

City of Brentwood Public Works/Operations Division

TRIENNIAL PUBLIC HEALTH GOAL REPORT

AUGUST 2016

Background

The California Health and Safety Code Section 116470 (b) specifies that water utilities serving more than 10,000 connections prepare a brief written report every three years that documents detections of any constituents that exceed a Public Health Goal (“PHG”) in the preceding three years. PHGs are non-enforceable goals established by the California 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 Goal (“MCLG”) adopted by the United States Environmental Protection Agency (“USEPA”). Only constituents that have both a California primary drinking water standard and a PHG or MCLG as of December 31, 2015 are to be addressed in the report.

The City of Brentwood (“City”) prepared the last Triennial PHG Report in 2013. The 2016 Triennial PHG Report covers constituents detected in the City’s water supply during calendar years 2013 through 2015 at a level exceeding an applicable PHG or MCLG and provides the required information for each constituent. Included is the numerical public health risk associated with the Maximum Contaminant Level (“MCL”) and the PHG or MCLG, the category or type of risk to health that could be associated with each constituent, the best 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 set by the OEHHA which is part of Cal-EPA and are based solely on public health risk considerations. None of the practical risk management factors that are considered by the USEPA or the State Water Resources Control Board Division of Drinking Water (“SWRCB DDW”) in setting drinking water standards (MCLs) are considered in setting the PHGs. These factors include analytical detection capability, treatment technology available, 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 that was collected from the City’s water system during calendar years 2013, 2014 and 2015 for purposes of determining compliance with drinking water standards was reviewed. The data was summarized in the 2013, 2014, and 2015 Annual Water Quality Reports (“AWQRs”) that were made available on City’s website and/or mailed to all of our customers each year. For the 2015 AWQR, post cards were mailed to all customers with a link to the City’s website and information on how to request a hard copy of the AWQR, if preferred.

Guidelines Followed

The Association of California Water Agencies (“ACWA”) formed a workgroup which prepared guidelines for water utilities to use in preparing these reports. The ACWA guidelines were updated in 2016 and were utilized in the preparation of this report. No formal guidance was available from state regulatory agencies.



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Best Available Treatment Technology and Cost Estimates

Both the USEPA and SWRCB DDW adopt what are known as Best Available Technologies that are the best known methods of reducing contaminant levels to the MCL. Costs 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 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 the costs to reduce a constituent to zero is difficult, because it is not possible to verify by analytical means that the level has been lowered to zero.

In some cases, installing treatment 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 MCLG

The following is a discussion of constituents that were detected in the City's drinking water at levels above the PHG, or if no PHG, above the MCLG.

Arsenic

Arsenic is a naturally occurring element in the earth's crust and is very widely distributed in the environment. All humans are exposed to small quantities of arsenic (inorganic and organic) largely from food and to a lesser degree from drinking water and air. Some edible seafood may contain higher concentrations of arsenic which are predominantly found in the less acutely toxic organic forms. City wells have an average level of 1.94 micrograms per liter (ug/L) of arsenic, which is well below the current "not-to-exceed" or MCL limit of 10 micrograms per liter of arsenic. The OEHHA has established a PHG of 0.004 micrograms per liter. OEHHA has determined arsenic as a carcinogen. OEHHA has a numerical cancer risk of one additional cancer case per million people for the 0.004 micrograms per liter PHG, and 1 in four hundred for the MCL of 10 micrograms per liter.

Ion exchange, reverse osmosis, and GFO/Adsorption are the water treatment technologies available for achieving compliance with the MCL for arsenic. It would cost the City approximately \$3 million in capital costs including annual operation and maintenance costs to reduce the arsenic levels of all its well water to the PHG level of 0.004 micrograms per liter.

Total Coliform Bacteria

During calendar years 2013 through 2015, the City was required to collect a minimum of 60 samples per month to meet the monitoring requirements of the Total Coliform Rule. Approximately 73 samples per month are collected on average, but the actual number varied from month to month. Occasionally, a sample was found to be positive for coliform bacteria but secondary samples were negative and follow-up actions were taken. A summary of coliform positives is indicated in Table 1.



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Month	Number of Samples Collected	Number of Samples Coliform Positive	Percent Positive	Number of Follow-up Samples Coliform Positive
October-14	68	1	1.47%	0
May-15	68	1	1.47%	0
November-15	68	1	1.47%	0

Table 1: Summary of Total Coliform Results

The MCL for total coliform is 5 percent positive samples of all samples per month and the MCLG is zero. The reason for the total coliform drinking water standard is to minimize the possibility of the water containing pathogens, which are organisms that cause waterborne disease. Because total coliform bacteria are only a surrogate indicator of the potential presence of pathogens, it is not possible to state a specific numerical health risk. While USEPA normally sets MCLGs “at a level where no known or anticipated adverse effects on persons would occur”, they indicate that they cannot do so with total coliform bacteria.

Coliform bacteria are an indicator organism that are ubiquitous in nature and are not generally considered harmful. They are used because of the ease in monitoring and analysis. If a positive sample is found, it indicates a potential problem that needs to be investigated and follow-up sampling done. It is not at all unusual for a system to have an occasional positive sample. It is difficult, if not impossible; to assure that a system will never get a positive sample. In all cases of detection in the City’s treated water, follow-up samples were negative for total coliform indicating good water quality and no system contamination.

The City utilizes ozone as a primary disinfectant in the treatment process at the water treatment plant to achieve the requisite microbial inactivation outlined in the Surface Water Treatment Rule to assure that the water served is microbiologically safe. Before delivery to the distribution system from the water treatment plant and at the wells, chloramines are added at a carefully controlled residual level to provide the best health protection without causing the water to have undesirable taste and odor or increasing the disinfection byproduct formation potential. This careful balance of treatment processes is essential to continue supplying our customers with safe drinking water.

Other equally important measures that the City has implemented include: an effective cross-connection control program, maintenance of a disinfectant residual throughout the system, occasional and unidirectional distribution system flushing, an effective monitoring and surveillance program, and maintaining positive pressures in the distribution system. The City has already taken all of the steps identified by DDW as best available technology for coliform bacteria in Section 64447, Title 22, of the California Code of Regulations.

Gross Alpha Particle Activity

Radionuclides such as gross alpha in water supplies are from erosion of natural deposits. The term radionuclide refers to naturally occurring elemental radium, radon, uranium, and thorium. Each of those elements has an unstable atomic nucleus that spontaneously decays producing ionizing radiation. Gross alpha is defined as the sum total of these radionuclides. Exposure to ionizing radiation in concentrations exceeding the MCL may have carcinogenic (cancer causing), mutagenic (causing mutation of cells) or teratogenicity (causing abnormalities in offspring) effects. The USEPA’s MCLG for gross alpha particle is zero and the California MCL is 15 pCi/L. The City wells have an average level of gross alpha is 5.2 pCi/L. Any levels detected were below MCL



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at all times. Health risk category based on experimental animal testing data evaluated in the USEPA MCLG document and California MCL has determined gross alpha particle as a carcinogen. The USEPA's MCLG for gross alpha is zero and a cancer risk of 1 additional case per million people for the DDW MCL of 15 pCi/L. *Note: Cancer Risk = Theoretical 70-year lifetime excess cancer risk at a statistical confidence limit. Actual cancer risk may be lower or zero.*

Reverse osmosis is the water treatment technology available for achieving compliance with the MCL for gross alpha particle activity. Removal and reduction via reverse osmosis could be achieved at a cost of \$10.9 million to the City including annual operation and maintenance costs.

Recommendations for Further Action

The City's drinking water quality meets all DDW and USEPA drinking water standards set to protect public health. The levels of constituents identified in this report are already significantly below the health-based MCLs established to provide safe drinking water. Further reductions in these levels would require additional costly treatment processes and the ability of these processes to provide significant additional reductions in constituent levels is uncertain. In addition, the health protection benefits of these possible reductions are not at all clear and may not be quantifiable. Therefore, no action is proposed at this time.

If you have any questions about this report, please contact City of Brentwood Public Works/Operations-Water Operations Division at (925) 516-6000, Monday through Friday between the hours of 7:00 a.m. to 3:30 p.m., or visit the City of Brentwood website at <http://www.brentwoodca.gov/gov/pw/water/reports.asp>.

