



Public Health Goal Report

2019 to 2021

July 2022

Acronyms:

<: less than

>: greater than

ACWA: Association of California Water Agencies

AF: Acre-Foot

BAT: Best Available Technology

Cal-EPA: California Environmental Protection Agency

DLR: Detection Level for Reporting

DDW: State Water Resources Control Board, Division of Drinking Water

EMWD: Eastern Municipal Water District

GAC: Granular Activated Carbon

HWFP: Hemet Water Filtration Plant

IX: Ion Exchange

MCL: Maximum Contaminant Level

MCLG: Maximum Contaminant Level Goal

OEHHA: Office of Environmental Health Hazard Assessment

pCi/L: picoCuries per liter

PHG: Public Health Goal

ppb: parts per billion

PWFP: Perris Water Filtration Plant

RO: Reverse Osmosis

USEPA: United States Environmental Protection Agency

Background

Provisions of the California Health and Safety Code, Section 116470(b), specify that water utilities serving more than 10,000 service connections prepare a report by July 1 every three years. The report provides information regarding water quality measurements that have exceeded any Public Health Goals (PHGs). PHGs are non-enforceable goals established by the state's Office of Environmental Health Hazard Assessment (OEHHA). The law also requires that where OEHHA has not adopted a PHG for a constituent, the water suppliers are to use the Maximum Contaminant Level Goals (MCLGs) adopted by United States Environmental Protection Agency (USEPA). Only constituents which have a California primary drinking water standard such as a Maximum Contaminant Level (MCL) and for which either a PHG or MCLG has been set, are to be addressed in this report.

There are a few constituents that are routinely detected in water systems at levels usually well below the drinking water standards for which no PHG nor MCLG have yet been adopted by OEHHA or USEPA, such as Total Trihalomethanes. These will be addressed in a future required report after a PHG has been adopted.

This report provides the information required by law for constituents detected in Eastern Municipal Water District's (EMWD) water supply in 2019, 2020, or 2021 at a level exceeding an applicable PHG or MCLG. Included in this report is the numerical public health risk associated with the MCL and the PHG or MCLG, the category or type of risk to health that could be associated with each constituent at the PHG, the Best Available Technology (BAT) for treatment that could be used to reduce the constituent level, and an estimate of the cost for that treatment if it is appropriate and feasible.

Guidelines

The Association of California Water Agencies (ACWA) prepared guidelines for water utilities to use in preparing the Public Health Goal report. The April 2022 ACWA guidelines and the OEHHA Health Risk Information for Public Health Goal Exceedance Reports, February 2022, were used in the preparation of this report.

What Are PHGs?

PHGs are set by OEHHA, which is part of California Environmental Protection Agency (Cal-EPA), and are based solely on public health risk considerations. Practical risk-management factors that are considered by the USEPA or the State Water Resources Control Board, Division of Drinking Water (DDW) in setting drinking water standards, such as MCLs, are not considered in setting PHGs. The factors considered in forming MCLs include analytical detection capability, treatment technology availability, benefits, and costs. PHGs are not enforceable and are not required to be met by any public water system. MCLGs are the USEPA equivalent to PHGs.

PHGs are intended to provide estimates of levels of chemical contaminants in drinking water which would pose no significant risk to individuals, including the most sensitive sub-populations, consuming the water every day, over an entire lifetime.

Generally, PHGs are set at lower levels than MCLs. MCLs are the regulated levels at which a contaminant cannot exceed in water served to the public. MCLs determine whether water is "safe" to drink, while PHGs represent the ideal levels.

Numerical Health Risks

Numerical health risks referenced from OEHHA Health Risk Information from Public Health Goal Exceedance Reports, February 2022, are also included in the discussion. PHGs are based on health risk assessments using the most current scientific methods. PHGs for non-carcinogenic chemicals are set at a concentration at which no known or anticipated adverse health effects will occur, with an adequate margin of safety. For carcinogens, PHGs are set at a concentration that does not pose any significant risk to health. Where numerical values are stated for carcinogenicity, the cancer risk is usually no more than one in a million excess cancer risk level for a lifetime of exposure. For example, one in a million means one excess cancer case per million in population. USEPA sets the MCLG for all carcinogens at zero, so the numerical health risk is also zero.

Best Available Treatment Technology and Cost Estimates

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

The cost estimates in this report are referenced from the Association of California Water Agencies guidance manual and are not to be used as a definitive cost for treatment installation. These estimates were created for projects which may or may not reflect treatment to levels which EMWD would have to reach in order to meet PHGs, or any property that might be required to house the facility. The cost estimates per household (or service connection) per year are based on an average annual usage of 0.36 acre-foot (AF) for the years 2019, 2020, and 2021.

Detected Constituents

The following is a discussion of constituents that were detected between 2019 and 2021 in one or more of our drinking water sources at levels above the PHG, or if no PHG exists, then above the MCLG. If the value is below the detection level for reporting (DLR) then the value used for averaging was zero. If the average was below the DLR it was not considered a PHG exceedance, even though the average exceeded the PHG. If any drinking water sources are blended or treated before distribution, any detection exceeding a PHG is based on “point of entry” to the distribution system, similar to determining compliance with MCLs.

Arsenic: Arsenic is a naturally-occurring mineral in soils. The PHG for arsenic is 0.004 parts per billion (ppb), and the MCL is 10 ppb. The category of health risk associated with arsenic is that people who drink water containing levels above the MCL throughout their lifetime could experience an increased risk of contracting cancer. The numerical health risk for the PHG is one in a million, and the numerical health risk for the MCL is 2.5 per one thousand.

Arsenic was detected at Hemet Water Filtration Plant (HWFP) at levels ranging from <2 to 3.0 ppb, Perris Water Filtration Plant (PWFP) ranged from <2 to 2.8 ppb, the Menifee Perris I Desalter ranged from <2 to 2.5 ppb, the

East Valley Wells ranged from <2 to 6.2 ppb, and Perris Wells ranged from <2 to 3.6 ppb.

The BATs to lower the level of arsenic at HWFP, PWFP, and the Menifee Perris I Desalter to below the PHG of 0.004 ppb are ion exchange (IX), reverse osmosis (RO), and coagulation filtration. The estimated cost of treatment with IX is about \$2.40 per 1,000 gallons treated or about \$282 per service connection per year. RO treatment is estimated to cost \$2.20 per 1,000 gallons treated or about \$258 per service connection per year. IX and RO both concentrate the contaminant so the spent resin or brine may need to be treated as a hazardous waste which will incur more costs for disposal. The estimated cost for coagulation filtration is \$0.45 per 1,000 gallons treated or about \$53 per service connection per year.

The BAT to reduce arsenic in the East Valley Wells and the Perris Wells is blending with other wells. The estimated cost for blending is \$0.68 to \$0.81 per 1,000 gallons treated or about \$80 to \$95 per service connection per year.

Bromate: Bromate forms as a by-product of ozone disinfection of drinking water. Ozone reacts with naturally-occurring bromide in the water to form bromate. Ozone is used in the disinfection of drinking water to decrease disinfection by-products formed by the use of chlorine or chlorine products. The PHG for bromate is 0.1 ppb and the MCL is 10 ppb. The category of health risk associated with bromate is that people who drink water containing levels above the MCL throughout their lifetime could experience an increased risk of contracting cancer. The numerical health risk for the PHG is one in a million and the numerical health risk for the MCL is one per ten thousand.

Bromate was detected in the Mills Treatment Plant effluent at levels ranging from 3.6 to 4.3 ppb and at the Skinner Treatment Plant effluent at levels ranging from 1.0 to 2.8 ppb. The bromate MCL is determined by a running annual average which was below the MCL for both treatment plants at all times. The Mills Filtration Plant and Skinner Filtration Plant are owned and operated by Metropolitan Water District.

The BATs for bromate reduction is coagulation/filtration optimization or granular activated carbon (GAC). The cost to reduce bromate using coagulation/filtration optimization technology averages about \$1.00 per 1,000 gallons treated or about \$117 per service connection per year. GAC treatment is estimated to cost \$0.69 to \$1.31 per 1,000 gallons treated or \$81 to \$154 per service connection per year.

Gross Alpha: Gross Alpha is a radiological contaminant that occurs naturally in the soil. There is no PHG for gross alpha, but the MCLG is 0 pCi/L; the MCL or drinking water standard is 15 pCi/L. The MCL for gross alpha particles is associated with a standard for a group of radionuclides. The category of health risk associated with gross alpha is that people who drink water containing levels above the MCL throughout their lifetime could experience an increased risk of contracting cancer. The numerical health risk at the MCLG is zero and the numerical health risk at the MCL is one per one thousand.

Gross alpha was detected in samples collected at PWFP at levels ranging from 3.2 to 4.3 pCi/L, the Menifee Perris I Desalter ranged from <3 to 3.1 pCi/L, the East Valley wells ranged from <3 to 3.6 pCi/L, and the Perris Wells ranged from 3.1 to 16.3 pCi/L. Compliance for gross alpha is determined by the net gross alpha which is calculated by deducting uranium from gross alpha; no results exceeded the MCL.

The BAT to lower the level of gross alpha to the MCLG is RO. Treatment at PWFP, the Menifee Perris I Desalter, the East Valley Wells, and the Perris Wells with RO is estimated to cost \$2.20 per 1,000 gallons treated or about \$258 per service connection per year. RO concentrates the contaminant and subsequently the brine may need to be treated as a hazardous waste and will incur more costs for disposal.

Gross Beta: Gross Beta is a radiological contaminant that occurs naturally in the soil. There is no PHG for gross beta, but the MCLG is 0 pCi/L; the MCL or drinking water standard is 50 pCi/L. The category of health risk associated with gross beta is that people who drink water containing levels above the MCL throughout their lifetime could experience an increased risk of contracting cancer. The numerical health risk at the MCLG is zero and the numerical health risk at the MCL is two per one thousand.

Gross beta was detected in the Perris Wells at levels ranging from <4 to 5.1 pCi/L.

The BATs to lower the level of gross beta to the MCLG in the Perris Wells is IX or RO. The estimated cost of IX treatment is \$2.40 per 1,000 gallons treated or about \$282 per service connection per year. RO treatment is estimated to cost \$2.20 per 1,000 gallons treated or about \$258 per service connection per year. IX and RO treatment concentrates the contaminant and subsequently the brine may need to be treated as a hazardous waste and will incur more costs for disposal.

Uranium: Uranium is a radiological contaminant that occurs naturally in the soil. The PHG for uranium is 0.43 pCi/L and the MCL is 20 pCi/L. The category of health risk associated with uranium is that people who drink water containing levels above the MCL throughout their lifetime could experience an increased risk of contracting cancer. The numerical health risk associated with uranium at the PHG is one in a million and the numerical health risk at the MCL is five per one hundred thousand.

Uranium was detected at HWFP with levels ranging from <1 to 1.3 pCi/L, the PWFP ranged from <1 to 2.2 pCi/L, the East Valley Wells ranged from <1 to 5.8 pCi/L, the Perris Wells ranged from 1.4. to 10 pCi/L, and Skinner Treatment Plant effluent ranged from <1 to 2 pCi/L.

The BATs to lower the uranium level below the PHG of 0.43 pCi/L at HWFP, PWFP, the East Valley Wells, the Perris Wells, and Skinner Treatment Plant are IX and RO. The estimated cost of treatment with IX is \$2.40 per 1,000 gallons treated or about \$282 per service connection per year. RO treatment is estimated to cost \$2.20 per 1,000 gallons treated or about \$258 per service connection per year. IX and RO concentrates the contaminant and subsequently the brine may need to be treated as a hazardous waste which will incur more costs for disposal. The Skinner Treatment Plant is owned and operated by Metropolitan Water District.

Recommendations for Further Action:

Eastern Municipal Water District is committed to providing safe, reliable, economical and environmentally sustainable water, wastewater, and recycled water services. Drinking water delivered by EMWD is in full compliance with Federal and State regulations and meets all Division of Drinking Water and USEPA drinking water MCLs. PHGs are non-enforceable, idealistic goals that are protective of public health, but do not consider feasibility or economic possibility of attainment.

To further reduce the levels of constituents identified in this report that are already in compliance with the Maximum Contaminant Levels would require additional costly treatment processes. The effectiveness of these treatment processes would not necessarily achieve PHG levels or provide further health protection benefits to our customers.

The recommendations for further action are spelled out in the Triennial Strategic Plan 2022 - 2024:

Protect water supplies and meet all regulatory requirements to ensure the health and safety of the communities we serve and our environment.

Water Quality: *Ensure EMWD's water distribution systems meet or exceed all applicable federal and state water quality standards.*

With a clearly defined mission and vision, as well as guiding principles that define EMWD's conduct as an organization, EMWD is driven by standards to provide safe, reliable, economical, and environmentally sustainable services.

EASTERN MUNICIPAL WATER DISTRICT PUBLIC HEALTH GOAL COST ESTIMATES 2019 to 2021

SOURCE	CONSTITUENT	BEST AVAILABLE TECHNOLOGY (BAT)	COST PER 1,000 GAL	COST PER SERVICE CONNECTION PER YEAR*
MILLS FILTRATION PLANT	Bromate	Coagulation Filtration	\$1.00	\$117
		GAC	\$0.69 to \$1.31	\$81 to \$154
SKINNER FILTRATION PLANT	Bromate	Coagulation Filtration	\$1.00	\$117
		GAC	\$0.69 to \$1.31	\$81 to \$154
	Uranium	IX	\$2.40	\$282
		RO	\$2.20	\$258
HEMET FILTRATION PLANT	Arsenic	Coagulation Filtration	\$0.45	\$53
		IX	\$2.40	\$282
		RO	\$2.20	\$258
	Uranium	IX	\$2.40	\$282
		RO	\$2.20	\$258
PERRIS FILTRATION PLANT	Arsenic	Coagulation Filtration	\$0.45	\$53
		IX	\$2.40	\$282
		RO	\$2.20	\$258
	Gross Alpha	RO	\$2.20	\$258
	Uranium	IX	\$2.40	\$282
		RO	\$2.20	\$258
MENIFEE PERRIS I DESALTER	Arsenic	Coagulation Filtration	\$0.45	\$53
		IX	\$2.40	\$282
		RO	\$2.20	\$258
	Gross Alpha	RO	\$2.20	\$258
EAST VALLEY WELLS	Arsenic	Blending	\$0.68 to \$0.81	\$80 to \$95
	Gross Alpha	RO	\$2.20	\$258
	Uranium	IX	\$2.40	\$282
		RO	\$2.20	\$258
PERRIS WELLS	Arsenic	Blending	\$0.68 to \$0.81	\$80 to \$95
	Gross Alpha	RO	\$2.20	\$258
	Gross Beta Uranium	IX	\$2.40	\$282
		RO	\$2.20	\$258

IX: Ion Exchange

RO: Reverse Osmosis

GAC: Granular Activated Carbon

*Cost based on an average annual usage of 0.36 acre-foot (AF) per service connection