Golden State Water Company
A Subsidiary of American States Water Company

2010 Report on Public Health Goals

Claremont System

Report prepared by
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Public Health Goals - Background

Provisions of the California Health and Safety Code, Section 116470, require public water systems serving more than 10,000 service connections to prepare a report (in plain language) containing information on the "detection" of any contaminants at levels above the Public Health Goals (PHGs) adopted by the State Office of Environmental Health Hazard Assessment (OEHHA) or the additional Maximum Contaminant Level Goals (MCLGs) set by the United States Environmental Protection Agency (USEPA). The first report was required and prepared July 1, 1998 and is required to be revised every three years thereafter.

Golden State Water Company is providing information in conformance with this requirement by providing this revised and updated report at this time. If a constituent was detected in the water supply between 2007 and 2009 at a level exceeding an applicable PHG or MCLG, this report provides health and treatment cost information as required by law.

Regulations and Drinking Water

The USEPA and the California Department of Health Services (CDPH) are responsible for establishing regulations, and setting drinking water standards and goals. These agencies, along with the California Public Utilities Commission (CPUC) set rules and regulations for water systems to follow.

Drinking water goals include MCLGs and PHGs. MCLGs are levels of contaminants in drinking water below which there is no known or expected risk to public health. They are set by the USEPA and allow for a margin of safety. MCLGs are not enforceable drinking water standards. PHGs are water quality goals set by the OEHHA and are recommended target levels and are not required to be met by any public water systems.

Drinking water standards are also known as Maximum Contaminant Levels (MCLs) and Action Levels (ALs). MCLs are the highest level of a contaminant allowed in drinking water. They are set as close to MCLGs and PHGs as are economically and technologically feasible. MCLs are enforceable water quality standards that public water systems must meet. ALs are the concentrations of a contaminant which, if exceeded, triggers treatment or other requirements that the water system must follow.

PHGs and MCLGs are not water quality standards. MCLGs and PHGs are goals identifying extremely small risks. These risks are normally assessed where one person in a million would be at risk to a contaminant. Determinations of health risk at these low levels are frequently theoretical and are based on risk assessments made using assumptions and mathematical extrapolations. Many contaminants are considered to be carcinogenic. The USEPA has set these MCLGs at zero, which cannot be measured by available analytical methods.

The USEPA and CDPH have established Best Available Technologies (BATs) to remove or reduce contaminants to levels at or approaching the PHGs and MCLGs, where technologically feasible. BATs 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 nor 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, if not impossible because it is not possible to verify by analytical means that the level has been lowered to zero. Furthermore, while cost estimates can be used to compare the economics of various treatment processes or the costs of major project components, such estimates do not represent the actual construction and operation and maintenance costs of the project. Actual costs are site-specific and must be developed for individual circumstances. Many factors which cannot be generalized influence construction costs. These factors include plant capacity, design criteria, treatment processes, site conditions and land costs, permit costs, climate, competition among bidders and suppliers, and general local and nationwide economic conditions. 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 following information discusses the constituents found in the water served by the water system at or above the MCLGs and PHGs, the established BAT, and the cost estimate to remove the contaminant to the goal levels, where technologically feasible. Please note that accurate cost estimates are difficult, if not impossible, and are highly speculative and theoretical.

Preparation of Report

The Association of California Water Agencies (ACWA) formed a workgroup which prepared guidelines for water utilities to use in preparing these newly required reports. The ACWA guidelines were used in the preparation of our report. No guidance was available from state regulatory agencies.

Constituents Detected that Exceed PHGs or MCLGs

Radiological Contaminants

Gross Alpha Particle Activity

Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Gross alpha particle activity has been detected at levels up to 9.8 picoCuries/L (pCi/L). The MCL is 15 pCi/L, and the MCLG is 0 pCi/L. The levels detected in the Claremont System were well below the MCL at all times, but were over the levels identified by the USEPA as MCLGs.

Gross alpha particles are naturally occurring in some groundwater and surface water supplies. This constituent has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed to high levels over their lifetimes. Constituents that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. USEPA has determined that the health risk associated with the MCLG is zero for gross alpha particles, and that the risk associated with the MCL for gross alpha is one excess case of cancer in 1,000 people over a long period of time for the most potent alpha emitter.

Uranium

Uranium has been detected at levels up to 5.0 pCi/L. The MCL is 20 pCi/L and the PHG is 0.43 pCi/L. The levels detected in our system were below the MCL at all times, but were over the PHG.

This radiological constituent is a naturally occurring contaminant in some groundwater and surface water supplies. Exposure to uranium in drinking water may result in toxic effects to the kidney. This constituent also has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed to high levels over their lifetimes. Constituents that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. OEHHA has determined the health risk associated with the PHG is one excess case of cancer in a million people, and the risk associated with the MCL is five excess cases of cancer in 100,000 people over a long period of time.

The Best Available Technology (BAT) identified to treat the removal of radiological constituents listed above (gross alpha particles and uranium) is reverse osmosis (RO). The most effective and economical treatment system is to use RO to reduce radiologicals at groundwater and surface water sources. The estimated cost to install and operate an RO treatment system to treat groundwater and surface water supplies in the Claremont system would be approximately $5.3 million annually. This translates into a monthly cost of $40.00 per connection for the life of the treatment system.

Microbiological Contaminants

Total Coliform Bacteria

GSWC conducted weekly monitoring throughout the distribution system for total coliform (TC) analysis, the results of which are calculated and reported to CDPH every month. A maximum of 1.5% of these samples were positive in any month. This percentage is the highest monthly percentage over the 36-month period from 2007 to 2009. The Claremont System collects between 64 and 80 TC samples every month at locations throughout the distribution system, for a total of 2,527 TC samples. Of these, only one sample was positive for TC in the months of December 2007; April 2008; May 2008; July 2008, and September 2009. The MCL for total coliform is 5% positive samples per month, and the MCLG is 0% of monthly samples.

The CDPH and USEPA have determined that the presence of total coliform is a possible health concern. Total coliform bacteria are common in the environment and are generally not harmful themselves. The presence of these bacteria in drinking water, however, generally is a result of a problem with water treatment or the pipes that distribute the water and indicates that the water may be contaminated with organisms that can cause disease. Disease symptoms may include diarrhea, cramps, nausea, and possibly jaundice, and any associated headaches and fatigue. These symptoms, however, are not just associated with disease‐causing organisms in drinking water, but also may be caused by a number of factors other than your drinking water.

Because coliform is only an indicator of the potential presence of pathogens, it is not possible to state a specific numerical health risk. The CDPH has set an enforceable drinking water standard for total coliform to reduce the risk of adverse health effects. Under this standard, no more than 5% of the samples collected during a month can contain these bacteria. Drinking water that meets this standard is usually not associated with a health risk from disease‐causing bacteria and should be considered safe.

The CDPH lists four operating and maintenance conditions as the Best Available Technology (BAT) for protection against microbiological contaminants. These conditions are practiced by the Claremont System, and are as follows:

- Protection of wells from coliform contamination by appropriate placement and construction;
- Maintenance of a disinfectant residual throughout the distribution system;
- Proper maintenance of the distribution system; and
- Filtration and disinfection of approved surface water, and disinfection of groundwater.

We add chlorine at our sources to assure that the water served is microbiologically safe. The chlorine residual levels are carefully controlled to provide the best health protection without causing the water to have undesirable taste and odor or increasing the disinfection byproduct level. This careful balance of treatment processes is essential to continue supplying our customers with safe drinking water.

Other equally important measures that we have implemented include: an effective cross-connection control program, maintenance of a disinfectant residual throughout our system, an effective monitoring and surveillance program and maintaining positive pressures in our distribution system. The Claremont System has already taken all of the steps described by CDPH as “best available technology” for coliform bacteria in Section 64447, Title 22, CCR.

Inorganic Chemical Contaminants

Arsenic

Arsenic has been detected at levels up to 2.7 micrograms per liter (ug/L) in the groundwater supplied to the Claremont System. The current MCL is 10 ug/L and the PHG is 4 nanograms per liter (ng/L). The levels detected in the Claremont System were below the MCL at all times, but were over the PHG level.

Arsenic is naturally occurring in the environment. The OEHHA has determined that the health risk associated with the PHG is one excess case of cancer in one million people, and the risk associated with the MCL is two excess cases of cancer per 1,000 people over a long period of time. Additionally, some people who drink water containing arsenic levels greater than the MCL over many years may experience circulatory problems and skin damage. The BATs for removal of arsenic in water include activated alumina; coagulation/filtration; lime softening; ion exchange; and reverse osmosis (RO). RO is the most effective method to consistently remove arsenic to below the PHG. The estimated cost to reduce arsenic to at or below the PHG is estimated at approximately $5.07 million per year. This is approximately $38.00 per month per service connection for the life of the treatment system.

Copper

Copper sampling is conducted at indoor faucets of selected customer homes, as directed by the Lead and Copper Rule. The Action Level for copper is 1300 ug/L and the PHG is 170 ug/L. "Action Level" means the concentration of copper in water which is used to determine the treatment requirements that a water system is required to complete. The most recent samples were collected in 2008. The copper levels ranged from 18 ug/L to 500 ug/L. The 90th percentile copper level is 190 ug/L which is significantly below the Action Level per the Lead and Copper Rule; however, it is slightly above the PHG level.

The principal source of copper in tap water is the pipes and plumbing fixtures in the customer's own household plumbing. Factors that can increase the amount of copper in tap water include: household fittings or faucets made of brass; copper plumbing materials; water that is soft or corrosive.

Based on human data, people who drink water containing copper in excess of the Action Level (1300 ug/L) could develop gastrointestinal irritation over a short-term exposure. Our water system is in full compliance with the Lead and Copper Rule. Based on our extensive sampling, it was determined according to State regulatory requirements that we meet the Action Levels for copper. Therefore, we are deemed by CDPH to have "optimized corrosion control" for our system.

In general, optimizing corrosion control is considered to be the Best Available Technology (BAT) to deal with copper. We will continue to monitor our water quality parameters that relate to corrosion control, such as the pH, hardness, alkalinity and total dissolved solids, and will take action if necessary to maintain our system in an "optimized corrosion control" condition.

Since we are meeting the "optimized corrosion control" requirement, it is not prudent to initiate additional corrosion control treatment as it involves the addition of other chemicals and there could be additional water quality issues raised. Therefore, no estimate of cost has been included.

Lead

Lead sampling is conducted at indoor faucets of selected customer homes, as directed by the Lead and Copper Rule. The Action Level for lead is 15 ug/L and the PHG is 2 ug/L. "Action Level" means the concentration of lead in water which is used to determine the treatment requirements that a water system is required to complete. The most recent samples were collected in 2008. The lead levels ranged from 0.22 ug/L to 15 ug/L. The 90th percentile lead level is 3.3 ug/L, which is significantly below the Action Level per the Lead and Copper Rule; however, it is slightly above the PHG level.

The principal source of lead in tap water is the pipes and plumbing fixtures in the customer's own household plumbing. Factors that can increase the amount of lead in tap water include: household fittings or faucets made of brass; lead-based solder used to join fittings or piping materials; water that is soft or corrosive.

Lead is an important contaminant to monitor in drinking water. It is stated by the USEPA that infants and children who drink water containing lead in excess of the Action Level could experience delays in their physical and mental development. Children could show deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure. The CDPH states that lead in drinking water is rarely the sole cause of lead poisoning. However, it can significantly increase an person's total lead exposure. Additionally, the risk of cancer for people who drink water with lead in excess of the PHG is three excess cases of cancer per ten million people. The risk for people who drink water with lead in excess of the MCL is two excess cases of cancer per million people.

The Claremont system is in full compliance with the Lead and Copper Rule. Based on our extensive sampling, it was determined according to State regulatory requirements that we meet the Action Levels for lead. Therefore, we are deemed by CDPH to have "optimized corrosion control" for our system.

In general, optimizing corrosion control is considered to be the Best Available Technology (BAT) to deal with lead. We will continue to monitor our water quality parameters that relate to corrosion control, such as the pH, hardness, alkalinity and total dissolved solids, and will take action if necessary to maintain our system in an "optimized corrosion control" condition.

Since we are meeting the "optimized corrosion control" requirement, it is not prudent to initiate additional corrosion control treatment as it involves the addition of other chemicals and there could be additional water quality issues raised. Therefore, no estimate of cost has been included.

Organic Chemical Contaminants

Dibromochloropropane

Dibromochloropropane (DBCP) has been detected at a level of 150 nanograms per liter (ng/L) in groundwater supplied to the system. The MCL is 200 ng/L and the PHG is 1.7 ng/L. The levels detected in our system were below the MCL at all times, but were over the PHG level identified by OEHHA.

DBCP is a banned nematocide that may still be present in soils due to runoff or leaching from former use on various crops. The numerical public health risk associated from ingestion of DBCP as identified by OEHHA is one excess case of cancer per million people. The risk associated with ingestion of DBCP in excess of the MCL is one excess case of cancer per ten thousand people. Additionally, some people who drink water containing DBCP in excess of the MCL over many years may experience reproductive difficulties.

The Best Available Technology identified to treat DBCP is Granular Activated Carbon (GAC) absorption. The most effective and economical treatment system would be to use GAC treatment at select plant sites. We have determined that the cost to install and operate a DBCP removal system to treat all of the affected wells in the Claremont system to meet the PHG levels would be approximately $0.75 million per year. This is approximately $2.12 per service connection per month for the life of the treatment system.

Summary of Findings

The drinking water quality of the Claremont system meets all CDPH and USEPA drinking water standards set to protect public health. At no time was water served containing contaminants above recognized and enforceable MCLs. To further reduce the levels of the constituents identified in this report to meet PHG or MCLG goals, 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, and the health protection benefits of these hypothetical reductions are not clear, and may not be quantifiable. Therefore, no further action is proposed at this time.

If you have questions about this report, please call us at (800) 999-4033. We are available to answer your questions 24 hours a day, 7 days a week, or visit our website at http://www.gswater.com.