

STAFF REPORT



ITEM NO. 26
CITY OF OCEANSIDE

DATE: August 21, 2013
TO: Honorable Mayor and City Councilmembers
FROM: Water Utilities Department
SUBJECT: **ACCEPTANCE OF THE REPORT ON WATER QUALITY RELATIVE TO PUBLIC HEALTH GOALS**

SYNOPSIS

Staff recommends that the City Council receive public comment and accept the report on water quality relative to Public Health Goals.

BACKGROUND

The California Environmental Protection Agency Office of Environmental Health Hazard Assessment establishes Public Health Goals (PHGs) and the Environmental Protection Agency (USEPA) establishes Maximum Contaminant Level Goals (MCLGs) for drinking water contaminants. The PHGs/MCLGs are guidelines and are not requirements for any public water system. Maximum Contaminant Levels (MCLs) set by the State or Federal EPA are the mandatory limits for all public water systems and PHGs/MCLGs are frequently much lower than the MCLs.

Under provisions of the California Health and Safety Code, once every three years, the City is required to prepare a special report identifying water quality measurements that have exceeded PHGs, or which were detected above the MCLG. The code also requires that a public water system conduct a public hearing and receive comments from the public relative to the report (Exhibit A).

The requirement to prepare PHG reports is unique to California. The reports are required in addition to the extensive annual public reporting of water quality information by California water utilities and in addition to the federally mandated Consumer Confidence Reports (CCRs).

ANALYSIS

For the years 2010, 2011, and 2012, the report shows that Oceanside's drinking water continues to meet all State of California, Department of Health Services, and USEPA drinking water standards set to protect public health. However, the City's drinking water exceeded the PHGs/MCLGs for total coliform, lead, gross alpha radiation and uranium

which is typical for a California Water agency. The detected levels for these constituents were well below their respective MCLs, so this does not constitute a violation of drinking water regulations or indicate the water was unsafe to drink.

Total Coliform Bacteria

Total coliform is a large group of bacteria. They are ubiquitous in nature and are not generally considered harmful. The presence of total coliform bacteria indicates a potential problem in the water system. Because this test is sensitive to contamination during sampling and handling, it is not at all unusual for a system to have an occasional positive sample. If a positive sample is found, follow-up samples are required to confirm the original result. It is difficult, if not impossible; to assure that a system will never get a positive sample.

The MCL for total coliform-positive samples may not exceed five percent per month and the MCLG is zero percent of the monthly samples. The City is required to collect at least 120 total coliform samples per month throughout the City's water distribution system. On average, 135 total coliform samples are collected each month. There were three months in 2010 and one month in 2012 when there was one positive total coliform sample in each month. The monthly percent of positive samples for each of these months was 0.7 percent. All follow-up samples were negative and the MCL was not exceeded.

The City follows best practices that minimize the chances of bacterial contamination by maintaining adequate disinfectant level in the water system. Chlorine is added to the water during and after treatment to assure that the water served is free of pathogenic organisms.

Because total coliform is only a surrogate indicator of the potential presence of pathogens, it is not possible to state a specific numerical health risk. There is no commercially available technology that will guarantee a zero percent coliform positive result every single month. Therefore, the cost of achieving the MCLG cannot be estimated.

Lead

Lead is not detected in the water that Oceanside provides to its customers. The main sources of lead in drinking water are lead solder, commonly used before 1990 to join lengths of copper pipe together; and faucets containing brass or bronze internal parts, which usually contains lead impurities.

Every three years the City is required to sample 50 Oceanside homes for lead, last completed in 2012. The samples are taken from faucets within each of the homes. Sampling for lead at the tap helps to determine if a water system is providing corrosive water and causing lead to leach into the water.

There is no MCL for lead. Instead the 90th percentile value of all samples from household taps cannot exceed the lead Action Level (AL) of 15 ppb (parts per billion).

This means that 90 percent of the 50 homes tested must be below 15 ppb. All of the homes sampled in 2012 were below the AL for lead. The non-enforceable PHG for lead is 0.2 ppb. The 90th percentile of the City's sampling of tap water samples in 2012 was 2.9 ppb. The maximum single sample was 5.1 ppb.

Based on our sampling results we are deemed by California Department of Public Health (CDPH) to have "optimized corrosion control" for our system. Since we are meeting the "optimized corrosion control" requirements, it is not prudent to initiate additional corrosion control treatment. Therefore, no estimate of treatment cost has been included.

Gross Alpha Radiation and Uranium

Gross alpha radiation is caused by naturally-occurring radioactive elements that are present in the earth's crust. Uranium is a typical alpha radiation emitter that is found in ground and surface waters due to its natural occurrence in geological formations.

Monitoring results indicate the presence of small amounts of gross alpha radiation and uranium in our water well below the MCL. The State of California MCL for gross alpha radiation is 15 pCi/L (picocuries per liter) and the results for our water ranged from 3.3 to 4.3 pCi/L. The non-enforceable MCLG for gross alpha radiation is zero. The MCL for uranium is 20 pCi/L and the results for our water ranged from 1.8 to 4.8 pCi/L. Uranium has a PHG of 0.43 pCi/L.

The best available technology to lower the gross alpha radiation and uranium levels is reverse osmosis (RO). The cost estimate to treat the City's water by RO is approximately \$4 per unit (748 gallons). The amount of surface water treated per year is 30,000 acre feet or about 36,000 units per day. The cost for treatment would be \$53,000,000 per year, not including the cost of disposing of the concentrated waste from the treatment facility and the capital cost of \$160 million.

The City of Oceanside's drinking water meets all CDPHS and USEPA drinking water standards set to protect public health. To further reduce the levels of the constituents identified in this report to meet the State's Public Health Goals would require additional costly treatment processes. The effectiveness of these treatment processes required to make reductions to the PHGs/MCLGs is uncertain. Therefore, no action is proposed at this time.

FISCAL IMPACT

There is no fiscal impact indicated by this report.

COMMISSION OR COMMITTEE REPORT

The Utilities Commission unanimously approved staff's recommendation at its regularly scheduled meeting on July 16, 2013.

CITY ATTORNEY'S ANALYSIS

City Attorney analysis does not apply.

RECOMMENDATION

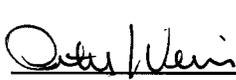
Staff recommends that the City Council receive public comment and accept the report on water quality relative to public health goals.

PREPARED BY:

SUBMITTED BY:

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Mark Hammond
Compliance Officer



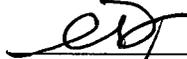
Peter A. Weiss
City Manager

REVIEWED BY:

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Cari Dale, Water Utilities Director



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Exhibit A – Report on Water Quality Relative to Public Health Goals



CITY OF OCEANSIDE

WATER UTILITIES DEPARTMENT

June 19, 2013

Report on Water Quality Relative to Public Health Goals

Background:

Provisions of the California Health and Safety Code specify that the City of Oceanside and other water utilities with more than 10,000 service connections prepare a special report by July 1, 2013 if their water quality measurements exceeded any State Public Health Goal (PHG) or Federal Maximum Contaminant Level Goal (MCLG) in calendar years 2010, 2011, and 2012. Only constituents which have a California Maximum Contaminant Level (MCL) or Action Level (AL) and either a PHG or MCLG that has been exceeded are to be addressed in this report. Included in this report is the numerical public health risk associated with the MCL and PHG or MCLG, the category or type of risk to health that could be associated with each constituent level, and an estimate of the cost to implement specified treatment if it is appropriate and feasible.

What is a MCLG, PHG, MCL and AL?

Maximum Contaminant Level Goal (MCLG) and Public Health Goal (PHG) are non-enforceable goals established by the State or Federal EPA and are based solely on public health risk considerations. PHGs are set by the State and MCLGs are set by the Federal Regulators. Research indicates that below the PHG/MCLG for a contaminant there are no known adverse health effects. The PHGs/MCLGs are not enforceable and are not required to be met by any public water system.

Maximum Contaminant Level (MCL) is the maximum level of a contaminant that is allowed in drinking water. The USEPA and the California Department of Public Health (CDPH) establish MCLs at very conservative levels to provide protection to consumers against all but very low to negligible risk. MCLs set by the State or Federal EPA are mandatory limits for all public water systems. MCLs are set as close as possible to PHGs/MCLGs but the MCL for a contaminant may be higher than the PHGs/MCLGs. This is because of the difficulties in measuring such small quantities of a contaminant, or a lack of available treatment technologies, or if EPA determines that the costs of treatment would outweigh the public health benefits of a lower MCL.

Action Level (AL) is the maximum level of Lead or Copper allowed in the water. If the AL is exceeded the water is considered corrosive to plumbing and corrosion control measures must be implemented by the water supplier.

Water Quality Data Considered:

All of the water quality data collected by our water system for 2010, 2011 and 2012 for purposes of determining compliance with drinking water standards was considered. This data was all summarized in our Annual Water Quality Reports.

Constituents Detected that Exceed a PHG or a MCLG:

Drinking water distributed in the City of Oceanside exceeded the PHGs or MCLGs for total coliform bacteria, lead, gross alpha radiation and uranium. The detected levels for these constituents were well below their respective MCLs, so this does not constitute a violation of drinking water regulations or indicate the water was unsafe to drink. These results could be considered typical for a California water agency. More detailed information for these constituents follows.

Total Coliform Bacteria

Total coliform is a large group of bacteria. They are ubiquitous in nature and are not generally considered harmful. The presence of Total coliform bacteria indicates a potential problem in the water system. They are used as an indicator because of ease of testing and results can be determined within 24 hours. Because this test is sensitive to contamination during sampling and handling, it is not at all unusual for a system to have an occasional positive sample. If a positive sample is found, follow up samples are required to confirm the original result. It is difficult, if not impossible; to assure that a system will never get a positive sample.

The MCL for Total coliform-positive samples may not exceed 5% per month and the MCLG is 0% of the monthly samples. The City collects, on average, 135 total coliform samples per month throughout the City. During the three year period, 2010, 2011 and 2012, the City collected a total of 4,857 coliform samples. There were three months in 2010 and one month in 2012 where there was one positive total coliform sample in each month. The monthly percent of positive samples for each of these months was 0.7%. All follow up samples were negative and the MCL was not exceeded.

The City follows best practices that minimize the chances of bacterial contamination by maintaining adequate disinfectant level in the water system. Chlorine is added to the water during and after treatment to assure that the water served is free of pathogenic organisms. 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.

Because total coliform is only a surrogate indicator of the potential presence of pathogens, it is not possible to state a specific numerical health risk.

It is difficult to assess the best available technology (BAT) costs to achieve the MCLG for coliform bacteria. There is no commercially available technology that will guarantee a zero percent coliform positive result every single month. Therefore, the cost of achieving the MCLG cannot be estimated.

Lead

Lead is not detected in the water that Oceanside provides to its customers. The main sources of lead in drinking water are lead solder, commonly used before 1990 to join lengths of copper pipe together; and faucets containing brass or bronze internal parts, which usually contains lead impurities.

Every three years the City is required to sample 50 Oceanside homes for lead, last completed in 2012. Because home plumbing and fixtures are the primary sources of lead in our drinking water, the samples are taken from faucets within each of the homes. Sampling for lead at the tap helps to determine if a water system is providing corrosive water and causing lead to leach into the water.

There is no MCL for lead. Instead the 90th percentile value of all samples from household taps cannot exceed the Action Level (AL) of 15 ppb (parts per billion). This means that 90% of the 50 homes tested must be below 15 ppb. All of the homes sampled in 2012 were well below the AL for lead. The 90th percentile of the City's sampling of tap water samples in 2012 was 2.9 ppb. The non enforceable PHG for lead is 0.2 ppb.

Our water system is in full compliance with the Federal and State lead requirements. Based on our sampling results we are deemed by CA Department of Public Health to have "optimized corrosion control" for our system. In general, optimizing corrosion control is considered to be the best available technology to deal with corrosion issues and with any lead findings. We continue to monitor our water for parameters that relate to corrosion, and will take action if necessary to maintain our system in an "optimized corrosion control" condition.

Exposure to lead has been associated with a large variety of human toxicological effects. Lead is known to cause changes in the cardiovascular, hematological, musculoskeletal, renal, reproductive, neurological, and immunological systems. In addition, lead may cause an increased risk of lung and stomach cancer. The cancer risk at the PHG is 3×10^{-7} or 3 excess cancer cases in 10 million people. The cancer risk at the AL is 2×10^{-6} or 2 excess cancer cases in a million people.

Since the City is meeting the "optimized corrosion control" requirements, 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.

Gross Alpha Radiation and Uranium

Gross alpha radiation is caused by naturally-occurring radioactive elements that are present in the earth's crust. Uranium is a typical alpha radiation emitter that is found in ground and surface waters due to its natural occurrence in geological formations. Monitoring results indicate the presence of gross alpha radiation and uranium in our water well below the MCL. The State of California MCL for gross alpha radiation is 15 pCi/L (picocuries per liter) and the results for our water ranged from 3.3 to 4.3 pCi/L. The MCL for uranium is 20 pCi/L and the results for our water ranged from 1.8 to 4.8 pCi/L.

The MCLG for gross alpha radiation is zero. Since this type of radiation is used as a screening test for a large group of radionuclides and the risks vary for each type of radionuclide, the EPA has set the MCLG at zero. Uranium has a PHG of 0.43 pCi/L.

Constituent	Unit	Our Water	MCL Legal Limit	PHG/MCLG Non enforceable goal
Alpha Radiation	pCi/L	3.3 – 4.3	15	0
Uranium	pCi/L	1.8 – 4.8	20	0.43

The health risk category for uranium is carcinogenicity. Carcinogenic risk means that the constituent is capable of producing cancer. The numerical health risk for uranium based on the MCL is 5×10^{-5} . This means five excess cancer cases per 100,000 population. The numerical health risk for uranium at the PHG is 1×10^{-6} . This means one excess cancer case per 1,000,000 population.

The best available technology (BAT) to lower the Gross Alpha Radiation and Uranium level is reverse osmosis (RO). The cost estimate to treat the City's water by RO is about \$4.00 per unit (748 gallons). The amount of surface water treated per year is about 30000 acre feet or about 36000 units per day. The cost for treatment would be about \$53 million per year, not including the cost of disposing of the concentrated waste from the treatment facility and the capital cost of \$160 million.

Recommendations

The City of Oceanside's drinking water meets all CA and USEPA drinking water standards set to protect public health. To further reduce the levels of the constituents identified in this report will require additional costly treatment processes. The effectiveness of these treatment processes required to make reductions to the PHGs/MCLGs is uncertain. Therefore, no action is proposed at this time.