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To: Water Utility Board members

From: Joe Grande, Water Quality Manager

Date: February 21, 2019

Subject: PFAS (per and polyfluoroalkyl substances) Monitoring Plan - 2019

Background

Madison Water Utility began testing for PFAS in drinking water, on a limited basis, in 2012. In 2015, the water utility tested each well two times for six PFAS chemicals to satisfy an EPA requirement for unregulated contaminants monitoring. Testing used EPA Method 537 with reporting limits that ranged from 10 to 90 parts per trillion (ppt) for each PFAS. None of the six PFAS, including PFOA and PFOS, was found at any well.

In 2017, the Water Quality Technical Advisory Committee recommended that we subject a subset of wells to the same analysis but using lower detection limits. It was argued that the reporting limits in 2015 were too high compared to updated health information and an EPA Health Advisory – 70 ppt for the combined concentration of PFOA & PFOS – issued in 2016. The committee recommended that we test wells located near the airport or known city landfills – potential PFAS sources – using a modified method with lower detection and reporting limits. Of five wells tested, three (#7, #18, and #29) were free of all six PFAS chemicals, Well 16 had a trace detection of one PFAS, and Well 15 showed the presence of five of six PFAS tested. Repeat testing at Wells 15 and 16 confirmed the detections.

More PFAS testing was conducted at Well 15 in March and October 2018. The number of PFAS tested was expanded to eighteen. Upon increasing the number of PFAS tested, and using the lower detection limits, one additional PFAS not previously found at Well 15 was detected. The following PFAS have been detected at Well 15: PFBS, PFHxS, PFHxA, PFHpA, PFOS, and PFOA.

For 2019, the utility previously committed to monthly testing at Well 15. Testing will use modified EPA Method 537 for 24-30 PFAS with reporting limits in the low single-digit part per trillion range for each PFAS. This memorandum provides alternatives for expanding low-level PFAS testing to other wells and the estimated cost for that expanded testing.

PFAS Contamination Risk

Each Madison drinking water well can be placed in a PFAS contamination risk category based on the well's proximity to a known or potential PFAS source and its construction. PFAS risk groups are shown in Table 1. Higher risk wells include those located near known or suspected PFAS sources – the airport,

former landfills, and (possibly) manufacturing and/or industrial sites – with a well casing that terminates above the shale layer. Confined aquifer wells, drawing water from the lower Mt. Simon aquifer, that are located remote from any known or suspected PFAS source fall in the lowest risk category.

Table 1. PFAS contamination risk matrix for Madison wells.

	Multi-Aquifer Wells	*Confined Aquifer Wells*
Known or suspected PFAS sources nearby	**Highest Risk** 6, 9, 11, 14, 15, 16, 18	7, 8, 29
No known or suspected PFAS source in vicinity	12, 13, 17, 20, 23, 25, 26	**Lowest Risk** 19, 24, 27, 28, 30, 31

Monitoring Options

All testing described below will involve collecting a single sample from each well. Testing will utilize modified EPA Method 537 for 24-30 PFAS with reporting limits in the low single-digit part per trillion range.

Option 1. Continue monthly low-level PFAS testing at Well 15 only. **Estimated cost: $4,890**.

Option 2. Continue to monitor Well 15 monthly and subject six other wells to low-level PFAS testing. The wells selected for testing will come from the high PFAS contamination risk group – multi-aquifer wells with known or suspected PFAS sources nearby. **Estimated cost: $6,700**.

Option 3. Test all wells once and continue with monthly monitoring at Well 15. Testing to occur independent of proximity to PFAS sources and well construction. **Estimated cost: $12,750**.

Recommendation

Water Utility staff recommends Option 3 to include low-level PFAS testing at all twenty-three drinking water wells. This option will provide clarity on PFAS occurrence in Madison's water system and assist with long-range facilities planning and decision-making. The expected absence of PFAS in most sources can help maintain public trust in the safety and integrity of our drinking water system.

Because the projected cost to expand PFAS testing will exceed the amount budgeted for emerging contaminants monitoring, other routine water quality monitoring will be reduced to offset these new unexpected costs. Some iron and manganese, ATP, coliform, and/or VOC testing may be reduced.