



ORIGINATING SECTION: Water Quality

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AGENDA DATE: September 18, 2019

ITEM NO. 10

SUBJECT: Per- and polyfluoroalkyl Substances (PFAS) Update

SUMMARY:

This report is to provide an update of recent regulatory developments in California and Zone 7's monitoring efforts regarding PFAS. These chemicals are unregulated emerging contaminants of concern to drinking water due to their tendency to accumulate in groundwater and their potential adverse health effects. In late August 2019, the California State Water Resources Control Board's Division of Drinking Water (DDW) issued revised guidelines for testing and reporting of two most common PFAS: perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS). The revised guidelines lower the current notification levels (NLs) from 14 parts per trillion (ppt) to 5.1 ppt for PFOA and from 13 ppt to 6.5 ppt for PFOS. DDW's recommended response level (RL) will remain at 70 ppt for the total concentration of PFOA and PFOS until it is updated later this year. DDW also announced that it has begun the process of establishing regulatory standards for these chemicals.

Zone 7 has completed the first quarterly tests of all applicable groundwater sources in April 2019 and the second quarter monitoring is in progress per DDW's order. Based upon current available data, seven of Zone 7's ten groundwater production wells (Chain-of-Lakes Wells, Mocho Wells No. 1 to 3, and Stoneridge Well) have tested above the new NL for PFOS and four of these wells have also tested above the new NL for PFOA. One of the wells, Mocho Well No. 1, has tested above the recommended RL and is being blended or treated to levels below the recommended RL. Zone 7's testing of surface treated water and Hopyard wells indicated no PFOS or PFOA detections. Although other PFAS have also been detected in Zone 7's water supply sources, there are no regulatory guidelines for these contaminants at the present time.

Zone 7 also initiated PFAS sampling of groundwater monitoring wells in May and June of 2019 to help determine the extent, and possibly the source of PFAS in the local groundwater basin. Monitoring data indicated that PFAS in Zone 7's groundwater basin appear to be widespread with occurrences in both the upper and lower aquifers. Further monitoring and analysis of findings is being planned.

BACKGROUND AND DISCUSSION:

PFAS are a large family of human-made chemicals that have been used extensively in the U.S. since the 1940s, particularly in surface coating and protectant formulations due to their ability to repel oil, grease and water. There are nearly 5,000 types of PFAS, some of which have been more widely used or studied than others. PFAS are used in fire-fighting foams and a wide range of industrial and consumer products such as stain- and water-resistant clothing, carpets, cleaning products, non-stick cookware and food packaging. Currently approved EPA analytical methods (EPA method 537.1) only provide the protocol for testing 18 specific PFAS at this time. Zone 7 is testing for each of these specified PFAS, however, State guidelines only exist for 2 (PFOA and PFOS) of the 18 PFAS. PFOA and PFOS are the most extensively produced and studied of these chemicals. These chemicals are very persistent in the environment and in the human body – meaning they don't break down and they can accumulate over time. There are studies that show exposure to PFAS can lead to adverse health effects, including harmful effects to a developing fetus or infant, immune system and liver effects, and cancer. Although certain PFAS are no longer manufactured in the U.S. as a result of phase outs including the [2010/2015 PFOA Stewardship Program](#), they are still produced internationally and can be imported into the U.S. in consumer goods.

There is currently no federal or State drinking water regulatory standard in California for any PFAS. In May 2016, the U.S. Environmental Protection Agency (EPA) issued lifetime [health advisories of 70 ppt for PFOA and PFOAS](#), individually or combined, to provide a margin of protection against adverse health effects to the most sensitive populations. Currently, the EPA has not set health advisory levels for the other PFAS.

While EPA is developing the regulatory standards for PFAS, many States are moving forward with setting their own guidelines and standards. In July 2018, the California issued [NLs for PFOA and PFOS](#) at 14 ppt and 13 ppt, respectively, and a combined RL of 70 ppt for these chemicals. NLs are a non-regulatory, precautionary health-based measure for concentrations in drinking water that warrant notification and further monitoring and assessment. Water systems are encouraged to test their water for contaminants with NLs, and in some circumstance may be ordered to test. If the systems do test, they are required to provide notification pursuant to [CA Health and Safety Code Section 116455](#) and are urged to report this information to their customers. When a source tests above a RL, DDW recommends removing the source from service or providing treatment, when possible.

In March 2019, DDW launched a [state-wide phased investigation](#) and issued orders to operators of hundreds of susceptible drinking water sources, including Zone 7 and City of Pleasanton, to conduct quarterly PFAS monitoring for at least one year. Phase I investigation also includes selected airports and landfills throughout the State, including 3 landfills in or near Zone 7's service area (Old Pleasanton Landfill, Vasco Rd Sanitary Landfill, and Altamont Sanitary Landfill). Phase II and III are anticipated to be implemented later this year which will focus on refineries, bulk terminals, fire training facilities, wildfire areas, manufacturers, and wastewater treatment plants.

In July 2019, [AB 756](#) was signed into law which gives authority to DDW (effectively January 1, 2020) to order a public water system to monitor for PFAS. It requires reporting any PFAS

detection in the water system's annual consumer confidence report. It also requires providing direct public notification if exceeding the RLs, not just a recommendation as it was prior to AB 756. Even though it was not required at the time, Zone 7 has already included its preliminary PFAS findings in its latest [annual consumer confidence report](#) and provided notification to its customers earlier this year, information was also posted to the website which includes a [PFAS Information Sheet](#) that is being updated regularly as new information and regulations are released.

In August 2019, the California [Office of Environmental Health Hazard Assessment \(OEHHA\)](#) recommended new NLs for PFOA and for PFOS. These recommendations are based on OEHHA's evaluation of recent human and animal toxicity data associated with pancreatic and liver tumors and OEHHA's risk assessment to account for the chemical half-life differences between rodents and humans. After independent review of the available information on the risks, DDW announced on [August 23, 2019](#), that the NLs are now lowered to [5.1 ppt for PFOA](#) and [6.5 ppt for PFOS](#), consistent with OEHHA's recommendations. Additionally, DDW announced that the recommended RLs for these chemicals will be updated in the fall and it has already begun the process of establishing regulatory standards for these chemicals by requesting the OEHHA to develop [Public Health Goals \(PHGs\)](#) for PFOA and PFOS.

Since protecting our customers' health and safety is our highest priority, Zone 7 voluntarily conducted proactive monitoring for several PFAS at some of its water supply sources in 2013, and at all sources in late 2018 and early 2019. PFAS were not detected in 2013, but reporting limits were much higher due to detection limitations at the time. However, detection and testing methods have greatly improved since early monitoring, and therefore recent sampling found detection of PFOA and PFOS in some of Zone 7's groundwater production wells (Chain-of-Lakes Wells, Mocho Wells, and Stoneridge Well); PFOA and PFOS were not detected in its Hopyard wells and surface water supplies. Although other PFAS were detected in Zone 7's water supply sources, at present there are no regulatory guidelines for these contaminants. Zone 7 will continue to monitor and compile data on these PFAS and will look to the regulatory bodies for any changes in guidelines for these chemicals. One of the groundwater wells, Mocho Well No. 1, has the combined PFOA and PFOS concentrations exceeding DDW's recommended RL. Currently available treatment options for Zone 7 for the Mocho Wellfield include reverse osmosis (RO) membrane filtration and blending of water sources. Immediately following confirmation of Mocho Well No. 1's sampling results, Zone 7 implemented procedures to keep Mocho wellfield supply below the recommended RL.

Following DDW's order, Zone 7 is conducting quarterly sampling since April 2019. The available results of the quarterly sampling are attached to this report and include applicable NLs and RL (see Attachment 1). In summary, seven production wells (Chain-of-Lakes Wells No. 1, 2 & 5, Mocho Wells No. 1 – 3, and Stoneridge Well) have tested above the new NL for PFOS in at least one quarter. Four production wells (Chain-of-Lakes Wells No. 1, Mocho Wells No. 1 – 3) have also tested above the new NL for PFOA in at least one quarter. One of the wells, Mocho Well No. 1, exceeded DDW's recommended RL in both quarters and is being blended or treated below the RL at Zone 7 Mocho Groundwater Demineralization Plant.

Zone 7 also initiated its own groundwater monitoring well sampling for PFAS to determine potential source(s) of contamination in the local groundwater basin. 19 monitoring wells at

various discrete depths around the municipal supply wellfields were sampled and analyzed for PFAS in May and June of 2019 with hope that the results would indicate a limited extent and point to a potential source. Six of the monitoring wells sampled in round one of sampling are being resampled due to contract lab data quality assurance issues; however, PFAS in Zone 7's groundwater basin appears to be widespread across the Amador Subbasin, and impacting both upper and lower aquifers. The PFOS detections in the monitoring wells ranged from 3 to 60 ppt and PFOA detections ranged from 0 to 8 ppt; other PFAS were also detected in the monitoring wells at various levels (see Attachment 2 for a map of PFOS concentrations from this initial monitoring). Staff plans to re-sample selected monitoring wells to confirm detections and also sample additional monitoring wells, mostly in the up-gradient direction from the initial detections, to further the investigation. The monitoring wells selected for this next phase of the investigation are also shown on Attachment 2.

Zone 7 will continue to provide additional notification as required or recommended by DDW. Staff will also continue to provide periodic updates to the Board as new information becomes available.

ATTACHMENTS:

1. PFOS/PFOA Quarterly Sampling Results and Calculated Running Annual Average (RAAs)
2. PFOS Concentrations in Livermore Valley Groundwater Basin – 2019 Water Year