CITY OF

NEWPORT BEACH

City Council Staff Report

July 23, 2019
Agenda Item No. 11

TO:	HONORABLE MAYOR AND MEMBERS OF THE CITY COUNCIL
FROM:	Mark Vukojevic, Utilities Department Director - 949-644-3011, mvukojevic@newportbeachca.gov
PREPARED BY:	Toan Van, Water Quality Coordinator, tvan@newportbeachca.gov
PHONE:	949-718-3412
TITLE:	2019 Drinking Water Quality Report on Public Health Goals

ABSTRACT:

The California Health and Safety Code Section 116470 requires all water agencies to prepare a report every three years if any of the water quality samples collected between 2016 and 2018 exceed a Public Health Goal (PHG) or Maximum Contaminant Level Goal (MCLG). Goals are separate from standards. Newport's water system meets all state and federal drinking water standards and complies with all maximum contaminant levels. Samples did find six commonly found constituents exceeded the PHG or MCLG in Newport Beach's water during the three-year period but were less than Maximum Contaminant Level (MCL). Because all standards are met, no additional measures are recommended to achieve goals.

RECOMMENDATION:

a) Conduct a public hearing;

b) Determine that the action is exempt from the California Environmental Quality Act (CEQA) pursuant to Sections 15060(c)(2) and 15060(c)(3) of the CEQA Guidelines because it will not result in a physical change to the environment, directly or indirectly; and

c) Receive and file City of Newport Beach 2019 Drinking Water Quality Report on Public Health Goals.

FUNDING REQUIREMENTS:

There is no fiscal impact related to this item.

DISCUSSION:

The California Health and Safety Code Section 116470 (b) requires public water systems to prepare a report every three years if their water quality measurements have exceeded any Public Health Goals (PHGs) or a Maximum Contaminant Level Goals (MCLGs) (collectively referred to as Goals).

These Goals are theoretical, non-enforceable and are established by the CalEPA's Office of Environmental Health Hazard Assessment (OEHHA) and the United States Environmental Protection Agency (USEPA) respectively. Goals are separate from Maximum Contaminant Levels (MCL), standards that are enforceable. The City's water system meets all drinking water standards.

Also, as required by the State Code, the report includes the numerical public health risk associated, the category or type of risk to health, the best available treatment technology, and an estimate of the cost to install that treatment and if it is appropriate and feasible. Since many Goals are set much lower than the MCL, treatment is not always possible or feasible and estimating the costs to reduce a constituent to zero is very difficult. In some cases, installing treatment to further reduce very low levels of one constituent may have adverse effects on another water quality aspect.

Attachment A, the 2019 Drinking Water Quality Report on Public Health Goals (2016, 2017, and 2018 data), is the required report, providing water quality information to the public on the constituents detected at a level exceeding an applicable Goal. These constituents are commonly found in all neighboring water systems and are similarly reported. As noted previously, goals are not enforceable and no action to meet them is mandated.

Newport Beach's water is in full compliance with all drinking water regulations, meeting all State and Federal drinking water standards set to protect public health. To further reduce the levels of the constituents that are already significantly below the MCL would require costly treatment. The effectiveness of the treatment processes to remove a constituent or even lower the level is uncertain. The health protection benefits of these further hypothetical reductions are not clear and may not be quantifiable. Therefore, no action is proposed.

The State Code requires that a public hearing be held for the purpose of accepting and responding to public comment on the report.

ENVIRONMENTAL REVIEW:

Staff recommends the City Council find this action is not subject to the California Environmental Quality Act (CEQA) pursuant to Sections 15060(c)(2) and 15060(c)(3). The activity will not result in a direct or reasonably foreseeable indirect physical change in the environment or the activity is not a project as defined in Section 15378 of the CEQA Guidelines, California Code of Regulations, Title 14, Chapter 3, because it has no potential for resulting in physical change to the environment, directly or indirectly.

NOTICING:

Notice of this hearing was published in the Daily Pilot at least 10 days before the scheduled meeting, consistent with the provisions of the Municipal Code. The agenda item has been noticed according to the Brown Act (72 hours in advance of the meeting at which the City Council considers the item).

ATTACHMENT:

Attachment A – 2019 Drinking Water Quality Report on Public Health Goals

City of Newport Beach
2019 Drinking Water Quality Report
on Public Health Goals

July 2019

Prepared By:

City of Newport Beach Utilities Department

City of Newport Beach Utilities Department
2019 Drinking Water Quality Report on Public Health Goals

Important Acronyms:

CalEPA – California Environmental Protection Agency
DDW – Division of Drinking Water (California)
MCLG - Maximum Contaminant Level Goals (Federal)
MCL - Maximum Contaminant Levels
OEHHA - Office of Environmental Health Hazard Assessment (California)
PHG - Public Health Goals (California)
SWRCB - State Water Resources Control Board (California)
USEPA - United States Environmental Protection Agency

Background

Provisions of the California Health and Safety Code Section 116470 (b) specify public water systems serving more than 10,000 service connections must prepare a report every three years (July 2019) if their water quality measurements have exceeded any Public Health Goals (PHGs). PHGs are theoretical non-enforceable goals established by the California-Environmental Protection Agency's (CalEPA's) Office of Environmental Health Hazard Assessment (OEHHA) and are based solely on public health risk considerations. 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 (MCLG's) adopted by United States Environmental Protection Agency (USEPA). Only constituents which have a California primary drinking water standard and for which either a PHG or MCLG has been set are to be addressed.

If a constituent was detected in the City's water supply between 2016 and 2018 at a level exceeding an applicable PHG or MCLG, this report provides the information required by the law. Included is the numerical public health risk associated with the PHG or MCLG, the Maximum Contaminant Level (MCL), the category or type of risk to health that could be 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 set by the OEHHA, which is part of Cal-EPA, and are based solely on public health risk considerations. PHGs also do not consider practical risk-management factors such as analytical detection capability, available treatment technologies, 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 throughout our water system between 2016 and 2018 for purposes of determining compliance with drinking water standards was considered. This 2019 PHG Report has been prepared to address the requirements set forth in Section 116470 of the California Health and Safety Code. It is based on water quality analyses during calendar years 2016, 2017, and 2018. This 2019 PHG Report has been designed to be as informative as possible, without unnecessary duplication of information contained in the Consumer Confidence Report (also known as the Water Quality Report), which is mailed to customers by July 1st of each year.

Guidelines Followed

There are no regulations explaining requirements for the preparation of PHG reports. A workgroup of the Association of California Water Agencies (ACWA) Water Quality Committee has prepared suggested guidelines for water utilities to use in preparing PHG reports. The ACWA guidelines were used in the preparation of this 2019 PHG Report. These guidelines include tables of cost estimates for BAT. The State of California (State) provides ACWA with numerical health risks and category of health risk information for contaminants with PHGs. This health risk information is appended to the ACWA guidelines.

Best Available Treatment Technology and Cost Estimates

Both the USEPA and DDW adopt Best Available Technologies (BATs), which are the best-known methods of reducing contaminant levels. 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. 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.

Constituents Detected That Exceed a PHG or a MCLG

	(Goal)	(Detection)	(Legal Max)
Constituent	**PHG/MCLG**	**Detections Range, (Average)**	**MCL/Action Level**
Coliform	0	ND – 3.3%, (ND)	<5% per month
Arsenic	0.000004 mg/l	ND - 0.0053 mg/l, (<0.002)	0.010 mg/l
Gross Alpha	0	ND to 4 pCi/l, (ND)	15 pCi/l
Gross Beta	0	4 - 6 pCi/L, (5)	50 pCi/L
Uranium	0.43 pCi/l	ND – 3.73 pCi/l, (1.77)	20 pCi/l
Bromate	0.0001 mg/l	ND – 0.0047 mg/l, (0.002)	0.010 mg/l

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 there is no PHG, above the MCLG.

Arsenic

	(Goal)	(Detection)	(Legal Max)
Constituent	**PHG/MCLG**	**Detections Range, (Average)**	**MCL/Action Level**
Arsenic	0.000004 mg/l	ND - 0.0053 mg/l, (<0.002)	0.010 mg/l

Arsenic is a naturally occurring metallic element found in water generally at low levels throughout California and elsewhere due to the erosion of mineral deposits. In most areas, erosion of rocks and minerals is considered the primary source in groundwater.

The numerical health risk of ingesting drinking water with arsenic above the PHG is one additional theoretical cancer cases in one million people drinking two liters of water a day for 70 years. Arsenic was detected below the MCL of 0.010 mg/l, but above the PHG of 0.000004 mg/l in local groundwater. The City's water source has been in full compliance with Federal and State drinking water standards for the MCL for arsenic.

Reverse osmosis (RO) is one of the most effective BAT treatments for removal of arsenic in water for large water systems. The estimated cost to reduce arsenic below the PHG using RO was calculated based on cost estimates provided in the Association of California Water Agencies (ACWA) guidelines. Achieving the water quality goal for arsenic using RO could cost approximately $7.7million - $28 million per year, or between $300 and $1000 per service connection per year in addition to the City's current water

rates. A RO system is not considered feasible and no local water agencies are using RO for system wide treatment of these constituents.

Coliform Bacteria:

	(Goal)	(Detection)	(Legal Max)	Retests
Constituent	**PHG/MCLG**	**Detections Range, (Average)**	**MCL/Action Level**	**Repeat Positives**
Coliform	0	ND – 3.3%, (ND)	<5% per month	0%

During 2016, 2017, and 2018, the City collected thousands of samples for coliform analysis. Occasionally, a sample was found to be positive for coliform bacteria but follow up actions were taken and all re-check samples were negative.

The MCL for coliform bacteria is five (5) percent positive samples of all samples per month and the MCLG is zero. The reason for the coliform drinking water standard is to minimize the possibility of the water containing pathogens, which are organisms that cause waterborne disease. Because coliform is 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 they cannot do so with coliforms.

Coliform bacteria are indicator organisms 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. USEPA states "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. All follow-up samples were negative, which indicates no potential problem and no need for further investigation.

The USEPA has determined the BAT for treating coliform bacteria is disinfection. The City adds monochloramine as a disinfectant to our water sources to assure the water is microbiologically safe. The 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 is essential in supplying safe good tasting drinking water.

Other equally important measures we have implemented include an effective cross-connection control program, maintenance of a disinfectant residual, monitoring and surveillance program, and maintaining positive pressures in our distribution system. Our system has already taken all steps described by SWRCB in Section 64447, Title 22, CCR as "best available technology" for coliform bacteria.

Gross Alpha, Gross Beta, and Uranium:

	(Goal)	(Detection)	(Legal Max)
Constituent	**PHG/MCLG**	**Detections Range, (Average)**	**MCL/Action Level**
Gross Alpha	0	ND to 4 pCi/l, (ND)	15 pCi/l
Gross Beta	0	4 - 6 pCi/L, (5)	50 pCi/L
Uranium	0.43 pCi/l	ND – 3.73 pCi/l, (1.77)	20 pCi/l

Gross Alpha, Gross Beta, and Uranium occur from the erosion of natural deposits and are naturally occurring in groundwater. In 2016, gross alpha and gross beta were detected above the MCLG in surface water purchased from Metropolitan Water District of Orange County (MWDOC). Uranium was detected above the PHG in the surface water purchased from MWDOC and in the local groundwater.

Numerical Public Health Risks for Gross Alpha, Gross Beta, and Uranium:

Gross Alpha - There is a health risk of obtaining cancer if one drinks water containing gross alpha above the MCL of 15 pCi/L. The cancer risk associated with gross alpha particles is one surplus of cancer cases per one thousand people who drink two liters of water a day for 70 years. The MCL associated with gross alpha excludes alpha particles emitted from uranium and radon. Since there is not a PHG for gross alpha; the MCLG of zero is adopted for Gross Alpha.

Gross Beta - USEPA has determined that the health risk associated with the MCLG is 0 and the risk associated with the MCL is 2 excess cases of cancer in 1,000 people over a lifetime exposure.

Uranium - OEHHA has determined that the theoretical health risk associated with the PHG is one excess case of cancer in a million people and the risk associated with the MCL is 5 excess cases of cancer in 100,000 people exposed over a 70-year lifetime. DDW says that “Drinking water which meets this standard (the MCL) is associated with little to none of this risk and should be considered safe with respect to Uranium.” The cancer risk for people who drink water containing Uranium above the PHG level throughout their lifetime could experience an increased risk of 1 per 1,000,000 of getting cancer.

The recommended BAT treatment for the removal of gross alpha, gross beta, and uranium in large water systems below PHG’s and MCLG’S is Reverse osmosis (RO). The cost of providing treatment using RO to reduce these constituents was calculated by ACWA. Achieving the PHG’s or MCLG’s could range from $7.7million - $28million per

year, or between $300 and $1000 per service connection per year in addition to the City's current water rates. A RO system is not considered feasible and no local water agencies are using RO for system wide treatment of these constituents.

Bromate:

	(Goal)	(Detection)	(Legal Max)
Constituent	**PHG/MCLG**	**Detections Range, (Average)**	**MCL/Action Level**
Bromate	0.0001 mg/l	ND – 0.0047 mg/l, (0.002)	0.010 mg/l

Bromate is a disinfection byproduct (DBP) formed when naturally occurring bromide reacts with ozone during the disinfection process. OEHHA has determined that the numerical cancer risk for bromate above the PHG level is one additional theoretical cancer cases in one million people drinking two liters of water a day for 70 years. The PHG for bromate is 0.0001 mg/l and the MCL for bromate is 0.010 mg/l. The MCL for bromate does not apply to single readings, but is instead compared to a Running Annual Average (RAA).

Bromate was detected above the PHG in treated surface water purchased from MWDOC. Groundwater resulted in non-detection for bromate. It would not be feasible for the City to lower bromate levels to the PHG, as it does meet federal and state health-based standards.

One of the most effective BAT treatment for bromate reduction is Reverse Osmosis (RO). RO treatment reduces the natural occurring bromide in source water by reducing the natural organic matter in water. According to ACWA, estimates for BAT would cost approximately $1.85 - $3.55 per 1000 gallons to treat. The cost could range from $10million to $20million per year, or between $400 and $750 per service connection per year in addition to the City's current water rates. A RO system is not considered feasible and no local water agencies are using RO for system wide treatment of these constituents.

RECOMMENDATIONS FOR FURTHER ACTION:

The drinking water quality of the City of Newport Beach meets all State and Federal drinking water standards set to protect public health. To further reduce the levels of the constituents that are already significantly below the Maximum Contaminant Levels would require costly treatment. The effectiveness of the treatment processes to remove a constituent or even lower the level is uncertain. The health protection benefits of these further hypothetical reductions are not clear and may not be quantifiable. Therefore, no action is proposed.