AGENDA REPORT

Meeting Date: July 22, 2010

Item Number: D-1

To: Honorable Mayor & City Council

From: Shana Epstein, Environmental Utilities Manager
Josette Descalzo, Water Quality Specialist

Subject: ACCEPTANCE OF CITY OF BEVERLY HILLS WATER UTILITY PUBLIC HEALTH GOAL REPORT

Attachments: 1. City of Beverly Hills Water Utility Public Health Goal Report

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RECOMMENDATION

Staff recommends that the City Council accept the final draft of the Public Health Goal (PHG) report. This report compares our drinking water quality with the PHG adopted by California EPA's Office of Environmental Health Hazard Assessment (OEHHA) and with the Maximum Contaminant Level Goals (MCLGs) adopted by USEPA. The attached report is intended to provide additional information to the annual Consumer Confidence Report (CCR).

INTRODUCTION

PHGs are set by the OEHHA, which is part of Cal-EPA. The PHG levels are based solely on public health risk considerations. OEHHA did not use practical risk-management factors such as analytical detection capability, Best Available Treatment (BAT) technology, benefits and costs when setting PHG limits. PHGs are not enforceable and are not required to be met by any public water system. MCLGs are the federal equivalent to PHGs.

DISCUSSION

SB 1307 (Calderone-Sher; adopted in 1-1-97) added new provisions to the California Health and Safety Code that requires water utilities that have more than 10,000 service connections to publish a PHG report in addition to the annual Consumer Confidence Report (CCR). The PHG report evaluates constituents that have primary drinking standards and comparing water quality results with the PHG or MCLG limits.

If a constituent exceeds these limits, the PHG report will need to discuss the following items for each constituent:

1. Numerical Public Health Risk associated with the MCL and the PHG or MCLG
2. The category or type of risk to health that could be associated with the constituent
2. The Best Available Treatment (BAT) technology that could be used to reduce the level below the MCL or the PHG or MCLG
3. The estimate cost to install the BAT if it's appropriate and feasible.

Water quality data between 2007 and 2009 were evaluated for this year's PHG report. There were six constituents with primary drinking standards that exceeded the PHG and MCLG limits. These were total coliform bacteria, bromate, radium 226, radium 228, uranium and arsenic. With the exception of bromate and total coliform bacteria, the other constituents were detected above the PHG or MCLG limits in our groundwater system. However, our groundwater goes through reverse osmosis treatment that further reduces the level below the PHG limits. RO is considered to be one of the most effective BATs to reduce any constituent below the MCL or the PHG or MCLG. Bromate was detected above the PHG from our Metropolitan Water District (MWD) treated water. Total coliform bacteria was detected during our routine distribution system monitoring, but repeat sampling confirmed that total coliform bacteria was absent in our system.

Even with six constituents being detected above the PHG limits, our water complies with all of the health-based drinking water standards and maximum contaminant levels (MCLs) required by the California Department of Public Health and the USEPA. Staff assures that our water is safe to drink and use, and does not recommend additional treatment.

The notice of public hearing was posted in the local Beverly Hills newspapers.

FISCAL IMPACT

There is no fiscal impact to implement this report.

DG David D. Gustavson
Approved By

Attachment 1

City of Beverly Hills Water Utility Public Health Goal Report

CITY OF BEVERLY HILLS WATER UTILITY
PUBLIC HEALTH GOAL REPORT

Background:

California Health and Safety Code Section 116470 (b) requires water utilities that serve more than 10,000 service connections to prepare a Public Health Goal (PHG) report every three years in addition to the annual Consumer Confidence Report (CCR). PHG reports should be completed by July 1, with a public hearing conducted right afterwards.

The PHG report contains water quality constituents that exceed PHG numerical limits. These limits are usually close to the Maximum Contaminant Levels (MCLs) and sometimes lower in levels than the Detection Limit for Reporting (DLR). **PHGs are non-enforceable goals** established by the Cal-EPA's Office of Environmental Health Hazard Assessment (OEHHA). The code also requires that where OEHHA has not adopted a PHG for a constituent, the water supplier is to use the Maximum Contaminant Limit Goals (MCLGs) adopted by 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.

This report provides information on constituents that have a primary drinking standard at a level exceeding an applicable PHG or MCLG. This report summarizes those tests results taken between 2007 and 2009. This report also contains numerical public health risks associated with the MCL, PHG and MCLG, the category or type of risks to health that could be associated with each constituent, the Best Available Treatment (BAT) technology that could be used to reduce the constituent level and an estimate of the cost to install that treatment if it's appropriate and feasible.

What Are PHGs?

California Office of Environmental Health Hazard Assessment (OEHHA) sets PHGs. **PHGs are set without taking into consideration practical risk-management factors used by the California Department of Public Health (CPDH) and USEPA for setting Maximum Contaminant Levels (MCLs) in drinking water standards**. These factors include analytical detection capability, treatment technology available, benefits and costs. **PHGs are also 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:

Water quality data from 2007 to 2009 was used for this report. This data was all summarized in our 2007, 2008 and 2009 annual Consumer Confidence Reports, which were mailed to all of our customers by or before July 1 of each year. Throughout these years, there were no constituents that exceeded compliance standards; however, there are a few that were above the PHG or MCLGs limits. These constituents are discussed in this report.

Identification of Contaminants

The City of Beverly Hills has approximately 10,500 service connections, which serve the cities of Beverly Hills and a portion of West Hollywood. The following constituents were detected at or above the PHG or MCLG at our MWD sources or our local groundwater wells.

1. **Total Coliform Bacteria** - Naturally occurring in the environment.

2. **Bromate** - By-product of ozonation disinfectant.

3. **Radium 226** - Erosion of natural deposits. Naturally occurring in groundwater and it occurs in virtually all rocks, soils, water, plants and animals.

4. **Radium 228** - Erosion of natural deposits. Naturally occurring in groundwater and it occurs in virtually all rocks, soil, water, plants and animals.

5. **Uranium** - Erosion of natural deposits. Naturally occurring in groundwater.

6. **Arsenic** - Naturally occurring in the environment.

Numerical Public Health Risks

Section Safety Code Section 116470(b)(2) requires public water systems to disclose numerical public health risks for constituents that have an associated MCLs, Action Limits (AL), PHGs and MCLGs. These numerical limits were developed by OEHHA for the constituents listed below. Only numerical risks associated with cancer- causing have been qualified by OEHHA. For those constituents that OEHHA has not established a PHG, the federal MCLG will be used for the purpose of complying with this report. The difference between PHG and MCLG is that MCLGs for carcinogen are set at zero because USEPA assumes there is no absolutely safe level of exposure to cancer. PHGs, on the other hand, are set at a level considered to pose no *significant risk* of cancer. This is usually no more than one-in-a-million excess cancer risk ($1x10^{-5}$) level for a lifetime of exposure. Table 1 summarizes the constituents detected above the PHG or MCLG and its respective DLR and MCL.

- **Total Coliform Bacteria** – USEPA has determined that the health risk associated with the MCLG is 0.

- **Bromate** – OEHHA has determined the health risk associated with the PHG is one excess case of cancer in a million people. The risk associated with the MCL is 1 excess case per ten thousand people over a long period of time.

- **Radium 226** – OEHHA has determined the health risk associated with the PHG is one excess case of cancer in a million people. The risk associated with the PHG is one excess case of cancer in a million people; the risk associated with the MCL is 1 excess case per ten thousand people over a long period of time.

- **Radium 228** - OEHHA has determined the health risk associated with the PHG is one excess case of cancer in a million people. The risk associated with the MCL is 3 excess cases per ten thousand people over a long period of time.

- **Uranium** – OEHHA has determined the health risk associated with the PHG is one excess case of cancer in a million people. The risk associated with the MCL is one excess case of cancer in a million people; the risk associated with the MCL is 5 per hundred thousand people over a long period of time.

- **Arsenic** – OEHHA has determined the health risk associated with the PHG is one excess case of cancer in a million people. The risk associated with the MCL is 2.5 per thousand people over a long period of time.

Table 1: City of Beverly Hills Water Utility PHG Table

Constituent	DLR	MCL	PHG or (MCLG)	Range
Total Coliform		5%*	0	0-1.8%**
Bromate	5 ppb	10 ppb***	0.1 ppb	4.2- 12 ppb
Radium 226	1 pCi/L	NA	0.05 pCi/L	0.23-0.73 pCi/L
Radium 228	1 pCi/L	NA	0.019 pCi/L	0.07-0.399 pCi/L
Uranium	1 pCi/L	20 pCi/L	0.43 pCi/L	0.70-1.36 pCi/l
Arsenic	2 ppb	10 ppb	0.004 ppb	ND - 4.57 ppb

ppb: parts per billion or micrograms per liter (µg/L)

pCi/L: picoCuries per liter

* Total coliform MCLs: No more than 5% of the monthly samples may be total coliform-positive.

** In 2009, there was one total coliform-positive sample in July 2009. As a result, 1.8% of the monthly sample was total coliform-positive. The MCL was not violated.

*** Bromate MCL: The MCL is based on the highest running annual average (RAA) and not on a single sample result. The highest RAA was 6.9 ppb which occurred in 2009.

Best Available Treatment (BAT) Technology and Cost Estimates:

Both the USEPA and CDPH adopted what are known as Best Available Treatment (BATs) technologies, which are the best known methods of reducing contaminant levels below the MCL. Costs can be estimated for such technologies and varies per each water utility. However, many PHGs and all MCLGs are set much lower than the MCL or Detection for Limit Reporting (DLR). This means it would be difficult to determine the treatment's effectiveness if the lowest acceptable analytical detection limit is greater than the PHG or MCLG. It is also not always possible or feasible to determine what treatment is needed to further reduce a constituent to or near the PHG or MCLG, many of which are set at zero. Cost estimates to reduce a constituent to zero is difficult, if not impossible, because it is difficult to verify analytical results 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. Below is a description of any actions the City of Beverly Hills may intend to use in reducing the level or occurrences exceeding the PHG or MCL limits and the basis for that decision.

- **Total Coliform Bacteria** – Total coliform bacteria was present in a maximum of 1.8% of samples collected in July 2009. The MCL was not violated for this occurrence. One total coliform-positive sample was present out of 59 samples collected in this month. Repeat samples were taken to confirm the initial sample and coliform bacteria was not present in these samples. This suggests that it may have been a sampling error that resulted in a total coliform-positive result. The one total coliform-positive sample was the only one out of 729 coliform samples taken in 2009. Samples taken in 2007 and 2008 did not show the presence of coliform bacteria.

  The MCL for total coliform-positive may not exceed 5% of the monthly samples and the MCLG may not exceed 0% of the monthly samples. The City of Beverly Hills did not exceed the MCL throughout this period, but did go above the MCLG of 0% in July 2009.

The presence of coliform bacteria in a sample doesn't determine the water's potability. CDPH and USEPA use total coliform bacteria as an organism indicator because the tests are done with ease and results can be determined in less than 24 hours. Actually, it is not uncommon to have the presence of coliform bacteria in a sample because it is present everywhere in the environment. It is important that operators follow proper sampling procedures to minimize the probability of contaminating the sample. Because this test is sensitive to contamination, USEPA and CDPH require water utilities to collect repeat samples to confirm the initial result. If the repeat samples show the presence of coliform bacteria, a water utility would execute its mitigation plan to disinfect the presence of coliform in water and perform a depth investigation to its cause.

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

The City of Beverly Hills follows best practices that minimize the chances of bacterial contamination by maintaining adequate disinfectant level in the water system. The water we serve you already contains adequate disinfectant residual; and it is maintained by having fresh water in our system. In addition, the water utility collects between 56 to 70 bacteria samples per month to assure the potablity of your water. We also collect weekly samples at the water treatment plant and monthly samples at our groundwater wells. By monitoring these locations, we demonstrate our commitment to providing you the safest water and also allow us to perform immediate mitigation activities if coliform is present in the water system.

- **Bromate** – Bromate is formed when naturally occurring bromide reacts with ozone during the disinfection process. The City's water supplier, Metropolitan Water District (MWD), uses ozone in its Jensen treatment plant to treat drinking water. Since the treatment plant's source water contains naturally occurring bromide, bromate is formed during this process.

  One of the most effective Best Available Treatment (BAT) technologies for bromate reduction is reverse osmosis (RO). RO treatment reduces the natural occurring bromide in source water by reducing the natural organic matter (NOM) in water. When this is reduced, the demand for ozone decreases, therefore reducing bromate formation. Because the DLR for bromate (5 ppb) is greater than the PHG (0.1ppb), it would be difficult to assess the effectiveness of RO treatment on reaching the PHG level.

  Bromate in our water system comes from our already treated water from MWD. It would not be feasible for the City of Beverly Hills to lower bromate levels to the PHG and MCLG levels because it meets federal and state health-based standards. According to the Association of California Water Agencies (ACWA) Cost Estimates for Treatment Technology BAT, it would cost approximately $1.37-$2.62 per 1000 gallons to treat bromate using RO treatment. If MWD chooses to use RO as BAT, it would cost them between $374M to $716M per year in annualized capital and O&M costs to try to meet PHG levels.

- **Radium 226, Radium 228 and Uranium** – Reverse osmosis treatment is one of the most effective BATs to reduce these radiological chemicals below their respective PHGs or MCLGs. The PHG for Radium 226, Radium 228 and Uranium are 0.05 pCi/L, 0.019 pCi/L and 0.43 pCi/L,

respectively. It would be difficult to measure RO's effectiveness since the DLR of 1 pCi/L is greater than their PHG level.

As mentioned earlier, these radiological chemicals were detected in the City's groundwater wells. Fortunately, our groundwater goes through RO treatment before it goes to the distribution system. The cost to treat these chemicals is incorporated in the capital and O&M costs of the RO plant. It costs approximately $1,566 to treat per acre-ft of groundwater. This translates into $201.30 per service connection annually.

- **Arsenic**- Reverse osmosis is one of the most effective BATs that is used to reduce levels below the MCL. It would be difficult to measure RO's effectiveness in meeting PHG levels because the DLR (2ppb) for arsenic is greater than the PHG limit (0.004ppb).

  As mentioned in the previous section, arsenic was detected in the City's groundwater wells. Fortunately, our groundwater goes through RO treatment before it goes to the distribution system. The cost to treat arsenic below the MCL is incorporated in the capital and O&M costs of the RO plant. It costs approximately $1566 to treat per acre-ft of groundwater. This translates into $201.30 per service connection annually.

Summary of Findings

There were six constituents that were detected above the PHGs or MCLGs between 2007 and 2009. None of these constituents exceeded the health-based drinking water standards and the MCLs required by USEPA and CDPH. Four of these constituents are present in the groundwater wells. Fortunately, Beverly Hills groundwater is processed through the City's RO treatment plant, which is one of the recommended BATs by USEPA and ACWA. Because the DLR of these constituents is greater than their PHG, it is difficult to determine whether the BATs selected reduce the constituent's level below its PHG.

For Additional Information:

Please contact Mr. Josette Descalzo, Water Quality Specialist at (310)285-2467 or write to City of Beverly Hills Public Works and Transportation Department, 345 Foothill Road., Beverly Hills, CA 90210.