAL DRINKING WATER CONSTITUENTS {H}

		NORTH Service Area						SOUTH Service Area			
		SSWD (groundwater)			San Juan Water District (surface water)			SSWD (groundwater)			
CONSTITUENT	UNITS	RANGE	AVERAGE	SAMPLE DATE	RANGE	AVERAGE	SAMPLE DATE	RANGE	AVERAGE	SAMPLE DATE	MAJOR SOURCES
Alkalinity	PPM	82-170	112	2016	14	14	2016	64-190	116	2017	Leaching from natural deposits
Calcium	PPM	16-51	24	2016	5.4	5.4	2016	14-43	25	2017	Erosion of natural deposits
Hardness	grains/gallon	4.5-14.6	6.7	2016	1.2	1.2	2016	3.2-12.9	7.5	2017	Leaching from natural deposits; hardness is the sum of polyvalent cations present in the water, generally naturally-occurring magnesium and calcium
	PPM	77-250	118		20	20		55-220	130		
Magnesium	PPM	8.9-29	14	2016	1.5	1.5	2016	4.8-29	16.4	2017	Erosion of natural deposits
pH	NONE	7.4-8.1	7.9	2016	7.72-8.76	8.17	2016	7.3-8.1	7.7	2017	Leaching from natural deposits; a measurement of hydrogen ion activity
Sodium	PPM	12-58	28	2016-2017	2.3	2.3	2016	7.8-23	14	2017	Erosion of natural deposits

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2018 Summary of Detected Constituents (continued)

Water Quality Definitions

Locational Running Annual Average (LRAA): The LRAA is a calculation used to determine compliance with a primary drinking water standard (or MCL) at a specific monitoring location.

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 USEPA.

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 Standard (PDWS): MCLs, MRDLs, and treatment techniques (TTs) 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.

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

Total Organic Carbon (TOC): Organically-derived carbon that can be naturally occurring or result from human activities.

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

Measurements

PPM (parts per million):	PPB (parts per billion):
3 drops in 42 gallons	1 drop in 14,000 gallons
1 second in 12 days	1 second in 32 years
1 inch in 16 miles	1 inch in 16,000 miles

DDW allows SSWD to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of the data, though representative, is more than one year old.

Key to Abbreviations

CU	Color Units
NA	Not Applicable
ND	Not Detected
NR	Not Required
NTU	Nephelometric Turbidity Units (a measure of clarity)
pCi/L	Picocuries per liter (a measure of radiation)
PPM	Parts per million or milligrams per liter (mg/L)
PPB	Parts per billion or micrograms per liter (µg/L)
HAA	Haloacetic Acids
µS/cm	Microsiemens per centimeter
TON	Threshold Odor Number

Table Notes

{A} Only surface water sources must comply with the PDWS for Control of Disinfection By-Product Precursors and Turbidity. Turbidity is a measure of the cloudiness of water. It is a good indicator of filtration process effectiveness for water systems that treat surface water.

{B} DDW rescinded the 10 ppb MCL for hexavalent chromium on September 11, 2017. For more information see: **www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Chromium6.html**. The hexavalent chromium data shown is from one NSA well.

{C} SSWD performed a repeat sampling and thorough investigation and concluded the Total Coliform and E. coli Bacteria reported was not representative of the water in the distribution system and was instead associated with the physical works and/or operating procedures of the contract lab.

{D} SSWD's fluoridation program provides the addition of fluoride to the system's SSA drinking water. Natural levels of fluoride are adjusted to be within DDW's Fluoride Control Range (0.6-1.2 mg/L).

{E} Calculation of the LRAA for the first three quarters of 2018 includes data from 2017.

{F} Unregulated contaminant monitoring helps USEPA and DDW to determine where certain contaminants occur and whether they need to be regulated. Both distribution system and source water are included.

{G} UCMR4 monitoring will continue into 2020.

{H} Constituents listed under "Additional Drinking Water Constituents" are of interest to some consumers, however, they have no regulatory thresholds.

A Note for Sensitive Populations

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 their drinking water from their health care providers. CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (1.800.426.4791).

SSWD Board of Directors

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Monthly Board Meetings

3rd Monday of each month, 6:00 p.m.
3701 Marconi Ave., Suite 100
Sacramento, CA 95821

Visit Our Website at sswd.org

Need More Information?

For questions about this report, or to request additional copies:
Call David Armand at 916.679.2888

EPA Drinking Water Information:
www.epa.gov/your-drinking-water

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

本報告包含有關飲用水的非常重要的信息。 翻譯它或與熟悉它的人交談。

Этот отчет содержит очень важную информацию о вашей питьевой воде. Переведите это или поговорите с кем-то, кто это хорошо понимает.

Once again, your drinking water continues to meet all state and federal drinking water standards.

Please Conserve Water!

In an effort to help customers use water more efficiently, SSWD has assembled a variety of programs, ideas and references that are designed to reduce water use at home. If you are interested in learning more about SSWD's conservation programs and what you can do to use water more efficiently inside and outside your home, please visit our website at **www.sswd.org/conservation-tips**. You may also schedule a Water Wise House Call by calling SSWD's office at 916.972.7171. Please help us preserve tomorrow's water supply by conserving water today.

ATTACHMENT 4

ACWA Cost Estimates for Treatment Technologies

Table 1
Reference: 2012 ACWA PHG Survey

COST ESTIMATES FOR TREATMENT TECHNOLOGIES
(INCLUDES ANNUALIZED CAPITAL AND O&M COSTS)

No.	Treatment Technology	Source of Information	Estimated Unit Cost 2012 ACWA Survey Indexed to 2018* ($/1,000 gallons treated)
1	Ion Exchange	Coachella Valley WD, for GW, to reduce Arsenic concentrations. 2011 costs.	2.19
2	Ion Exchange	City of Riverside Public Utilities, for GW, for Perchlorate treatment.	1.06
3	Ion Exchange	Carollo Engineers, anonymous utility, 2012 costs for treating GW source for Nitrates. Design souce water concentration: 88 mg/L NO_3. Design finished water concentration: 45 mg/L NO_3. Does not include concentrate disposal or land cost.	0.80
4	Granular Activated Carbon	City of Riverside Public Utilities, GW sources, for TCE, DBCP (VOC, SOC) treatment.	0.53
5	Granular Activated Carbon	Carollo Engineers, anonymous utility, 2012 costs for treating SW source for TTHMs. Design souce water concentration: 0.135 mg/L. Design finished water concentration: 0.07 mg/L. Does not include concentrate disposal or land cost.	0.38
6	Granular Activated Carbon, Liquid Phase	LADWP, Liquid Phase GAC treatment at Tujunga Well field. Costs for treating 2 wells. Treament for 1,1 DCE (VOC). 2011-2012 costs.	1.62
7	Reverse Osmosis	Carollo Engineers, anonymous utility, 2012 costs for treating GW source for Nitrates. Design souce water concentration: 88 mg/L NO_3. Design finished water concentration: 45 mg/L NO_3. Does not include concentrate disposal or land cost.	0.86
8	Packed Tower Aeration	City of Monrovia, treatment to reduce TCE, PCE concentrations. 2011-12 costs.	0.47
9	Ozonation+ Chemical addition	SCVWD, STWTP treatment plant includes chemical addition + ozone generation costs to reduce THM/HAAs concentrations. 2009-2012 costs.	0.10

COST ESTIMATES FOR TREATMENT TECHNOLOGIES

(INCLUDES ANNUALIZED CAPITAL AND O&M COSTS)

No.	Treatment Technology	Source of Information	Estimated Unit Cost 2012 ACWA Survey Indexed to 2018* ($/1,000 gallons treated)
10	Ozonation+ Chemical addition	SCVWD, PWTP treatment plant includes chemical addition + ozone generation costs to reduce THM/HAAs concentrations, 2009-2012 costs.	0.21
11	Coagulation/Filtration	Soquel WD, treatment to reduce manganese concentrations in GW. 2011 costs.	0.80
12	Coagulation/Filtration Optimization	San Diego WA, costs to reduce THM/Bromate, Turbidity concentrations, raw SW a blend of State Water Project water and Colorado River water, treated at Twin Oaks Valley WTP.	0.91
13	Blending (Well)	Rancho California WD, GW blending well, 1150 gpm, to reduce fluoride concentrations.	0.76
14	Blending (Wells)	Rancho California WD, GW blending wells, to reduce arsenic concentrations, 2012 costs.	0.62
15	Blending	Rancho California WD, using MWD water to blend with GW to reduce arsenic concentrations. 2012 costs.	0.74
16	Corrosion Inhibition	Atascadero Mutual WC, corrosion inhibitor addition to control aggressive water. 2011 costs.	0.09

*Costs were adjusted from date of original estimates to present, where appropriate, using the Engineering News Record (ENR) annual average building costs of 2018 and 2012. The adjustment factor was derived from the ratio of 2018 Index/2012 Index, or 1.188.

For the indexed 2015 costs, please refer to the ACWA PHG Guidance published in March 2016.

Table 2
Reference: Other Agencies

COST ESTIMATES FOR TREATMENT TECHNOLOGIES
(INCLUDES ANNUALIZED CAPITAL AND O&M COSTS)

No.	Treatment Technology	Source of Information	Estimated 2012 Unit Cost Indexed to 2018* ($/1,000 gallons treated)
1	Reduction - Coagulation-Filtration	Reference: February 28, 2013, Final Report Chromium Removal Research, City of Glendale, CA. 100-2000 gpm. Reduce Hexavalent Chromium to 1 ppb.	1.74 - 10.97
2	IX - Weak Base Anion Resin	Reference: February 28, 2013, Final Report Chromium Removal Research, City of Glendale, CA. 100-2000 gpm. Reduce Hexavalent Chromium to 1 ppb.	1.79 - 7.47
3	IX	Golden State Water Co., IX w/disposable resin, 1 MGD, Perchlorate removal, built in 2010.	0.55
4	IX	Golden State Water Co., IX w/disposable resin, 1000 gpm, perchlorate removal (Proposed; O&M estimated).	1.19
5	IX	Golden State Water Co., IX with brine regeneration, 500 gpm for Selenium removal, built in 2007.	7.81
6	GFO/Adsorption	Golden State Water Co., Granular Ferric Oxide Resin, Arsenic removal, 600 gpm, 2 facilities, built in 2006.	2.04 - 2.18
7	RO	Reference: Inland Empire Utilities Agency : Chino Basin Desalter. RO cost to reduce 800 ppm TDS, 150 ppm Nitrate (as NO3); approx. 7 mgd.	2.67
8	IX	Reference: Inland Empire Utilities Agency : Chino Basin Desalter. IX cost to reduce 150 ppm Nitrate (as NO3); approx. 2.6 mgd.	1.49

9	Packed Tower Aeration	Reference: Inland Empire Utilities Agency : Chino Basin Desalter. PTA-VOC air stripping, typical treated flow of approx. 1.6 mgd.	0.45
10	IX	Reference: West Valley WD Report, for Water Recycling Funding Program, for 2.88 mgd treatment facility. IX to remove Perchlorate, Perchlorate levels 6-10 ppb. 2008 costs.	0.62 - 0.88
11	Coagulation Filtration	Reference: West Valley WD, includes capital, O&M costs for 2.88 mgd treatment facility- Layne Christensen packaged coagulation Arsenic removal system. 2009-2012 costs.	0.41
12	FBR	Reference: West Valley WD/Envirogen design data for the O&M + actual capitol costs, 2.88 mgd fluidized bed reactor (FBR) treatment system, Perchlorate and Nitrate removal, followed by multimedia filtration & chlorination, 2012. NOTE: The capitol cost for the treatment facility for the first 2,000 gpm is $23 million annualized over 20 years with ability to expand to 4,000 gpm with minimal costs in the future. $17 million funded through state and federal grants with the remainder funded by WVWD and the City of Rialto.	1.84 - 1.94

*Costs were adjusted from date of original estimates to present, where appropriate, using the Engineering News Record (ENR) annual average building costs of 2018 and 2012. The adjustment factor was derived from the ratio of 2018 Index/2012 Index, or 1.188.

For the indexed 2015 costs, please refer to the ACWA PHG Guidance published in March 2016.

Table 3
Reference: Updated 2012 ACWA Cost of Treatment Table

COST ESTIMATES FOR TREATMENT TECHNOLOGIES
(INCLUDES ANNUALIZED CAPITAL AND O&M COSTS)

No.	Treatment Technology	Source of Information	Estimated 2012 Unit Cost Indexed to 2018* ($/1,000 gallons treated)
1	Granular Activated Carbon	Reference: Malcolm Pirnie estimate for California Urban Water Agencies, large surface water treatment plants treating water from the State Water Project to meet Stage 2 D/DBP and bromate regulation, 1998	0.63 - 1.19
2	Granular Activated Carbon	Reference: Carollo Engineers, estimate for VOC treatment (PCE), 95% removal of PCE, Oct. 1994,1900 gpm design capacity	0.29
3	Granular Activated Carbon	Reference: Carollo Engineers, est. for a large No. Calif. surf. water treatment plant (90 mgd capacity) treating water from the State Water Project, to reduce THM precursors, ENR construction cost index = 6262 (San Francisco area) - 1992	1.38
4	Granular Activated Carbon	Reference: CH2M Hill study on San Gabriel Basin, for 135 mgd central treatment facility for VOC and SOC removal by GAC, 1990	0.54 - 0.78
5	Granular Activated Carbon	Reference: Southern California Water Co. - actual data for "rented" GAC to remove VOCs (1,1-DCE), 1.5 mgd capacity facility, 1998	2.47
6	Granular Activated Carbon	Reference: Southern California Water Co. - actual data for permanent GAC to remove VOCs (TCE), 2.16 mgd plant capacity, 1998	1.60
7	Reverse Osmosis	Reference: Malcolm Pirnie estimate for California Urban Water Agencies, large surface water treatment plants treating water from the State Water Project to meet Stage 2 D/DBP and bromate regulation, 1998	1.85 - 3.55
8	Reverse Osmosis	Reference: Boyle Engineering, RO cost to reduce 1000 ppm TDS in brackish groundwater in So. Calif., 1.0 mgd plant operated at 40% of design flow, high brine line cost, May 1991	4.38
9	Reverse Osmosis	Reference: Boyle Engineering, RO cost to reduce 1000 ppm TDS in brackish groundwater in So. Calif., 1.0 mgd plant operated at 100% of design flow, high brine line cost, May 1991	2.70
10	Reverse Osmosis	Reference: Boyle Engineering, RO cost to reduce 1000 ppm TDS in brackish groundwater in So. Calif., 10.0 mgd plant operated at 40% of design flow, high brine line cost, May 1991	2.92

COST ESTIMATES FOR TREATMENT TECHNOLOGIES

(INCLUDES ANNUALIZED CAPITAL AND O&M COSTS)

No.	Treatment Technology	Source of Information	Estimated 2012 Unit Cost Indexed to 2018* ($/1,000 gallons treated)
11	Reverse Osmosis	Reference: Boyle Engineering, RO cost to reduce 1000 ppm TDS in brackish groundwater in So. Calif., 10.0 mgd plant operated at 100% of design flow, high brine line cost, May 1991	2.26
12	Reverse Osmosis	Reference: Arsenic Removal Study, City of Scottsdale, AZ - CH2M Hill, for a 1.0 mgd plant operated at 40% of design capacity, Oct. 1991	7.33
13	Reverse Osmosis	Reference: Arsenic Removal Study, City of Scottsdale, AZ - CH2M Hill, for a 1.0 mgd plant operated at 100% of design capacity, Oct. 1991	4.33
14	Reverse Osmosis	Reference: Arsenic Removal Study, City of Scottsdale, AZ - CH2M Hill, for a 10.0 mgd plant operated at 40% of design capacity, Oct. 1991	3.24
15	Reverse Osmosis	Reference: Arsenic Removal Study, City of Scottsdale, AZ - CH2M Hill, for a 10.0 mgd plant operated at 100% of design capacity, Oct. 1991	2.01
16	Reverse Osmosis	Reference: CH2M Hill study on San Gabriel Basin, for 135 mgd central treatment facility with RO to remove nitrate, 1990	2.02 - 3.55
17	Packed Tower Aeration	Reference: Analysis of Costs for Radon Removal... (AWWARF publication), Kennedy/Jenks, for a 1.4 mgd facility operating at 40% of design capacity, Oct. 1991	1.16
18	Packed Tower Aeration	Reference: Analysis of Costs for Radon Removal... (AWWARF publication), Kennedy/Jenks, for a 14.0 mgd facility operating at 40% of design capacity, Oct. 1991	0.62
19	Packed Tower Aeration	Reference: Carollo Engineers, estimate for VOC treatment (PCE) by packed tower aeration, without off-gas treatment, O&M costs based on operation during 329 days/year at 10% downtime, 16 hr/day air stripping operation, 1900 gpm design capacity, Oct. 1994	0.31
20	Packed Tower Aeration	Reference: Carollo Engineers, for PCE treatment by Ecolo-Flo Enviro-Tower air stripping, without off-gas treatment, O&M costs based on operation during 329 days/year at 10% downtime, 16 hr/day air stripping operation, 1900 gpm design capacity, Oct. 1994	0.32
21	Packed Tower Aeration	Reference: CH2M Hill study on San Gabriel Basin, for 135 mgd central treatment facility - packed tower aeration for VOC and radon removal, 1990	0.50 - 0.82

COST ESTIMATES FOR TREATMENT TECHNOLOGIES

(INCLUDES ANNUALIZED CAPITAL AND O&M COSTS)

No.	Treatment Technology	Source of Information	Estimated 2012 Unit Cost Indexed to 2018* ($/1,000 gallons treated)
22	Advanced Oxidation Processes	Reference: Carollo Engineers, estimate for VOC treatment (PCE) by UV Light, Ozone, Hydrogen Peroxide, O&M costs based on operation during 329 days/year at 10% downtime, 24 hr/day AOP operation, 1900 gpm capacity, Oct. 1994	0.61
23	Ozonation	Reference: Malcolm Pirnie estimate for CUWA, large surface water treatment plants using ozone to treat water from the State Water Project to meet Stage 2 D/DBP and bromate regulation, *Cryptosporidium* inactivation requirements,1998	0.14 - 0.29
24	Ion Exchange	Reference: CH2M Hill study on San Gabriel Basin, for 135 mgd central treatment facility - ion exchange to remove nitrate, 1990	0.67 - 0.88

*Costs were adjusted from date of original estimates to present, where appropriate, using the Engineering News Record (ENR) annual average building costs of 2018 and 2012. The adjustment factor was derived from the ratio of 2018 Index/2012 Index, or 1.188.
For the indexed 2015 costs, please refer to the ACWA PHG Guidance published in March 2016.