

**CARMICHAEL WATER DISTRICT  
REPORT ON WATER QUALITY  
RELATIVE TO PUBLIC HEALTH GOALS  
JUNE 2022**

***Background:***

Provisions of the California Health and Safety Code, Title 22, Section 116470, specify that every three years water utilities larger than 10,000 service connections are required to prepare a special report if their water quality measurements have exceeded any Public Health Goals (PHGs). PHGs are non-enforceable goals established by the California EPA'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 USEPA. Constituents which have a California primary drinking water standard and for which either a PHG or MCLG has been set are to be addressed.

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 has yet been adopted by OEHHA or USEPA. Carmichael Water District (CWD) will address these constituents in a future required report after PHG adoption.

If CWD detected a constituent in the water supply between 2019 and 2021 at a level exceeding an applicable PHG or MCLG, this report provides the information required by law. Included is the numerical public health risk associated with each constituent, the best treatment technology available that could be used to reduce the constituent level, and an estimate of the cost to install that treatment if it is appropriate and feasible.

***What Are PHGs?***

A PHG for a drinking water constituent is the level that poses no significant health risk if consumed for a lifetime. PHGs are non-enforceable goals set by OEHHA, based solely on public health risk considerations and none of the practical risk-management factors considered by the USEPA or the State Water Resources Control Board (SWRCB) Division of Drinking Water (DDW) for setting drinking water standards (such as MCLs) are considered in setting the PHGs. These factors include analytical detection capability, treatment technology available, and benefits and costs. The PHGs are not enforceable and are not required to be met by any public water system. MCLGs are the federal equivalent to PHGs.

***Water Quality Data Considered:***

All of the water quality data collected by our water system in 2019-2021 for purposes of determining compliance with drinking water standards was considered. The 2019-2021 Consumer Confidence Reports, delivered to customers annually by July 1, summarized data collected in 2019-2021. The Consumer Confidence Reports also contains useful definitions for PHG, MCLG, MCL, microgram per liter, and milligram per liter.

***Guidelines Followed:***

The Association of California Water Agencies (ACWA) formed a workgroup that prepared guidelines for water utilities to use in preparing this required report. The ACWA guidelines were used in the preparation of our report.

***Best Available Treatment Technology and Cost Estimates:***

Both the USEPA and DDW adopted Best Available Technologies (BAT) which are the best-known methods of reducing contaminant levels to the Maximum Contaminant Level (MCL). Cost can be estimated for such technologies. However, since many PHGs and all MCLGs are set much lower than the MCL, it is not always possible or feasible to determine the treatment technologies needed to further reduce drinking water constituents downward to or near the PHG or MCLG, of which many are set at zero. Estimating the costs to reduce a

constituent to zero is difficult. In some cases, installing treatment to try to further reduce very low levels of one constituent may have adverse effects on other aspects of water quality.

#### ***Constituents Detected That Exceed a PHG or a MCLG:***

The following is a discussion of constituents that were detected in one or more of our drinking water sources at levels above the PHG, or if no PHG, above the MCLG:

#### ***Tetrachloroethylene (PCE):***

The PHG for PCE is 0.06 micrograms per liter (ug/L or parts per billion). The MCL or drinking water standard for PCE is 5 ug/L. CWD detected PCE at levels not exceeding the MCL in the discharges from two (2) District Wells. The average of 11 samples taken at La Vista Well and Garfield Well within the three-year period 2019-21 was:

La Vista Well – 2.6 ug/L  
Garfield Well – 2.7 ug/L

OEHHA has determined that the health risk associated with tetrachloroethylene (PCE) is an increased risk of cancer. Numerical health risk data provided by OEHHA determined the health risk associated with the PHG is one (1) excess case of cancer in a million people and the health risk associated with the MCL is eight (8) excess cases of cancer in 100,000 people over a lifetime of exposure.

The BAT for PCE to reduce the level below the MCL is either Granular Activated Carbon (GAC) or Packed Tower Aeration. Since the PCE levels at both wells are already below the MCL, a GAC system would likely be required to reduce the levels below the PHG. It should be pointed out these are theoretical calculations and rough cost estimates. The estimated cost to install two complete systems at the two-affected wells would be \$8M with an ongoing O&M cost of \$0.55M per year. Currently CWD proactively monitors these wells quarterly to observe any significant changes in PCE levels.

#### ***Arsenic:***

The PHG for Arsenic is 0.004 micrograms per liter (ug/L or parts per billion). The MCL or drinking water standard for arsenic is 10 ug/L.

CWD detected arsenic levels not exceeding the MCL in the discharges from two (2) wells. The 2 samples taken in 2020 were:

Willow Park Well – 3.0 ug/L  
Garfield Well – 2.3 ug/L

OEHHA has determined that the health risk associated with arsenic is an increased risk of cancer. Numerical health risk data provided by OEHHA determined the health risk associated with the PHG is one (1) excess case of cancer in a million people and the health risk associated with the MCL is two and a half (2.5) excess cases of cancer in 1,000 people over lifetime of exposure.

The BAT for arsenic is Activated Alumina, Coagulation/Filtration, Lime Softening, Ion Exchange and Reverse Osmosis. Of the technologies listed above, all are expensive and would require more extensive consultation beyond the scope of this report, but for purposes of this report, Ion Exchange will be selected. Providing Ion Exchange treatment at two well sites would cost \$6.1M with an annual O&M cost of \$1M/year. Since the arsenic level is below the MCL the district will continue monitoring Willow Park Well and Garfield Well for any changes in arsenic levels.

The cost to purchase additional land required for any of the chosen technologies would be estimated at \$1M.

***Recommendations for Further Action:***

The drinking water quality of CWD meets all DDW, and USEPA drinking water standards set to protect public health. To further reduce the levels of the constituents identified in this report that are already significantly below the health-based MCLs established to provide “safe drinking water”, additional costly treatment processes would be required. The effectiveness of the treatment processes to provide any significant reductions in constituent levels at these already low values is uncertain. The health protection benefits of these further hypothetical reductions are not at all clear and may not be quantifiable. Therefore, no action is proposed.