

**CARMICHAEL WATER DISTRICT  
REPORT ON WATER QUALITY  
RELATIVE TO PUBLIC HEALTH GOALS  
JUNE 2013**

***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 Environmental Protection Agency's (CEPA) 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). 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 or MCLG has yet been adopted by OEHHA or USEPA including Total Trihalomethanes (TTHM) and Haloacetic Acids (HAA5). These constituents will be addressed in a future required report after a PHG has been adopted.

If a constituent was detected in the Carmichael Water District (District) water supply between 2010 and 2012 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?***

PHGs are non-enforceable goals set by the California OEHHA, which is part of California EPA and are based solely on public health risk considerations. A PHG is the level that poses no significant health risk if consumed for a lifetime. None of the practical risk-management factors that are considered by the USEPA or the California Department of Public Health (CDPH) in 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 2010-2012 for purposes of determining compliance with drinking water standards was considered. The 2012 Consumer Confidence Report which was mailed to customers in June of 2013

summarized data collected in 2011 and 2012. The Consumer Confidence Report 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 established 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 CDPH adopt 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, estimating the costs to reduce a constituent to zero is difficult. Since many PHGs and all MCLG are set much lower than the MCL, it is not always possible or 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. 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. The District detected PCE at levels not exceeding the MCL in the discharges from two (2) District wells. The average of 12 samples taken quarterly at these wells within the three year period 2010-12 was:

La Vista Well – 1.7 ug/L

Garfield Well – 1.6 ug/L

OEHHA has determined that the health risk associated with 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 1,000,000 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 the two (2) District wells are already below the MCL, a GAC system would likely be required to reduce the levels below the PHG. The estimated cost to install this system on the two affected district wells would be \$1,500,000 with an ongoing annual O & M cost of \$165,000. Additionally, the District would need to purchase land to have enough room for the treatment technology. The cost to purchase the additional land is estimated at \$500,000-\$600,000. It should be pointed out these are theoretical calculations and

rough cost estimates. Currently, the district proactively monitors these wells quarterly to measure 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. The District detected arsenic levels not exceeding the MCL in the discharges from one (1) District well. The average of two (2) samples taken in 2010 and 2012 was:

Willow Park Well – 1.3 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 1,000,000 people and the health risk associated with the MCL is two (2) excess cases of cancer in 1,000 people over a 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 to recommend an appropriate BAT and provide an estimate of the associated costs. Since the arsenic level is below the MCL the District will continue monitoring Willow Park Well for any changes in arsenic levels. The cost to purchase additional land required for any of the chosen technologies would be estimated at \$700,000-\$900,000.

***Recommendations for Further Action:***

The drinking water quality of the District meets all CDPH, 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.