

**COUNCIL ACTION FORM**

**SUBJECT: FURNACE ATOMIC ABSORPTION SPECTROPHOTOMETER  
REPLACEMENT FOR W & PC LABORATORY**

**BACKGROUND:**

As a condition of its drinking water and wastewater permits, the City of Ames is required to self-monitor for various heavy metal constituents. The equipment used to perform these analyses is an atomic absorption spectrophotometer, often referred to as an "AA." The machine operates by atomizing a small sample of the liquid being tested, and then measuring the absorption of light at specific wavelengths.



*The AA unit currently utilized by the Laboratory Services Division*

The AA consists of three individual components:

- The Flame AA is able to detect metals in the parts per million (ppm) range.
- The Graphite Furnace AA is able to detect metals in the parts per billion (ppb) range.
- The Mercury Analyzer can detect mercury at exceptionally low, sub-ppb levels.

All three components were originally purchased in 1989 as part of the construction loan package when the Water Pollution Control Facility was constructed. When the current Laboratory was constructed in 2000, the Flame AA and Furnace AA were replaced. The long range CIP plan for the Sewer Fund includes a \$150,000 allowance in FY 25/26 to replace all three components of the AA. That expense was accounted for in the ten-year rate projections that were shared with Council last spring.

**Recently, a water line on the Furnace AA ruptured, damaging the device beyond repair. Therefore, the Furnace AA requires replacement.** For this project, the Single Source provisions of the City's Purchasing Policies are being utilized for the following reasons:

- Both the Flame AA and Furnace AA are controlled by the same computer and software. It is necessary for the new Furnace AA to be compatible.
- Both the Flame and the Furnace units utilize hollow cathode lamps for each element. Having the new Furnace AA be capable of utilizing the existing lamps provides a cost savings of approximately \$4,500 (\$500 per lamp for 9 elements).

- Having a unit that the Laboratory Analysts are familiar with avoids the need for costly and time consuming specialized training.

**Agilent Technologies was identified as the most appropriate manufacturer, and has provided a quote to replace the Furnace AA in the amount of \$42,909.48**

**Should Council agree to authorize the purchase of a new Furnace AA, staff will divert a portion of the savings (\$50,000 of the approximately \$158,000 savings) as a part of the mid-year budget amendments from the Primary Clarifier Drives Replacement Project to cover the cost of this replacement project.**

**ALTERNATIVES:**

1. Authorize waiver of Purchasing Policies and approve the sole source purchase of a new Furnace Atomic Absorption Spectrophotometer from Agilent Technologies of Wilmington, DE, in the amount of \$42,909.48.
2. Do not authorize the purchase of a new AA at this time. In order to perform the analyses required by the City's various permits, staff will have to contract with a private laboratory.

**CITY MANAGER'S RECOMMENDED ACTION:**

Monitoring for heavy metals is a requirement of the City's drinking water operation permit and National Pollutant Discharge Elimination System (NPDES) permits. The equipment currently being utilized is 20 years old, and one component (the Furnace AA) was irreparably damaged by a broken water line. Funding to replace the AA has been included in the Sewer Fund rate projections, with the purchase planned in six years. Savings from other CIP projects can be utilized to accelerate the purchase of the Furnace AA without negatively impacting the Sewer Fund balance in the short term.

Therefore, it is the recommendation of the City Manager that the City Council adopt Alternative No. 1, as described above.