



# City Council Agenda Item Report

## December 20, 2016

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**SUBJECT: DISCUSSION AND POSSIBLE ACTION REGARDING THE CONTINUATION OF FLUORIDATION OF THE CITY'S WATER SUPPLIES**

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### 1. EXECUTIVE SUMMARY

On July 2015, the City Council adopted an ordinance to continue fluoridation of the City's surface water supplies. Council has requested a discussion before fluoridation is resumed.

### 2. BACKGROUND/HISTORY

On July 7, 2015, City Council passed a resolution supporting the continued fluoridation of the City's water supplies. The Guadalupe Blanco River Authority (GBRA) stopped fluoridating surface water treated at the San Marcos treatment plant in November 2015.

Surface water purchased from the Guadalupe-Blanco River Authority (GBRA) makes up approximately 60% percent of the City's current water supply. The other 40% of Buda's water supply is groundwater from the Edwards Aquifer which contains varying levels of naturally occurring fluoride.

The surface water portion of Buda's water supply has been continuously fluoridated since the City became a GBRA customer in 2002 up until November 2015 when the GBRA stopped fluoridating this supply source at the San Marcos treatment plant.

The City has worked with the Texas Fluoridation Program (TFP), a branch of the Department of State Health Services, to design and install a fluoridation system to adjust the fluoride level of the City's purchased surface water to a level of 0.7 mg/l (milligrams per liter). This is the optimum level recommended by the Federal Department of Health and Human Services for reducing the occurrence of dental caries. The system design has been reviewed by the Texas Commission on Environmental Quality (TCEQ).

A bill insert was included in the November utility bill notifying city water customers that fluoridation of the City's surface water supply would resume on December 1, 2016, however, the system has not yet been activated.

### **3. STAFF'S REVIEW AND ANALYSIS**

The following information is provided per Council Member request:

#### **Regulation of Fluoride in Public Drinking Water Supplies**

The TCEQ regulates public drinking water standards in the State of Texas and has established Maximum Contaminate Levels (MCL's ) for various constituents present in drinking water. The MCL for fluoride is 4.0 mg/l. When fluoride is present in drinking water above this level, the water supplier must utilize treatment techniques to reduce the content below the MCL.

The TCEQ has also established a Secondary Contaminant Level (SCL) for fluoride of 2.0 mg/l. No treatment or removal is required for fluoride levels above the SCL, but annual customer notification is required. In 2016, the TCEQ posted mandatory notification language that will appear in all future Consumer Confidence Reports.

Based on previous sampling data, Well No.3 at the Bonita Vista Pump Station contains naturally occurring fluoride levels ranging from 1.8-2.5 mg/l. The other wells belonging to the City contain fluoride levels ranging from 0.22-0.70 mg/l

#### **Licensing Requirements**

While there is not a specific licensing endorsement for fluoridation, the TCEQ requires that all public drinking water systems must be managed by a state-licensed water operator. The type of license and number of licensed operators is dictated by the source of the community's water supply and population.

This licensing provides operators with the skills and training necessary to treat and deliver potable water safely and according to state requirements. Licensing courses provide training on the proper handling and dosing of chemicals routinely used to treat potable water. Operators are required to obtain a certain amount of continuing education units (CUE's) on a regular basis to maintain their licensed status. The City of Buda has 3 licensed water operators on staff.

The Texas Fluoridation Program periodically offers an 8 hour course on the fluoridation of public drinking water supplies. Some of the City's licensed operators were able to attend the most recent training that was held in September 2016. While staffing/operational needs prevented all the operators from attending this session all at once, the remaining employees responsible for operation of the fluoridation system will attend the training when it is offered in the spring of 2017.

TFP staff will provide on-site training and guidance during system start-up. Additionally, TFP staff are available as an on-going resource to provide continuing technical support and guidance to the City.

### **Cost to the City for Fluoridation**

Discussed in the “Financial Impact” section of this agenda item report.

### **Monitoring Requirements**

TCEQ requires that water suppliers sample each entry point (a state approved sample point where treated water enters the distribution system for delivery to customers) for minerals including fluoride once every 3 years.

When the fluoridation system is placed into operation, the fluoride level at the surface water entry point will be checked daily during normal well rounds by the operators. The fluoride level at points in the distribution system farthest from the injection point will initially be checked weekly after system start-up, and may be reduced to monthly intervals if sample data warrants such reduction in frequency. Sample results will be shared with TFP staff for ongoing data collection efforts and technical assistance.

### **Safety Considerations**

The City will be using a liquid form of fluoride known as hydrofluorosilicic acid (HFA). This is a 25-28% concentrated acid solution that is corrosive in undiluted form. The main hazard from handling HFA is chemical burns caused by direct bodily contact with the undiluted product. Inhalation hazards are another possible risk, but are not anticipated to be a problem with the ventilation incorporated into the fluoride room enclosure. Workers that are responsible for maintenance and operation of the fluoridation system will be provided with the following personal protective gear (PPG):

- chemical goggles
- face shield
- chemical gloves
- PVC rain suit
- chemical apron
- rubber boots

This PPG will be stored on site at the Bonita Vista Pump Station in a quickly accessible location away from the fluoridation system. Additional on-site safety considerations include a permanent eye-wash station and hose for rinsing in the event of bodily contact. Crushed limestone material (garden lime) will also be kept on-site to assist with neutralization of surface spills should they occur.

The fluoridation system includes some provisions to prevent accidental spills or over treatment. These provisions include:

- double-walled bulk storage tank and double-walled day tank
- manual transfer from the bulk tank to a day tank that contains only enough fluoride to treat up to 1 to 3 days of water supply
- peristaltic dosing pump that activates only when surface water is being delivered
- digital scale for accurate daily measurement of fluoride pumped from day tank.

The fluoride product that will be used is certified by the National Sanitation Federation (NSF) as approved for use in potable drinking water supplies.

**Distribution in the System**

The city is supplied by surface and groundwater sources that mix at varying degrees within the distribution system depending on location and demand. Some areas of town receive predominately groundwater containing naturally occurring levels of fluoride. Other areas of town receive predominantly surface water which will contain fluoride adjusted to the recommended beneficial level of 0.7 mg/l. Some parts of the city will receive a mixture of both surface and groundwater. The balance of this surface/groundwater mix will vary through time based on location, system demand, and supplies available during drought.

Fluoridation of the City’s surface water supply will occur at the Bonita Vista Pump Station. The recently completed Interim Water Improvements project has increased pumping capacity within the distribution system, which will allow more surface water to be pumped westward to the far reaches of the distribution system. Mixing of groundwater and surface water throughout the system will be the key factor in maintaining the recommended beneficial level of fluoride in the City’s drinking water supplies. When fluoridation of surface water resumes, frequent sampling at designated points throughout the distribution system will be necessary to determine the extent of dilution and the efficacy of fluoride delivery at beneficial levels. This will also be the case when future water supplies such HCPUA are added to the City’s total supply.

**4. FINANCIAL IMPACT**

Fluoridation equipment and chemicals are paid for out of the operating budget of the Water Fund.

Most of the components of the fluoridation system as well as design and installation services were provided free of charge courtesy of the TFP. The table below illustrates system component costs

| <b>Equipment</b>  | <b>Cost</b> |
|---|-------------|
| 5,400 gallon PolyProcessing Double Wall Bulk Tank with Stairway (Including fittings and shipping) | \$17,000.00 |
| Fiberglass Enclosure 8’ x 8’ (fluoride building)  | \$11,181.00 |
| Eyewash Station   | \$705.00    |
| 35-Gallon Snyder Double Wall Day Tank   | \$439.00    |
| Electronic scale and display  | \$3,195.00  |
| Standard 118” Transfer Pump   | \$1,909.00  |
| Hach Sample Kit   | \$472.00    |
| Miscellaneous fittings  | \$500.00    |
| Design and installation (approx.)   | \$10,000    |
| Sub-total of components provided by TFP   | \$45,401.00 |
| Chem-Tech Series XP Peristaltic Metering Pump   | \$799.95    |
| Force Flow Ultra-Sonic Bulk Tank Level Transmitter  | \$1,220.00  |

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|--|--------------------|
| Concrete Slab (20' x 25')                | \$2,650.00         |
| Electrical work for equipment connection | \$1,575            |
| Sub-total of components provided by City | \$6,244.95         |
| <b>Total System Cost</b>                 | <b>\$51,645.95</b> |

The cost of the liquid fluoride product is \$3.44 per gallon from an initial supplier contacted. The City will order 2,700 gallons at a time, which equals \$9,288. At current water demands, this quantity is anticipated to provide approximately 2 years of fluoridation treatment. City staff will obtain quotes from additional sources to see if a lower cost supplier can be identified.

**5. ATTACHMENTS**

City of Buda Resolution No. 2015-R-10