

CITY OF SHAVANO PARK
WATER ADVISORY COMMITTEE MEETING
900 SADDLETREE COURT, SHAVANO PARK, TX 78231
MAY 6, 2019
6:30 PM
AGENDA

1. CALL TO ORDER

2. ROLL CALL

3. CITIZENS TO BE HEARD

The Water Advisory Committee welcomes Citizens to be heard, we request that if you wish to speak that you follow these guidelines – Resolution No. 04-11 residents are given three (3) minutes to speak during Citizens to be heard. Citizens are only allowed to speak once and cannot pass their time allotment to someone else. In compliance with the Texas Open Meetings Act, the Water Advisory Committee may not deliberate on comments (Attorney General Opinion – JC0169)

4. CONSENT AGENDA

- a. Approval – Water Advisory Committee Meeting Minutes, April 8, 2019

5. REPORTS - Public Works Director Update

- a. Water system
 - a. Water System Infrastructure Updates
- b. Financial Report
 - a. March Report

6. REGULAR BUSINESS

- a. Discussion / Action - City of Shavano Park Water Rate Structure - Chairman Walea
- b. Discussion - Irrigation System Backflow Prevention Requirements - Director Peterson

7. FUTURE ITEMS

- a. Franchise Agreement with SAWS (expires 2019)
- b. Delinquent Account Procedures
- c. Addressing inactive wells
- d. Policy #12 Water Adjustment Procedure Clarification – Director Peterson

8. ADJOURNMENT

I, the undersigned authority, do hereby certify that the above Notice of Meeting of the governing body of the above named City of Shavano Park Water Advisory Committee is a true and correct copy of said Notice and that I posted a true and correct copy of said Notice on the bulletin boards, of the City Hall of said City Shavano Park, Texas, a place convenient and readily accessible to the general public at all times, and said Notice was posted on this the 2nd day of May 2019 at 4:40 p.m. and remained so posted continuously for at least 72 hours preceding the scheduled time of said meeting.

Zina Tedford
City Secretary

Accessibility Statement

The City of Shavano Park City Hall is wheelchair accessible. The entry ramp is located in the front of the building. Accessible parking spaces are also available in the front and sides of the building. Sign interpretative services for meetings must be made 48 hours in advance of the meeting. Call the A.D.A. Coordinator at 817-447-5400 or TDD 1-800-735-2989.

WATER ADVISORY COMMITTEE STAFF SUMMARY

Meeting Date: May 6, 2019

Agenda item: 5.b.

Prepared by: Brenda Morey

Reviewed by: Bill Hill

AGENDA ITEM DESCRIPTION:

Presentation of March 2019 Monthly Reports

X

Attachments for Reference:

a) March 2019 Revenue and Expense Report

BACKGROUND / HISTORY: The information provided in the attachments are for the FY 2018-19 budget period, month ending March 31, 2019. The “Current Budget” column contains the amended budget, with one amendment approved to date. This summary highlights a number of points related to the current month’s activity.

DISCUSSION:

As of March 31, 2019, the Water Fund total revenues are \$258,056 or 28.55% of the total annual budgeted amount. Water Fund (Water Department & Debt Service) expenses total \$465,844 or 51.54% of budget.

Revenues:

-Water consumption (5015) billed in March for the month of February is \$18,957. Total consumption for the month is approximately 522,000 gallons less than the previous year or \$2,196 of revenue.

-The Debt Service (5018) and Water Service Fee (5019) remain on target with annual budgeted amounts as these are flat fees and are not related to volume charges recognized, at 50.19% and 51.00% respectively.

-The EAA Pass Thru (5036) fees are charged to customers based on usage, \$2,873 was recorded for the month and 24.00% of the annual budgeted amount has been recognized to date.

Expenses:

Water department (606) expenses for the day-to-day operations are on budget with a total of \$40,421 for the month or 51.54% of the budget utilized. Engineering services (3012) includes invoices from KFW for the electronic archiving project that was in prior year’s budget.

The next debt service payments are scheduled for August, interest only.

Payroll:

The City is on a bi-weekly payroll; there have been 13 pay periods out of 26 so 50.00% of the budget should be expensed in the line items directly related to personnel. The Utility is below budget due to the vacancy in the superintendent position since January, which is charged 50/50 between Public Works and the Water Utility. TMRS (1040) expense is at approximately 53.45%,

on track with the related compensation accounts. Expense for Workers' Comp Insurance (1037) is recognized quarterly. It is currently at 40% of budget due to a more favorable experience factor than what was anticipated and used for budget development and the superintendent vacancy.

COURSES OF ACTION: None related to the Report.

FINANCIAL IMPACT: N/A

STAFF RECOMMENDATION: N/A

20 -WATER FUND

FINANCIAL SUMMARY

% OF YEAR COMPLETED: 50.00

	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	BUDGET BALANCE	% OF BUDGET
<u>REVENUE SUMMARY</u>					
NON-DEPARTMENTAL	<u>903,799.00</u>	<u>39,704.72</u>	<u>258,055.70</u>	<u>645,743.30</u>	<u>28.55</u>
TOTAL REVENUES	903,799.00 =====	39,704.72 =====	258,055.70 =====	645,743.30 =====	28.55 =====
<u>EXPENDITURE SUMMARY</u>					
WATER DEPARTMENT	716,584.00	40,420.84	317,410.44	399,173.56	44.29
DEBT SERVICE	<u>187,215.00</u>	<u>0.00</u>	<u>148,433.12</u>	<u>38,781.88</u>	<u>79.28</u>
TOTAL EXPENDITURES	903,799.00 =====	40,420.84 =====	465,843.56 =====	437,955.44 =====	51.54 =====
REVENUES OVER/(UNDER) EXPENDITURES	0.00 (	716.12) (	207,787.86)	207,787.86	0.00

20 -WATER FUND
FINANCIAL SUMMARY

% OF YEAR COMPLETED: 50.00

REVENUES	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	BUDGET BALANCE	% OF BUDGET
<u>NON-DEPARTMENTAL</u>					
<u>WATER SALES</u>					
20-599-5015 WATER CONSUMPTION	621,347.00	18,956.80	134,847.69	486,499.31	21.70
20-599-5016 LATE CHARGES	6,000.00	555.22	3,245.08	2,754.92	54.08
20-599-5017 CAPITAL RESERVE FUND	0.00	0.00	0.00	0.00	0.00
20-599-5018 DEBT SERVICE	53,453.00	4,467.20	26,828.80	26,624.20	50.19
20-599-5019 WATER SERVICE FEE	58,092.00	5,002.38	29,628.12	28,463.88	51.00
20-599-5036 EAA PASS THRU CHARGE	83,319.00	2,873.05	19,994.75	63,324.25	24.00
20-599-5037 CONNECTION/DISCONNECT FEE	0.00	0.00	0.00	0.00	0.00
20-599-5040 TAPPING FEES	<u>0.00</u>	<u>1,800.00</u>	<u>1,800.00</u>	<u>(1,800.00)</u>	<u>0.00</u>
TOTAL WATER SALES	822,211.00	33,654.65	216,344.44	605,866.56	26.31
<u>MISC./GRANTS/INTEREST</u>					
20-599-7000 INTEREST INCOME	9,500.00	2,156.56	7,920.02	1,579.98	83.37
20-599-7011 OTHER INCOME	0.00	25.00	809.46	(809.46)	0.00
20-599-7012 LEASE OF WATER RIGHTS	17,108.00	2,500.00	5,000.00	12,108.00	29.23
20-599-7040 ASR LEASE PROGRAM	0.00	0.00	0.00	0.00	0.00
20-599-7060 CC SERVICE FEES	1,200.00	63.74	546.46	653.54	45.54
20-599-7075 SITE/TOWER LEASE REVENUE	15,500.00	1,304.77	7,818.82	7,681.18	50.44
20-599-7090 SALE OF FIXED ASSETS	0.00	0.00	230.50	(230.50)	0.00
20-599-7097 INSURANCE PROCEEDS	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>
TOTAL MISC./GRANTS/INTEREST	43,308.00	6,050.07	22,325.26	20,982.74	51.55
<u>TRANSFERS IN</u>					
20-599-8072 TRF IN - CAPITAL REPLACEMEN	38,280.00	0.00	19,386.00	18,894.00	50.64
20-599-8090 PRIOR PERIOD ADJUSTMENT	0.00	0.00	0.00	0.00	0.00
20-599-8099 TRF IN - RESERVES	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>
TOTAL TRANSFERS IN	38,280.00	0.00	19,386.00	18,894.00	50.64
TOTAL NON-DEPARTMENTAL	903,799.00	39,704.72	258,055.70	645,743.30	28.55
TOTAL REVENUES	903,799.00	39,704.72	258,055.70	645,743.30	28.55
	=====	=====	=====	=====	=====

20 -WATER FUND

WATER DEPARTMENT

% OF YEAR COMPLETED: 50.00

EXPENDITURES	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	BUDGET BALANCE	% OF BUDGET
--------------	-------------------	-------------------	------------------------	-------------------	----------------

PERSONNEL

20-606-1010 SALARIES	185,260.00	12,146.62	87,706.24	97,553.76	47.34
20-606-1015 OVERTIME	7,000.00	605.52	5,233.08	1,766.92	74.76
20-606-1020 MEDICARE	2,615.00	186.64	1,374.43	1,240.57	52.56
20-606-1025 TWC (SUI)	828.00	26.53	26.53	801.47	3.20
20-606-1030 HEALTH INSURANCE	25,991.00	1,927.06	12,721.78	13,269.22	48.95
20-606-1031 HSA	178.00	11.10	74.56	103.44	41.89
20-606-1033 DENTAL INSURANCE	1,480.00	105.92	695.15	784.85	46.97
20-606-1035 VISION CARE INSURANCE	325.00	25.18	165.27	159.73	50.85
20-606-1036 LIFE INSURANCE	318.00	23.14	152.79	165.21	48.05
20-606-1037 WORKERS' COMP INSURANCE	6,551.00	1,042.85	2,620.23	3,930.77	40.00
20-606-1040 TMRS RETIREMENT	25,157.00	1,848.13	13,445.59	11,711.41	53.45
20-606-1070 SPECIAL ALLOWANCES	<u>11,400.00</u>	<u>496.18</u>	<u>4,309.85</u>	<u>7,090.15</u>	<u>37.81</u>
TOTAL PERSONNEL	267,103.00	18,444.87	128,525.50	138,577.50	48.12

SUPPLIES

20-606-2020 OFFICE SUPPLIES	1,400.00	99.93	956.17	443.83	68.30
20-606-2030 POSTAGE	2,500.00	229.60	1,486.17	1,013.83	59.45
20-606-2050 PRINTING & COPYING	600.00	0.00	444.92	155.08	74.15
20-606-2060 MED EXAMS/SCREENING/TESTING	0.00	0.00	0.00	0.00	0.00
20-606-2070 JANITORIAL SUPPLIES	100.00	0.00	0.00	100.00	0.00
20-606-2075 BANK/CREDITCARD FEES	5,100.00	315.63	2,600.29	2,499.71	50.99
20-606-2080 UNIFORMS	1,200.00	200.00	494.22	705.78	41.19
20-606-2090 SMALL TOOLS	2,000.00	0.00	392.92	1,607.08	19.65
20-606-2091 SAFETY SUPPLIES/EQUIPMENT	<u>1,200.00</u>	<u>29.91</u>	<u>29.91</u>	<u>1,170.09</u>	<u>2.49</u>
TOTAL SUPPLIES	14,100.00	875.07	6,404.60	7,695.40	45.42

SERVICES

20-606-3012 ENGINEERING SERVICES	0.00	4,125.00	4,125.00 (	4,125.00)	0.00
20-606-3013 PROFESSIONAL SERVICES	0.00	0.00	0.00	0.00	0.00
20-606-3020 ASSOCIATION DUES & PUBS	2,215.00	0.00	331.00	1,884.00	14.94
20-606-3030 TRAINING/EDUCATION	3,000.00	0.00	1,790.00	1,210.00	59.67
20-606-3040 TRAVEL/MILEAGE/LODGING/PERD	1,438.00	749.43	819.39	618.61	56.98
20-606-3050 INSURANCE - LIABILITY	3,795.00	0.00	3,870.13 (	75.13)	101.98
20-606-3060 UNIFORM SERVICES	3,000.00	148.30	950.87	2,049.13	31.70
20-606-3070 INSURANCE - PROPERTY	1,850.00	0.00	1,886.62 (	36.62)	101.98
20-606-3075 WATER CONSERVATION EDUCATIO	100.00	0.00	0.00	100.00	0.00
20-606-3080 SPECIAL SERVICES	300.00	12.50	110.50	189.50	36.83
20-606-3082 WATER ANALYSIS FEES	<u>6,500.00</u>	<u>564.00</u>	<u>2,935.91</u>	<u>3,564.09</u>	<u>45.17</u>
TOTAL SERVICES	22,198.00	5,599.23	16,819.42	5,378.58	75.77

CONTRACTUAL

20-606-4075 COMPUTER SOFTWARE/INCODE	10,292.00	170.36	4,734.72	5,557.28	46.00
20-606-4085 EAA -WATER MANAGEMENT FEES	84,084.00	7,006.52	37,839.12	46,244.88	45.00
20-606-4086 CONTRACT LABOR	0.00	0.00	0.00	0.00	0.00
20-606-4099 WATER RIGHTS/LEASE PAYMENTS	<u>10,851.00</u>	<u>0.00</u>	<u>12,281.50 (</u>	<u>1,430.50)</u>	<u>113.18</u>
TOTAL CONTRACTUAL	105,227.00	7,176.88	54,855.34	50,371.66	52.13

20 -WATER FUND

WATER DEPARTMENT

% OF YEAR COMPLETED: 50.00

EXPENDITURES	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	BUDGET BALANCE	% OF BUDGET
<u>MAINTENANCE</u>					
20-606-5005 EQUIPMENT LEASES	1,500.00	0.00	0.00	1,500.00	0.00
20-606-5010 EQUIPMENT MAINT & REPAIR	6,500.00	7.00	7.00	6,493.00	0.11
20-606-5015 ELECTRONIC EQPT MAINTENANCE	500.00	0.00	0.00	500.00	0.00
20-606-5020 VEHICLE MAINTENANCE	2,000.00	76.53	964.90	1,035.10	48.25
20-606-5030 BUILDING MAINTENANCE	2,000.00	45.58	1,265.42	734.58	63.27
20-606-5060 VEHICLE & EQPT FUELS	<u>3,000.00</u>	<u>372.42</u>	<u>2,530.46</u>	<u>469.54</u>	<u>84.35</u>
TOTAL MAINTENANCE	15,500.00	501.53	4,767.78	10,732.22	30.76
<u>DEPT MATERIALS-SERVICES</u>					
20-606-6011 CHEMICALS	17,000.00	636.72	11,165.72	5,834.28	65.68
20-606-6050 WATER METERS & BOXES	4,500.00	0.00	4,692.94 (	192.94)	104.29
20-606-6055 FIRE HYDRANTS	3,000.00	975.00	11,538.14 (	8,538.14)	384.60
20-606-6060 HUEBNER STORAGE TANK	6,000.00	0.00	47.32	5,952.68	0.79
20-606-6061 ELEVATED STORAGE TANK- #1 W	3,000.00	0.00	996.00	2,004.00	33.20
20-606-6062 WELL SITE #2-EAA MONITORED	100.00	0.00	0.00	100.00	0.00
20-606-6063 WELL SITE #3-NOT OPERATION	0.00	0.00	0.00	0.00	0.00
20-606-6064 WELL SITE #4-NOT OPERATION	0.00	0.00	0.00	0.00	0.00
20-606-6065 WELL SITE #5-EDWARDS BLENDI	3,000.00	34.75	82.06	2,917.94	2.74
20-606-6066 WELL SITE #6-MUNI TRACT	1,000.00	69.60	872.26	127.74	87.23
20-606-6067 WELL SITE #7	5,000.00	34.75	82.07	4,917.93	1.64
20-606-6068 WELL SITE #8	3,500.00	34.75	1,231.06	2,268.94	35.17
20-606-6069 WELL SITE #9-TRINITY	2,000.00	0.00	0.00	2,000.00	0.00
20-606-6070 SCADA SYSTEM MAINTENANCE	2,000.00	0.00	2,339.25 (	339.25)	116.96
20-606-6071 SHAVANO DRIVE PUMP STATION	7,000.00	1,970.66	8,902.36 (	1,902.36)	127.18
20-606-6072 WATER SYSTEM MAINTENANCE	13,305.00	1,613.87	16,315.27 (	3,010.27)	122.63
20-606-6080 STREET MAINT SUPPLIES	<u>1,500.00</u>	<u>0.00</u>	<u>57.50</u>	<u>1,442.50</u>	<u>3.83</u>
TOTAL DEPT MATERIALS-SERVICES	71,905.00	5,370.10	58,321.95	13,583.05	81.11
<u>UTILITIES</u>					
20-606-7040 UTILITIES - ELECTRIC	70,000.00	2,322.63	18,282.34	51,717.66	26.12
20-606-7042 UTILITIES - PHONE/CELL	800.00	118.44	179.70	620.30	22.46
20-606-7044 UTILITIES - WATER	<u>300.00</u>	<u>12.09</u>	<u>70.76</u>	<u>229.24</u>	<u>23.59</u>
TOTAL UTILITIES	71,100.00	2,453.16	18,532.80	52,567.20	26.07
<u>CAPITAL OUTLAY</u>					
20-606-8010 NON-CAP ELECTRONIC EQUIPMEN	0.00	0.00	0.00	0.00	0.00
20-606-8015 NON-CAPITAL - COMPUTERS	0.00	0.00	0.00	0.00	0.00
20-606-8020 NON-CAPITAL MAINTENANCE EQU	1,000.00	0.00	0.00	1,000.00	0.00
20-606-8045 CAPITAL-COMPUTER EQUIPMENT	0.00	0.00	0.00	0.00	0.00
20-606-8050 CAPITAL - VEHICLES	0.00	0.00	0.00	0.00	0.00
20-606-8060 CAPITAL- EQUIPMENT	31,175.00	0.00	19,386.00	11,789.00	62.18
20-606-8080 WATER SYSTEM IMPROVEMENTS	19,500.00	0.00	9,797.05	9,702.95	50.24
20-606-8081 CAPITAL - BUILDING	0.00	0.00	0.00	0.00	0.00
20-606-8085 CAPITAL-WATER TOWER/STORAGE	0.00	0.00	0.00	0.00	0.00
20-606-8087 WATER METER REPLACEMENT	<u>3,780.00</u>	<u>0.00</u>	<u>0.00</u>	<u>3,780.00</u>	<u>0.00</u>
TOTAL CAPITAL OUTLAY	55,455.00	0.00	29,183.05	26,271.95	52.62

20 -WATER FUND

WATER DEPARTMENT

% OF YEAR COMPLETED: 50.00

EXPENDITURES	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	BUDGET BALANCE	% OF BUDGET
<u>INTERFUND TRANSFERS</u>					
20-606-9000 EOY ASSET RECLASS	0.00	0.00	0.00	0.00	0.00
20-606-9010 TRF TO GENERAL FUND	22,050.00	0.00	0.00	22,050.00	0.00
20-606-9020 TRF TO CAPITAL REP. FUND 72	71,946.00	0.00	0.00	71,946.00	0.00
20-606-9050 BAD DEBT EXPENSE	0.00	0.00	0.00	0.00	0.00
20-606-9090 DEPRECIATION EXPENSE	0.00	0.00	0.00	0.00	0.00
20-606-9095 PENSION EXPENSE	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>
TOTAL INTERFUND TRANSFERS	93,996.00	0.00	0.00	93,996.00	0.00
<hr/>					
TOTAL WATER DEPARTMENT	716,584.00	40,420.84	317,410.44	399,173.56	44.29

20 -WATER FUND
DEBT SERVICE

% OF YEAR COMPLETED: 50.00

EXPENDITURES	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	BUDGET BALANCE	% OF BUDGET
<u>CAPITAL OUTLAY</u>					
20-607-8000 BOND PRINCIPAL EOY	0.00	0.00	0.00	0.00	0.00
20-607-8011 ACCRUED BOND INTEREST	0.00	0.00	0.00	0.00	0.00
20-607-8012 2009 CO - PRINCIPAL	0.00	0.00	0.00	0.00	0.00
20-607-8013 2009 CO - INTEREST	0.00	0.00	0.00	0.00	0.00
20-607-8014 2009 GO REFUND - PRINCIPAL	40,072.50	0.00	40,072.50	0.00	100.00
20-607-8015 2009 GO REFUND - INTEREST	13,830.00	0.00	1,602.90	12,227.10	11.59
20-607-8016 2017 GO REFUNDING (2009) PR	65,000.00	0.00	65,000.00	0.00	100.00
20-607-8017 2017 GO REFUNDING (2009) IN	68,162.50	0.00	34,612.50	33,550.00	50.78
20-607-8020 BOND UNAMORTIZED LOSS	0.00	0.00	0.00	0.00	0.00
20-607-8030 BOND AGENT FEES	150.00	0.00	200.00 (	50.00)	133.33
20-607-8035 BOND ISSUANCE COSTS	0.00	0.00	0.00	0.00	0.00
20-607-8056 2018 GO REFUNDING (2009) PR	0.00	0.00	5,137.50 (	5,137.50)	0.00
20-607-8057 2018 GO REFUNDING (2009) IN	<u>0.00</u>	<u>0.00</u>	<u>1,807.72 (</u>	<u>1,807.72)</u>	<u>0.00</u>
TOTAL CAPITAL OUTLAY	187,215.00	0.00	148,433.12	38,781.88	79.28
TOTAL DEBT SERVICE	187,215.00	0.00	148,433.12	38,781.88	79.28
TOTAL EXPENDITURES	903,799.00	40,420.84	465,843.56	437,955.44	51.54
=====					
REVENUES OVER/(UNDER) EXPENDITURES	0.00 (	716.12) (	207,787.86)	207,787.86	0.00
=====					

WATER ADVISORY COMMITTEE STAFF SUMMARY

Meeting Date: May 6, 2019

Agenda item: 6.a.

Prepared by: Brenda Morey

Reviewed by: Bill Hill

AGENDA ITEM DESCRIPTION:

Discussion – City of Shavano Park Water Rate Structure

☒

Attachments for Reference:

- 1) **Revised** Rate Structure Analysis and support
- 2) **Original** Rate Structure Analysis and support

BACKGROUND / HISTORY: The rate structure currently in use by the City's water utility was first approved October 2004 with only minor changes being made since then. The structure is a combination of fixed rates for the debt service and water service fees and variable rates for water consumption and EAA management fees. The water consumption fee is progressive, charging more per gallon to higher volume users.

The Utility Fund has incurred significant expenses in recent years, reducing cash reserves by over \$700,000 from September 2013 to September 2018.

At its April 8, 2019 meeting, the Water Advisory Committee approved presenting to City Council a rate increase providing for a 5% increase in the consumption (tier) fee, an increase in the debt service fee from \$6.40 to \$11.29 to fund 50% of Water Utility's average principal and interest payments, a 50% increase in the water service fee and no change proposed for the EAA pass thru charge. This proposal was presented to Council at the April 22, 2019 meeting by Chairman Walea.

At the April 22, 2019 meeting, Council provided guidance to increase only the debt service fee to fully fund the Water Utility's annual principal and interest payments utilizing the average debt service amount as determined by Frost Bank for the next five fiscal years. City Staff was directed to prepare an analysis comparing the two rate increase options to assist Council in determining the course of action.

DISCUSSION: The documentation for the **original** rate increase option has not changed from that previously presented (see attachment #2). If Council approved, this structure would provide approximately \$100,000 of additional revenue per year, based on the average annual consumption from the last five years. And with the 5% increase in the consumption (tier) fee approved, an additional \$32,000 of revenue would be generated in year 2 and \$34,000 additional in year 3. As this proposal affects both variable and fixed fees, the higher volume users would see greater increases in their monthly bills than the lower volume users.

The **revised** rate increase option would change the monthly debt service fee from \$6.40 to \$22.58 per customer (see attachment #1). With this flat fee, every customer's monthly bill would increase \$16.18 and the Utility's annual principal and interest payments would be fully funded and not reliant on water sales.

Sample Bill Calculations

<u>Meter & Volume</u>	<u>At Rate:</u>		
	<u>Current</u>	<u>Original</u>	<u>Revised</u>
5/8" - 5,000	\$ 29.35	\$ 37.54	\$ 45.53
5/8" - 10,500	\$ 50.80	\$ 59.93	\$ 66.98
5/8" - 58,000	\$ 254.09	\$ 272.17	\$ 270.27
3/4" - 5,000	\$ 31.59	\$ 40.90	\$ 47.77
3/4" - 17,000	\$ 78.39	\$ 89.74	\$ 94.57
3/4" - 58,000	\$ 256.33	\$ 275.53	\$ 272.51

The various rates were applied to the average annual consumption based on the most recently completed five fiscal years, and the number of customers and meters in service from the February 2019 billing reports.

COURSES OF ACTION: Informational only, action is at Council level.

FINANCIAL IMPACT: **Original** rate increase option - Year 1 approximate increase in revenue of \$100,643, year #2 an additional \$32,456 and year #3 an additional \$34,079. Under the **revised** rate increase option – an additional \$133,000 will be received.

MOTION REQUESTED: N/A

**CITY OF SHAVANO PARK - WATER UTILITY
REVISED RATE STRUCTURE ANALYSIS
SUMMARY OF REVENUE COMPONENTS:**

<u>Water Consumption (5015)</u>	
no change proposed	Current <u>Rate</u>
Estimated annual revenues at:	\$ 618,368

<u>Debt Service Fee (5018)</u>		
	Current <u>Rate</u>	@ 100% <u>of DS Pmt</u>
Estimated annual revenues at:	\$ 52,685	\$ 185,879
Change from Current Rate	N/A	\$ 133,194

<u>Water Service Fee (5019)</u>	
no change proposed	Current <u>Rate</u>
Estimated annual revenues at:	\$ 59,280

<u>EAA Pass Thru Charge (5036)</u>	
no change proposed	Current <u>Rate</u>
Estimated annual revenues at:	\$ 82,222

BASE CALCULATION - ALL CURRENT RATES	
Water Consumption	\$ 618,368
Debt Service	52,685
Water Service	59,280
EAA Pass Thru	82,222
	<u>\$ 812,555</u>

**ESTIMATED REVENUES BASED ON INCREASE IN DEBT
SERVICE FEE**

Water Consumption - no change	\$ 618,368
Debt Service - 100% of DS	185,879
Water Service - no change	59,280
EAA Pass Thru - no change	82,222
	<u>\$ 945,749</u>
Increase from base calculation	<u>\$ 133,194</u>

CITY OF SHAVANO PARK - WATER UTILITY
SAMPLE MONTHLY BILL CALCULATIONS - CURRENT AND REVISED RATES

As most of the Utility's customers have either 5/8" or 3/4" meters, the sample calculations will be based on those sizes.

The average consumption for 5/8" meter for calendar year 2018 was 10,500 gallons/month

The average consumption for 3/4" meter for calendar year 2018 was 17,000 gallons/month

@ CURRENT RATES

5/8" meter			WATER	DEBT	WTR SVC	EAA	TOTAL
Based on	5,000	gallon consumption	\$ 15.35	\$ 6.40	\$ 5.10	\$ 2.50	\$ 29.35
Based on	10,500	gallon consumption	\$ 34.05	\$ 6.40	\$ 5.10	\$ 5.25	\$ 50.80
Based on	58,000	gallon consumption	\$ 213.59	\$ 6.40	\$ 5.10	\$ 29.00	\$ 254.09

@ PROPOSED RATES

5/8" meter			WATER	DEBT	WTR SVC	EAA	TOTAL	INCREASE
Based on	5,000	gallon consumption	\$ 15.35	\$ 22.58	\$ 5.10	\$ 2.50	\$ 45.53	\$ 16.18
Based on	10,500	gallon consumption	\$ 34.05	\$ 22.58	\$ 5.10	\$ 5.25	\$ 66.98	\$ 16.18
Based on	58,000	gallon consumption	\$ 213.59	\$ 22.58	\$ 5.10	\$ 29.00	\$ 270.27	\$ 16.18

@ CURRENT RATES

3/4" meter			WATER	DEBT	WTR SVC	EAA	TOTAL
Based on	5,000	gallon consumption	\$ 15.35	\$ 6.40	\$ 7.34	\$ 2.50	\$ 31.59
Based on	17,000	gallon consumption	\$ 56.15	\$ 6.40	\$ 7.34	\$ 8.50	\$ 78.39
Based on	58,000	gallon consumption	\$ 213.59	\$ 6.40	\$ 7.34	\$ 29.00	\$ 256.33

@ PROPOSED RATES

3/4" meter			WATER	DEBT	WTR SVC	EAA	TOTAL	INCREASE
Based on	5,000	gallon consumption	\$ 15.35	\$ 22.58	\$ 7.34	\$ 2.50	\$ 47.77	\$ 16.18
Based on	17,000	gallon consumption	\$ 56.15	\$ 22.58	\$ 7.34	\$ 8.50	\$ 94.57	\$ 16.18
Based on	58,000	gallon consumption	\$ 213.59	\$ 22.58	\$ 7.34	\$ 29.00	\$ 272.51	\$ 16.18

CITY OF SHAVANO PARK - WATER UTILITY CALCULATION OF WATER SERVICE CONSUMPTION

The Water Utility uses a graduated consumption billing rate, charging more to higher volume users.

<u>TIERS:</u>	<u>Gallons:</u>		<u>Per 1,000 gallons</u>	
			<u>Current Rate</u>	
1	-	to	5,000	\$ 3.07
2	5,001	to	30,000	\$ 3.40
3	30,001	to	50,000	\$ 3.83
4	50,001	to	70,000	\$ 4.58
5	70,001	to	100,000	\$ 6.29
6	100,001	and above		\$ 11.94

<u>TIERS:</u>	<u>Total Gallons FY14-FY18</u>	<u>Average Gallons Per Year</u>	<u>Revenue @</u>	
			<u>Current Rate</u>	
1	176,578,000	35,315,600	\$	108,419
2	416,124,500	83,224,900		282,965
3	125,465,000	25,093,000		96,106
4	55,593,000	11,118,600		50,923
5	31,659,000	6,331,800		39,827
6	16,804,000	3,360,800		40,128
		164,444,700	\$	<u>618,368</u>

*** Per Rate Tier Analysis Report, 10/1/2013 to 9/30/2018

**CITY OF SHAVANO PARK - WATER UTILITY
CALCULATION OF DEBT SERVICE CHARGE - REVISED**

The Water Utility charges a flat fee for the debt service.
Each customer is charged the fee, not the meter. So a customer
may have multiple meters, but is only charged one debt service fee

Per the amortization schedules provided by Frost Bank, the annual debt service for FY19
to FY23 is as follows:

FY19	\$	186,344	
FY20		187,833	
FY21		186,023	
FY22		185,462	
FY23		183,832	
5 year average	\$	185,899	using for calculation purposes
Utility customers		686	
Monthly debt service per customer:	\$	<u>22.58</u>	
Current monthly fee:	\$	<u>6.40</u>	

Revenue Calculations:

			<u># of Customers</u>	<u>Annual Revenue</u>	<u>Change from Current Rate</u>
At current rate:	\$	6.40	686	\$ 52,685	N/A
At 100% of average debt	\$	22.58	686	\$ 185,879	\$ 133,194

CITY OF SHAVANO PARK - WATER UTILITY
CALCULATION OF WATER SERVICE CHARGE
(METER FEE)

The Water Utility charges a fixed fee per month based on meter size.

The current water service fees are:

Meter size:	<u>5/8"</u>	<u>3/4"</u>	<u>1"</u>	<u>1.5"</u>	<u>2"</u>	<u>6"</u>
Monthly fee:	\$ 5.10	\$ 7.34	\$ 13.06	\$ 29.38	\$ 52.22	\$ 470.02

SAWS Rates	\$ 12.82	\$ 16.97	\$ 25.22	\$ 45.85	\$ 70.58
-------------------	-----------------	-----------------	-----------------	-----------------	-----------------

Revenue Calculations:		Current	***
<u>Size</u>	<u>Count</u>	<u>Rate</u>	<u>SAWS Rates</u>
5/8"	275	\$ 16,830	\$ 42,306
3/4"	397	34,968	80,845
1"	17	2,664	5,145
1.5"	3	1,058	1,651
2"	6	3,760	5,082
	698	<u>\$ 59,280</u>	<u>\$ 135,029</u>
Difference in revenue from current rate:		<u>N/A</u>	<u>\$ 75,749</u>

*** Informational only

(Used the number of meters from the Monthly Billing Report ran 2/6/2019)

CITY OF SHAVANO PARK - WATER UTILITY
CALCULATION OF EAA FEES

The Water Utility charges \$0.50 per 1,000 gallons consumed for the EAA fee.
No plan to change this fee.

Average annual consumption - gallons (based on 5 prior years, see Water Service Consumption page)	<u>164,444,700</u>
EAA fee - \$0.50/1,000 gallons	<u>\$ 82,222</u>

CITY OF SHAVANO PARK - WATER UTILITY
HISTORICAL INFORMATION
COMBINED RESULTS OF OPERATIONS AND OTHER FINANCIAL CONSIDERATIONS

	Budget									
	FYE19	FYE18	FYE17	FYE16	FYE15	FYE14	FYE13	FYE12	FYE11	FYE10
Revenues:										
Water Consumption	\$ 621,347	\$ 661,864	\$ 658,287	\$ 585,411	\$ 602,875	\$ 638,815	\$ 764,052	\$ 736,913	\$ 951,468	\$ 588,365
Debt Service Fee	53,453	53,530	53,555	53,382	53,498	53,161	48,940	56,025	55,843	60,386
Water Service Fee	58,092	58,646	58,605	57,980	57,978	58,427	53,072	57,666	57,105	61,459
EAA Pass Thru Charge	83,319	89,139	87,732	79,312	80,569	88,470	90,439	91,014	61,896	40,507
Late Charges	6,000	6,010	7,962	8,357	7,385	9,136	7,199	8,734	8,424	3,808
Other revenues	72,088	108,902	79,896	66,297	49,737	108,651	50,964	44,353	68,129	36,056
Plus (less) transfer from capital/other	(28,780)	(32,209)	-	-	-	31,007	-	-	-	-
Total Revenues	\$ 865,519	\$ 945,882	\$ 946,037	\$ 850,739	\$ 852,042	\$ 987,667	\$ 1,014,666	\$ 994,705	\$ 1,202,865	\$ 790,581
Expenses:										
Water Department	\$ 606,358	\$ 574,885	\$ 884,091	\$ 682,195	\$ 566,071	\$ 649,691	\$ 590,432	\$ 581,073	\$ 766,328	\$ 509,811
Transfer to Capital Replacement	71,946	109,487	-	-	-	-	-	-	-	-
Depreciation	-	190,805	203,800	195,206	196,615	207,674	199,964	199,762	199,108	138,000
Debt Service/fiscal charges	82,142	83,637	174,608	117,397	119,575	122,398	142,803	167,725	160,819	124,355
Total Expenses	\$ 760,446	\$ 958,814	\$ 1,262,499	\$ 994,798	\$ 882,261	\$ 979,763	\$ 933,199	\$ 948,560	\$ 1,126,255	\$ 772,166
Net income(loss)	\$ 105,073	\$ (12,932)	\$ (316,462)	\$ (144,059)	\$ (30,219)	\$ 7,904	\$ 81,467	\$ 46,145	\$ 76,610	\$ 18,415
Cumulative net loss - last 5 fiscal years:	\$ (495,768)									

Comments on operations:

Note: Net Income reflects net operating cost to run the sytem and does not include capital asset purchases or principal payments on debt issues.

FYE17: Expenses include \$183,000 for Well #9 Trinity, \$79,000 transfer to the General Fund, \$76,000 of bond issue costs for the refinancing

FYE16: Expenses include \$40,000 for Well#9 Trinity and \$57,000 on Shavano Drive Pump Station

FYE14: Expenses include \$127,000 in Water System Maintenance to pull and replace pump at Well #5 and pull and evaluate motors at Well #6 and #9 due to storm damage - Well #9 pump and motor were replaced.

FYE11: Expenses include \$147,000 to paint the Huebner Storage Tank and \$79,000 water lease payment

CONTINUED - NEXT PAGE

CITY OF SHAVANO PARK - WATER UTILITY
HISTORICAL INFORMATION
COMBINED RESULTS OF OPERATIONS AND OTHER FINANCIAL CONSIDERATIONS

Other financial considerations:	Budget									
	<u>FYE19</u>	<u>FYE18</u>	<u>FYE17</u>	<u>FYE16</u>	<u>FYE15</u>	<u>FYE14</u>	<u>FYE13</u>	<u>FYE12</u>	<u>FYE11</u>	<u>FYE10</u>
Fixed asset purchases	\$ 28,780	\$ 138,963	\$ 316,938	\$ 192,258	\$ 91,363	\$ 58,629	\$ 363,007	\$ 128,094	\$ 659,985	\$ 1,673,520
Principal payments (not included in above debt service)	\$ 105,073	\$ 101,990	\$ 120,962	\$ 83,270	\$ 81,214	\$ 81,215	\$ 74,158	\$ 34,378	\$ 42,498	\$ 57,384

Significant fixed asset purchases:

FYE18: Well #5 and #6 rebuild \$68,000, purchased water rights \$66,000
FYE17 : Ditch Witch \$30,000, SCADA upgrade \$253,000
FYE16: Elevated Storage tank painting \$178,000
FYE15 : PW/Water office building \$91,000
FYE14: Ford F250 truck \$25,000
FYE13: Trinity Well \$281,000, Water System Improvements \$66,900 (Huebner VFD, Pump/Motor rebuild)
FYE12: Pump station (unspecified) \$21,600, Trinity Well \$86,000
FYE11: Trinity Well \$652,000
FYE10: Trinity Well \$1,662,000

	<u>Prelim</u>									
	<u>03/31/2019</u>	<u>09/30/2018</u>	<u>09/30/2017</u>	<u>09/30/2016</u>	<u>09/30/2015</u>	<u>09/30/2014</u>	<u>09/30/2013</u>	<u>09/30/2012</u>	<u>09/30/2011</u>	<u>09/30/2010</u>
Cash and Investments:										
Designated - Capital	\$ 501,383	\$ 520,769	\$ 448,330	\$ 380,121	\$ 117,872	N/A	N/A	N/A	N/A	N/A
Undesignated	210,112	395,230	501,556	953,655	1,339,121	1,546,969	1,631,691	1,515,678	1,499,917	2,160,816
	<u>\$ 711,495</u>	<u>\$ 915,999</u>	<u>\$ 949,886</u>	<u>\$ 1,333,776</u>	<u>\$ 1,456,993</u>	<u>\$ 1,546,969</u>	<u>\$ 1,631,691</u>	<u>\$ 1,515,678</u>	<u>\$ 1,499,917</u>	<u>\$ 2,160,816</u>
Change from prior period	<u>\$ (204,504)</u>	<u>\$ (33,887)</u>	<u>\$ (383,890)</u>	<u>\$ (123,217)</u>	<u>\$ (89,976)</u>	<u>\$ (84,722)</u>	<u>\$ 116,013</u>	<u>\$ 15,761</u>	<u>\$ (660,899)</u>	N/A
Total reduction of cash and investments, from 9/30/2013 to 3/31/2019	<u><u>\$ (920,196)</u></u>									

**CITY OF SHAVANO PARK - WATER UTILITY
HISTORICAL INFORMATION**

<u>Year</u>	<u>SAWS % Increase</u>		<u>Shavano Park Water Utility % Increase</u>				<u>Inflation Rate**</u>
	<u>Water Delivery</u>	<u>Water Supply</u>	<u>Debt Service</u>	<u>EAA Fee</u>	<u>Water Service</u>	<u>Water Consumption</u>	
2010	0.00%	0.00%	0.00%	0.00%	0.00%	8.77%	1.60%
2011	2.20%	2.90%	0.00%	0.00%	0.00%	0.00%	3.20%
2012	3.40%	3.00%	0.00%	140.00%	0.00%	0.00%	2.10%
2013	0.00%	2.50%	-4.76%	-16.67%	0.00%	0.00%	1.50%
2014	2.50%	13.10%	0.00%	0.00%	0.00%	0.00%	1.60%
2015	3.60%	5.10%	0.00%	0.00%	0.00%	0.00%	0.10%
2016	9.90%	9.30%	0.00%	0.00%	0.00%	0.00%	1.30%
2017	8.60%	6.80%	0.00%	0.00%	0.00%	0.00%	2.10%
2018	9.70%	4.50%	0.00%	0.00%	0.00%	0.00%	2.20%
2019	4.00%	4.30%	0.00%	0.00%	0.00%	0.00%	NA
Average	4.39%	5.15%	-0.48%	12.33%	0.00%	0.88%	1.74%

** Per Federal Reserve Bank of Minneapolis, Consumer Price Index

**CITY OF SHAVANO PARK - WATER UTILITY
RATE STRUCTURE ANALYSIS
SUMMARY OF REVENUE COMPONENTS:**

<u>Water Consumption (5015)</u>		
	<u>Current Rate</u>	<u>5% Increase</u>
Estimated annual revenues at:	\$ 618,368	\$ 649,117
Change from Current Rate	N/A	\$ 30,749

<u>Debt Service Fee (5018)</u>		
	<u>Current Rate</u>	<u>@ 50% of DS Pmt</u>
Estimated annual revenues at:	\$ 52,685	\$ 92,939
Change from Current Rate	N/A	\$ 40,254

<u>Water Service Fee (5019)</u>		
	<u>Current Rate</u>	<u>@ 50% Increase</u>
Estimated annual revenues at:	\$ 59,280	\$ 88,920
Change from Current Rate	N/A	\$ 29,640

<u>EAA Pass Thru Charge (5036)</u>	
	<u>Current Rate</u>
Estimated annual revenues at:	\$ 82,222

BASE CALCULATION - ALL CURRENT RATES	
Water Consumption	\$ 618,368
Debt Service	52,685
Water Service	59,280
EAA Pass Thru	82,222
	<u>\$ 812,555</u>

**SCENARIO IS CALCULATED WITH A 5% RATE INCREASE FOR
YEARS 2 AND 3 IN THE WATER CONSUMPTION CATEGORY ONLY**

	<u>YEAR #1</u>	<u>YEAR #2</u>	<u>YEAR #3</u>
Water Consumption - 5% increase	\$ 649,117	\$ 681,573	\$ 715,651
Debt Service - 50% of DS	92,939	92,939	92,939
Water Service - 50% increase	88,920	88,920	88,920
EAA Pass Thru	82,222	82,222	82,222
	<u>\$ 913,198</u>	<u>\$ 945,654</u>	<u>\$ 979,733</u>
Increase from base calculation/prior year	<u>\$ 100,643</u>	<u>\$ 32,456</u>	<u>\$ 34,079</u>

CITY OF SHAVANO PARK - WATER UTILITY
SAMPLE MONTHLY BILL CALCULATIONS - CURRENT AND PROPOSED RATES

As most of the Utility's customers have either 5/8" or 3/4" meters, the sample calculations will be based on those sizes.

The average consumption for 5/8" meter for calendar year 2018 was 10,500 gallons/month

The average consumption for 3/4" meter for calendar year 2018 was 17,000 gallons/month

@ CURRENT RATES

5/8" meter			WATER	DEBT	WTR SVC	EAA	TOTAL
Based on	5,000	gallon consumption	\$ 15.35	\$ 6.40	\$ 5.10	\$ 2.50	\$ 29.35
Based on	10,500	gallon consumption	\$ 34.05	\$ 6.40	\$ 5.10	\$ 5.25	\$ 50.80
Based on	58,000	gallon consumption	\$ 213.59	\$ 6.40	\$ 5.10	\$ 29.00	\$ 254.09

@ PROPOSED RATES

5/8" meter			WATER	DEBT	WTR SVC	EAA	TOTAL	INCREASE
Based on	5,000	gallon consumption	\$ 16.10	\$ 11.29	\$ 7.65	\$ 2.50	\$ 37.54	\$ 8.19
Based on	10,500	gallon consumption	\$ 35.74	\$ 11.29	\$ 7.65	\$ 5.25	\$ 59.93	\$ 9.13
Based on	58,000	gallon consumption	\$ 224.23	\$ 11.29	\$ 7.65	\$ 29.00	\$ 272.17	\$ 18.08

@ CURRENT RATES

3/4" meter			WATER	DEBT	WTR SVC	EAA	TOTAL
Based on	5,000	gallon consumption	\$ 15.35	\$ 6.40	\$ 7.34	\$ 2.50	\$ 31.59
Based on	17,000	gallon consumption	\$ 56.15	\$ 6.40	\$ 7.34	\$ 8.50	\$ 78.39
Based on	58,000	gallon consumption	\$ 213.59	\$ 6.40	\$ 7.34	\$ 29.00	\$ 256.33

@ PROPOSED RATES

3/4" meter			WATER	DEBT	WTR SVC	EAA	TOTAL	INCREASE
Based on	5,000	gallon consumption	\$ 16.10	\$ 11.29	\$ 11.01	\$ 2.50	\$ 40.90	\$ 9.31
Based on	17,000	gallon consumption	\$ 58.94	\$ 11.29	\$ 11.01	\$ 8.50	\$ 89.74	\$ 11.35
Based on	58,000	gallon consumption	\$ 224.23	\$ 11.29	\$ 11.01	\$ 29.00	\$ 275.53	\$ 19.20

CITY OF SHAVANO PARK - WATER UTILITY CALCULATION OF WATER SERVICE CONSUMPTION

The Water Utility uses a graduated consumption billing rate, charging more to higher volume users.

<u>TIERS:</u>	<u>Gallons:</u>		<u>Per 1,000 gallons</u>	
			<u>Current</u>	<u>5%</u>
			<u>Rate</u>	<u>Increase</u>
1	-	to 5,000	\$ 3.07	\$ 3.22
2	5,001	to 30,000	\$ 3.40	\$ 3.57
3	30,001	to 50,000	\$ 3.83	\$ 4.02
4	50,001	to 70,000	\$ 4.58	\$ 4.81
5	70,001	to 100,000	\$ 6.29	\$ 6.60
6	100,001	and above	\$ 11.94	\$ 12.54

<u>TIERS:</u>	<u>Total Gallons FY14-FY18</u>	<u>Average Gallons Per Year</u>	<u>Revenue @</u>	
			<u>Current</u>	<u>5%</u>
			<u>Rate</u>	<u>Increase</u>
1	176,578,000	35,315,600	\$ 108,419	\$ 113,716
2	416,124,500	83,224,900	282,965	297,113
3	125,465,000	25,093,000	96,106	100,874
4	55,593,000	11,118,600	50,923	53,480
5	31,659,000	6,331,800	39,827	41,790
6	16,804,000	3,360,800	40,128	42,144
		164,444,700	<u>\$ 618,368</u>	<u>\$ 649,117</u>
Change in revenue from current rate			N/A	\$ 30,749

*** Per Rate Tier Analysis Report, 10/1/2013 to 9/30/2018

CITY OF SHAVANO PARK - WATER UTILITY CALCULATION OF DEBT SERVICE CHARGE

The Water Utility charges a flat fee for the debt service.
Each customer is charged the fee, not the meter. So a customer
may have multiple meters, but is only charged one debt service fee

Per the amortization schedules provided by Frost Bank, the annual debt service for FY19
to FY23 is as follows:

FY19	\$	186,344	
FY20		187,833	
FY21		186,023	
FY22		185,462	
FY23		183,832	
5 year average	\$	185,899	using for calculation purposes
Utility customers		686	
Monthly debt service per customer:	\$	<u>22.58</u>	
50% of actual monthly debt service	\$	<u>11.29</u>	
Current monthly fee:	\$	<u>6.40</u>	

Revenue Calculations:

			<u># of Customers</u>	<u>Annual Revenue</u>	<u>Change from Current Rate</u>
At current rate:	\$	6.40	686	\$ 52,685	N/A
At 50% of average debt	\$	11.29	686	\$ 92,939	\$ 40,254

**CITY OF SHAVANO PARK - WATER UTILITY
CALCULATION OF WATER SERVICE CHARGE
(METER FEE)**

The Water Utility charges a fixed fee per month based on meter size.

The current water service fees are:

Meter size:	<u>5/8"</u>	<u>3/4"</u>	<u>1"</u>	<u>1.5"</u>	<u>2"</u>	<u>6"</u>
Monthly fee:	\$ 5.10	\$ 7.34	\$ 13.06	\$ 29.38	\$ 52.22	\$ 470.02
50% increase in current fee	\$ 7.65	\$ 11.01	\$ 19.59	\$ 44.07	\$ 78.33	\$ 705.03
SAWS Rates	\$ 12.82	\$ 16.97	\$ 25.22	\$ 45.85	\$ 70.58	

Revenue Calculations:		***		
<u>Size</u>	<u>Count</u>	<u>Current Rate</u>	<u>+ 50% of Current</u>	<u>SAWS Rates</u>
5/8"	275	\$ 16,830	\$ 25,245	\$ 42,306
3/4"	397	34,968	52,452	80,845
1"	17	2,664	3,996	5,145
1.5"	3	1,058	1,587	1,651
2"	6	3,760	5,640	5,082
	698	<u>\$ 59,280</u>	<u>\$ 88,920</u>	<u>\$ 135,029</u>
Change in revenue from current rate:		<u>N/A</u>	<u>\$ 29,640</u>	<u>\$ 75,749</u>

*** Informational only

(Used the number of meters from the Monthly Billing Report ran 2/6/2019)

CITY OF SHAVANO PARK - WATER UTILITY
CALCULATION OF EAA FEES

The Water Utility charges \$0.50 per 1,000 gallons consumed for the EAA fee.
There was no discussion in the notes changing this fee.

Average annual consumption - gallons (based on 5 prior years, see Water Service Consumption page)	<u>164,444,700</u>
EAA fee - \$0.50/1,000 gallons	<u>\$ 82,222</u>

WATER ADVISORY COMMITTEE STAFF SUMMARY

Meeting Date: May 6, 2019

Agenda item: 6.b.

Prepared by: Curtis Leeth / Brandon Peterson

Reviewed by: Bill Hill

AGENDA ITEM DESCRIPTION:

Discussion – Irrigation System Backflow Prevention Requirements - Director Peterson

X

Attachments for Reference:

- a) Draft Backflow Amendments
- b) Attorney Memo * Attorney Client
- c) TCEQ Backflow Inquiry Response
- d) 2015 IPC Code (currently adopted)

BACKGROUND / HISTORY:

On March 7, 2019 the City received a memo from City Attorney answering question from the City Manager regarding Backflow Prevention Assembly where an on-site sewage facility exists (Attachment b – Note: Memo is Attorney-Client Privilege).

On March 9, 2019 the City received a memo from Texas Commission on Environmental Quality Office of Compliance and Enforcement in response to the City's inquiries regarding backflow prevention requirements where an on-site sewage facility exists (attachment c).

Staff briefed the WAC on Backflow Prevention Assembly requirements in March and April and have concluded that Shavano Park's backflow ordinance is outdated and needs revision to be in compliance with TCEQ and the Texas Administrative Code (TAC).

DISCUSSION:

In April, staff drafted amendments (attachment C) to comply with State regulations regarding backflow prevention requirement using definitions from the 2015 International Plumbing Code combined with language from TCEQ regulations and the ordinances of Fair Oaks Ranch and Universal City. Since April's WAC meeting staff reviewed the draft amendments and have made minor changes to the amendments.

Per April 8, 2019 WAC meeting, staff acknowledge that the following actions will need to be considered once the ordinance is passed.

- The manner and timing to implement the program (note: implementation will likely be phased in over a year's period)
- Educating residents on who is impacted and what action must they take to be in compliance (staff anticipates writing a letter addressed to each residence)
- Educating residents on requirements to test backflow devices annually, provide records to CoSP (letters and Roadrunner)

COURSES OF ACTION: Approve amendments as presented or provide recommendations or guidance

FINANCIAL IMPACT: These requirements from TCEQ will impact those residents that have an irrigation system on property that is serviced by an OSSF. There will be an annual inspection requirement and eventually residents will need to replace their backflow device with an RPBA device.

MOTION REQUESTED: To approve a recommendation to City Council that the proposed amendments be adopted by ordinance.

Chapter 6 - BUILDINGS AND BUILDING REGULATIONS

...

ARTICLE VI. - UTILITY SERVICES

Sec. 6-165. - Water service.

For City of Shavano Park Water Utility system regulations see Chapter 34 – UTILITIES of the City of Shavano Park Code of Ordinances.

- ~~(a) Upon application and payment of the established connection fee and water meter deposit, the City will provide water to any platted lot within the City's area as defined by the certificate of convenience and necessity (CCN).~~
- ~~(b) The connection fee will cover installation of a three-fourths-inch connection to the water main, a three-fourths-inch service pipe and a five-eighths-inch meter and meter box. Where a pavement cut is required, the cost of such cut will be borne by the owner, contractor or other person responsible for the construction.~~
- ~~(c) The service line from the meter to the house shall be installed by the owner or contractor and shall be a minimum one-inch inside diameter of schedule 40 PVC or one-inch copper tubing meeting ASTM specifications type L soft. The one-inch tubing shall be connected to the water meter through a substantial three-fourths-inch or one-inch brass cutoff ball valve.~~
- ~~(d) Attachment of a temporary water faucet will not be permitted without an installed meter and hose bib vacuum breaker device installed on temporary water faucet with a customer-installed control ball valve. Violation of this provision will constitute a \$200.00 fine.~~
- ~~(e) All lawn sprinklers must have a control valve and an approved double check backflow prevention device to protect the City's water system from bacterial contamination. The valve must be separate from the house water system. Both house service and sprinkler service must have an individual control valve.~~
- ~~(f) The backflow prevention device test and maintenance report must be submitted to the Building Official as a component of the final inspection. The report must be signed by a State certified tester.~~

Commented [CL1]: These sections are moved to Chapter 34; more logical place for these regulations.

Commented [CL2]: These two sections are deleted and new backflow regulations are established in Chapter 34.

Sec. 6-166. - Electrical and gas connections.

- (a) *Electrical connection.* It shall be unlawful for City Public Service to make final power connection to any residence or building within the City until such time as a final inspection has been completed and such connection has been authorized by the Building Official.
- (b) *Gas supply.* It shall be unlawful for any person, firm or business to connect a flammable gas supply to any residence or building within the City until pressure and leak tests have been completed, final inspections made, and connection authorized by the Building Official.

Chapter 34 - UTILITIES

ARTICLE I. - IN GENERAL

Secs. 34-1—34-18. - Reserved.

ARTICLE II. - WATER

DIVISION 1. - ~~GENERALLY~~ IN GENERAL

Sec. 34-19. - ~~Reserved~~ Definitions.

The following words, terms and phrases, when used in this division, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

Backflow means the backflow of potentially contaminated or polluted water into the potable water system as a result of the pressure in the potable water system falling below atmospheric pressure of the plumbing fixtures, pools, tanks or vats connected to the potable water distribution piping.

Commented [CL3]: From currently adopted International Plumbing Code 2015 (IPC)

Backflow prevention assembly means any assembly used to prevent backflow into a potable water system. The type of assembly used is based on the existing or potential degree of health hazard and backflow condition.

Commented [CL4]: Fair Oaks Ranch Ordinance definition

- (1) Double check valve assembly: The approved double check valve assembly consists of two internally loaded check valves, either spring loaded or internally weighted, installed as a unit between two tightly closing resilient-seated shut-off valves and fittings with properly located resilient-seated test cocks. This assembly shall only be used to protect against a nonhealth hazard (that is, a pollutant).
- (2) Reduced-pressure backflow prevention assembly: The approved reduced-pressure principle backflow-prevention assembly consists of two (2) independently acting approved check valves together with a hydraulically operating, mechanically independent pressure differential relief valve located between the check valves and below the first check valve. These units are located between two tightly closing resilient-seated shutoff valves as an assembly and equipped with properly located resilient-seated test cocks. This assembly must be used to protect against health hazards (that is, a contamination).

Commented [CL5]: Universal City Ordinance definitions

Contamination means an impairment of the quality of the potable water that creates an actual hazard to the public health through poisoning or the spread of disease by sewage, industrial fluids or waste. Contaminates are considered a health hazard.

Commented [CL6]: From IPC

Cross connection means any physical connection or arrangement between two otherwise separate piping systems, one of which contains potable water and the other either water of unknown or questionable safety.

Commented [CL7]: From IPC

Health Hazards means cross-connection, potential contamination hazard, or other situation involving any substance that can cause death, illness, spread of disease, or has a high probability of causing such effects if introduced into the potable drinking water supply. Reference Texas Administrative Code Title 30, Section 290.38(35). This definition includes on-site sewage facilities (OSSF) located on the same property as an irrigation system with a cross-connection to the City of Shavano Park Water Utility system.

Commented [CL8]: From Texas Administrative Code Chapter 30, Section 290.38(35)

On-Site Sewage Facility (OSSF) means an on-site sewage disposal system. This includes systems typically referred to as septic systems. An OSSF is considered a health hazard in reference to backflow prevention for irrigation systems by the Texas Commission on Environmental Quality.

Commented [CL9]: Staff written and verbiage from TCEQ memo

Sec. 34-20. - Rebate program established.

For users of the City water system, the City hereby establishes a rebate program for persons purchasing and installing certain low water use household appliances and fixtures for retrofitting existing single-family structures. The City authorizes the Public Works Director or his designee to prepare a list on an annual basis of appliances and fixtures for which rebates shall be given, and shall be further authorized to establish administrative procedures for implementing the rebate program. Rebates shall be:

- (1) Upon installation of low flush toilet, \$50.00 credit on water bill.
 - a. Limit two credits per residential unit.
 - b. Requires proof of purchase and inspection by City official.
 - c. Residents will be responsible for disposal of toilet.
 - d. Qualifying low flush toilet shall be in accordance with the San Antonio Water Systems standard.
- (2) Upon installation of high-efficiency washing machine, \$100.00 credit on water bill.
 - a. Limit one per residential unit.
 - b. Qualifying high-efficiency washing machine shall be in accordance with the San Antonio Water Systems standard.
 - c. Requires proof of purchase and inspection by City official.

The Water Conservation Rebate Program will be available for fixtures and machines installed after the effective date of the ordinance from which this section is derived. Residents that installed fixtures and machines prior to the approval of the ordinance from which this section is derived do not qualify for the rebate program.

Sec. 34-21. – Water Service.

- (a) Upon application and payment of the established connection fee and water meter deposit, the City will provide water to any platted lot within the City's area as defined by the certificate of convenience and necessity (CCN).
- (b) The connection fee will cover installation of a three-fourths-inch connection to the water main, a three-fourths-inch service pipe and a five-eighths-inch meter and meter box. Where a pavement cut is required, the cost of such cut will be borne by the owner, contractor or other person responsible for the construction.
- (c) The service line from the meter to the house shall be installed by the owner or contractor and shall be a minimum one-inch inside diameter of schedule 40 PVC or one-inch copper tubing meeting ASTMA specifications type L soft. The one-inch tubing shall be connected to the water meter through a substantial three-fourths-inch or one-inch brass cutoff ball valve.
- (d) Attachment of a temporary water faucet will not be permitted without an installed meter and hose bib vacuum breaker device installed on temporary water faucet with a customer-installed control ball valve. Violation of this provision will constitute a \$200.00 fine.

Commented [CL10]: Moved from Section 6-165 of the City Ordinances minus sections (e) and (f) that dealt with backflow.

Sec. 34-22. – Backflow Prevention.

(a) General.

- (1) No water service connection shall be made to any property where an actual or potential health hazard exists unless the City of Shavano Park Water Utility system is protected in accordance with the Texas Administrative Code Title 30, Chapter 290 and the International Plumbing Code, as adopted.
- (2) The Texas Administrative Code referred to herein shall mean those in effect at the effective date of this ordinance and any other subsequent approved amendments, or those made effective by any successor regulatory agency of the state.

(b) Backflow prevention assembly installation, testing, and maintenance.

- (1) All cross-connections to the City of Shavano Park Water Utility system must have, at a minimum, an approved double check valve assembly installed by a licensed plumber or licensed irrigator.
- (2) If an irrigation system is installed on a property that is served by an on-site sewage facility it constitutes a potential health hazard. All cross-connections to the property's water system must install an approved reduced-pressure backflow prevention assembly by a licensed plumber or licensed irrigator.
- (3) Reduced pressure principle backflow prevention assemblies shall be tested by a recognized backflow prevention assembly tester at the time of installation, immediately after repairs or relocation, and annually by a recognized backflow prevention assembly tester in accordance with Texas Administrative Code Chapter 344. A copy of all test records must be submitted to the City of Shavano Park upon completion.
- (4) All presently installed backflow prevention assemblies that do not meet the standards of this section but were approved assemblies for the purpose described herein at the time of installation and that have been properly maintained, shall, except for the inspection and maintenance requirements, be excluded from the requirements of these rules so long as the Water Utility Director is assured that they will satisfactorily protect the utility system. Whenever the existing assembly is moved from the present location, requires more than minimum maintenance, or when the Water Utility Director finds that the existing device constitutes a hazard to health, the unit shall be replaced by an approved backflow prevention assembly meeting the requirements of this section.

- i. If an existing double check valve assembly fails inspection the property owner shall upgrade to a reduced pressure principle backflow prevention assembly within 30 calendar days of the failed inspection.

- (5) Testing and maintenance reports of backflow prevention assemblies shall be submitted to the City of Shavano Park Water Utility within 30 calendar days of completion.

(c) Designation of program coordinator. The program coordinator shall be the Water Utility Director of the City of Shavano Park Water Utility system.

(d) Enforcement.

- (1) Any person, firm or corporation violating any provisions of this article shall be deemed guilty of a misdemeanor and upon conviction, shall be fined in a sum not to exceed one thousand dollars (\$1,000.00) for each violation and each day being a separate violation.

- (2) The Water Utility Director may discontinue water service to a property where such violations occur to protect the public health and safety. Services discontinued under such circumstances shall be restored only upon compliance.

Secs. 34-~~21~~~~23~~—34-42. - Reserved.

DIVISION 2. - PUBLIC WATER SUPPLY WELL

Sec. 34-43. - Purpose.

- (a) This division sets forth uniform requirements for the users and the construction of facilities in or on land within 150 feet of the wells in order to promote sanitary conditions in and around such wells, to secure all such land from pollution hazards, and to enable the City to comply with all applicable State and local regulations.
- (b) The objective of this division is to prevent certain uses and the construction of facilities in or on land surrounding the wells that might create a danger of pollution to the water produced from such wells.

Sec. 34-44. - Definitions.

The following words, terms and phrases, when used in this division, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

Person means any individual, partnership, co-partnership, firm, company, corporation, association, joint stock company, trust estate, governmental entity, or any other legal entity, or its legal representatives, agents, successors, or assigns.

Public Works Director means the head of the City Department of Public Works.

Wells means the water wells owned and operated by the City.

Sec. 34-45. - State regulation.

For the purposes of this division, improperly constructed water wells are those wells that do not meet the surface and subsurface construction standards adopted by the State Commission on Environmental Quality for a public water supply well.

Sec. 34-46. - Prohibited activities.

The following activities are prohibited within the designated areas of land surrounding the wells:

- (1) Construction and/or operation of any underground petroleum and/or chemical storage tank, liquid transmission pipeline, stock, pen, feedlot, dump grounds, privy, cesspool, septic tank, sewage treatment plant, sewage wet well, sewage pumping station, drainage ditch that contains industrial waste discharges or the wastes from sewage treatment systems, solid waste disposal site, land on which sewage plant or septic tank sludge is applied, land irrigated by sewage plant effluent, septic tank perforated drain field, absorption bed, evapotranspiration bed, area irrigated by low dosage, low angle spray on-site sewage facility, military petrochemical production, storage and/or transmission facility, Class 1, 2, 3, and/or 4 injection well, pesticide storage and/or mixing facility, abandoned well, inoperative well, improperly constructed water well of any depth, and all other construction or operation that could create an unsanitary

condition is prohibited within, upon, or across all areas of land within a 150-foot radius of the wells.

- (2) Construction and/or operation of tile or concrete sanitary sewers, sewer appurtenances, septic tanks, storm sewers, and cemeteries is specifically prohibited within, upon, or across any area of land within a 50-foot radius of the wells.
- (3) Construction of homes or buildings upon any area of land within a 150-foot radius of the wells is permitted, provided the restrictions described in subsections (1) and (2) of this section are met.
- (4) Except for non-commercial farming, farming and ranching operations are prohibited in all cases, and livestock shall not be allowed within a 150-foot radius of the wells.

Sec. 34-47. - Right of entry.

In order to protect the health, safety, and welfare of our citizens and water supply, City employees, or authorized representatives of the City, bearing proper credentials and identification shall be permitted to immediately enter upon any premises located within a 150-foot radius of any well to conduct any inspection or observation necessary to enforce this division.

Sec. 34-48. - Required removal.

Any person who shall violate any provision of this division shall be required to remove the prohibited construction or potential source of contamination within seven days after notification that they are in violation of this division.

Sec. 34-49. - Superceding regulation or statute.

Whenever any applicable statute, regulation, or permit of any state, federal, or other agency having jurisdiction over the subject matter of this division is in conflict herewith, the stricter requirement shall apply, unless mandated otherwise.

Secs. 34-50—34-73. - Reserved.

DIVISION 3. - WATER SERVICE CHARGES

Sec. 34-74. - Billing; calculation of charges.

- (a) Charges for water service shall be calculated on monthly consumption, in amounts as established from time to time by the City Council.
- (b) There shall be a minimum bill in an amount as established from time to time by the City Council.
- (c) The net charge for water service to each customer shall be the total amount calculated as stated in subsections (a) and (b) of this section and is due upon receipt. The gross charge will be due the last day of the month of billing.
- (d) The gross amount (net plus ten percent) will be due on all bills not paid by the listed due date. Unpaid balances carried to the next billing period will become part of the new net due and therefore subject to the ten percent late penalty.

- (e) All new customers to the water system or any customers disconnected for nonpayment shall be charged a fee as a connection deposit. In addition, a fee shall be charged to reconnect service disconnected for any reason. Such fees shall be established by the City Council from time to time. The meter installation fee shall be per lot and shall be established by the City Council from time to time.
- (f) The City Health Officer will be notified when water service is discontinued and will take appropriate action necessary as a result of termination of service.
- (g) The owner of a property whether resident, lessor or developer, shall be liable for water service charges incurred by the occupants. If such bills remain unpaid, the City Council shall have the option after due process to assess such charges and costs incident to the collection as a lien against the property and to file such lien in the County records.
- (h) The Public Works Director or his designee will review all outstanding accounts at the end of the second month of each quarter and take appropriate action for collection of delinquent, problem or uncollectable accounts.
- (i) To avoid unnecessary charge and penalties, residents who plan to be away over a billing period are encouraged to place an advance deposit, which will be carried on the account as a credit balance, with the Public Works Director or his designee in an amount sufficient to cover an anticipated quarterly billing.

Secs. 34-75—34-91. - Reserved.

DIVISION 4. - WATER UTILITY FUND

Sec. 34-92. - Rate structure.

The water utility fund rate structure shall be as established from time to time by ordinance.

Sec. 34-93. - Water utility fund.

- (a) There shall be transferred from the water utility fund of the City to the general fund of the City such rate of gross receipts as set by City Council, at least annually.
- (b) Payments hereunder shall be calculated on the basis of gross receipts from the sale of water within the corporate limits of the City during the calendar quarters ending March 31, June 30, September 30 or December 31 next preceding that during which payment is made and shall be payable on or before April 15, July 15, October 15 and January 15 for the preceding quarter.

Secs. 34-94—34-114. - Reserved.

DENTON NAVARRO ROCHA BERNAL & ZECH PC
ATTORNEY/CLIENT WORK PRODUCT
NOT A PUBLIC RECORD
MEMORANDUM TO CLIENT

TO: BILL HILL, CITY MANAGER
CITY OF SHAVANO PARK

FROM: CYNTHIA TREVINO, ASSISTANT CITY ATTORNEY *CT*

DATE: MARCH 7, 2019

RE: BACKFLOW PREVENTION ASSEMBLY WHERE AN ON-SITE SEWAGE FACILITY EXISTS

Background: The City is conducting a review of its backflow prevention program and related ordinance provisions. An interpretation of relevant Texas Administrative Code Provisions is needed in order for the City to determine the next steps in its review process.

Summary: The specific provisions requiring reduced pressure principle backflow prevention assemblies ("RP") for irrigation systems on properties with OSSF apply and control over the general provisions covering backflow prevention methods found in Title 30 chapter 344 of the Texas Administrative Code. Further, although 30 Tex. Admin. Code § 290.38(35) does not specifically define an OSSF as a health hazard, the TCEQ has designated an OSSF as a health hazard requiring RP backflow assemblies with the requisite annual testing. Therefore, as TCEQ is the enforcement agency over public water systems and, as such, is entitled to judicial deference towards its interpretations of its rules, we recommend that an RP assembly be required in these situations, as well as annual testing of the same.

Question: Does TAC 344.51 specifically require a reduced pressure principal backflow prevention assembly be installed on an irrigation system installed on a property that is served by an on-site sewage facility (septic)?

Response: Title 30 chapter 344 of the Texas Administrative Code regulates the installation of backflow prevention and cross-control connections relating to irrigation systems. Any irrigation system that is connected to a public or private potable water supply must be connected through a commission-approved backflow prevention method. 30 Tex. Admin. Code § 344.50(a). This section also provides that if conditions that present a health hazard exist, then one of the approved backflow prevention methods must be used, one method of which includes a reduced pressure principle assembly. 30 Tex. Admin. Code § 344.50(b).

The chapter then establishes a specific condition for an irrigation system installed on property served by an on-site sewage facility. (See 30 Tex. Admin. Code § 344.51(d)). This provision

explicitly states that “if an irrigation system is designed or installed on a property that is served by an on-site sewage facility (“OSSF”), as defined in Chapter 285 of this title (relating to OSSF), then any connections using a private or public potable water source must be connected to the water source through a reduced pressure principle backflow prevention assembly (“RP”) as defined in § 344.50 of this title (relating to Backflow Prevention Methods).

When there are two statutes that overlap, as is the case for your inquiry, a specific statute controls over the general provision. *See* 67 Tex. Jur. 3d Statutes § 122. Based on the rule of statutory construction it is our interpretation that the specific provisions requiring reduced pressure principle backflow prevention assemblies for irrigation systems on properties with OSSF applies and controls over the general provisions covering backflow prevention methods.

Questions: Does the annual testing required by TAC 344.50(c) apply to properties with on-site septic systems? Is a septic tank identified as a health hazard?

Response: 30 Tex. Admin. Code § 344.50(c) states that “backflow prevention devices used in applications designated as health hazards must be tested upon installation and annually thereafter. This requirement conforms to the general testing requirements provided by 30 Tex. Admin. Code § 290.44(h)(4). Additionally, 30 Tex. Admin. Code § 290.38(35) defines a “health hazard” as “a cross-connection, potential contamination hazard, or other situation involving any substance that can cause death, illness, spread of disease, or has a high probability of causing such effects if introduced into the potable drinking water supply.” While we note that 30 Tex. Admin. Code 290 Appendix F lists many health hazards, it does not include on-site sewage disposal systems (OSSF). However, this Appendix also states that the list “is not an all-inclusive list of the hazards which may be found connected to public water systems,” thereby establishing an avenue for additional agency discretion to determine other health hazards.

TCEQ is the administering agency for public water systems and it authorized to make reasonable interpretations of the regulations established in the Texas Administrative Code. Accordingly, in TCEQ publication RG-478, the cross-connection rules publication, TCEQ states that “the existence of the OSSF elevates the classification of the irrigation system to a health hazard requiring the installation of an RP [reduced pressure backflow assembly].” TCEQ’s designation of an on-site OSSF as a health hazard triggers the application of the annual inspection requirement. A copy of RG-478 is attached and the information is located on pages 15 – 16.

Mr. Hill,

Thank you for your email. Each of your questions is addressed separately below. Please note that the information contained in this response is provided as general information with respect to the questions you asked and may not be a comprehensive list. The information provided in this response is not a substitute for professional advice you would get from an attorney or professional engineer. The information provided does not constitute legal advice or a legal opinion.

Q1) What is your legal interpretation of whether 344.51 specifically requires a reduced pressure principal backflow prevention assembly (or air gap, which is not common practice in residential properties) be installed on an irrigation system installed on a property that is served by an on-site sewage facility (septic).

A1) 30 Texas Administrative Code (TAC) Section (§) 344.51(d)(2) provides:

(d) If an irrigation system is designed or installed on a property that is served by an on-site sewage facility, as defined in Chapter 285 of this title (relating to On-Site Sewage Facilities), then:

(2) any connections using a private or public potable water source must be connected to the water source through a reduced pressure principle backflow prevention assembly as defined in §344.50 of this title (relating to Backflow Prevention Methods); and

The regulation is clear, a Reduced Pressure Principal Backflow Prevention Assembly (RP) is required on an irrigation system installed on a site served by an on-site sewage facility (OSSF).

Q2) You do not pose a specific question but, discuss the health hazard designation of OSSFs and testing requirements.

A2) An OSSF is considered a health hazard in reference to backflow prevention for irrigation systems. Backflow from a cross-connection to an OSSF could cause death, illness, or the spread of disease per the definition of “health hazard” in our rules. The definition of “health hazard” is:

30 TAC § 290.38(35) Health hazard--A cross-connection, potential contamination hazard, or other situation involving any substance that can cause death, illness, spread of disease, or has a high probability of causing such effects if introduced into the potable drinking water supply.

Just because OSSFs are not on the list in 30 TAC § 290.47(f) does not mean that they are not considered health hazards. As the introduction to Appendix F notes, the list is not an all-inclusive list of the hazards which may be found connected to public water systems. There are many other connections, plumbing systems, types of equipment that use water which are not listed in 30 TAC § 290.47(f) but must be protected against backflowing into the potable water supply. Hypothetically speaking, chemical mixing tanks are often supplied with water. If adequate backflow prevention is not provided, the potable water supply will be contaminated with the contents of the tank if a backflow event were to occur. Chemical mixing tanks are not listed in 30 TAC § 290.47(f), yet this scenario would be a health hazard.

The annual testing requirement for backflow prevention assemblies installed to protect the potable water supply from health hazards is specified in:

30 TAC § 344.50(c). Backflow prevention devices used in applications designated as health hazards must be tested upon installation and annually thereafter.

Because an OSSF is a health hazard, any irrigation system connected to a potable water system on property served by an OSSF requires annual testing of the backflow prevention assembly.

*Remember:
This is new installs
only!*

2015 IPC

*No City Amendments to
Section 6.8*

*See highlighted portions.
Follow references to sheets.*

WATER SUPPLY AND DISTRIBUTION

607.1.1 Temperature limiting means. A thermostat control for a water heater shall not serve as the temperature limiting means for the purposes of complying with the requirements of this code for maximum allowable *hot* or *tempered* water delivery temperature at fixtures.

607.1.2 Tempered water temperature control. *Tempered* water shall be supplied through a water temperature limiting device that conforms to ASSE 1070 and shall limit the *tempered* water to a maximum of 110°F (43°C). This provision shall not supersede the requirement for protective shower valves in accordance with Section 424.3.

607.2 Hot or tempered water supply to fixtures. The *developed length* of *hot* or *tempered* water piping, from the source of hot water to the fixtures that require *hot* or *tempered* water, shall not exceed 50 feet (15 240 mm). Recirculating system piping and heat-traced piping shall be considered to be sources of *hot* or *tempered* water.

607.2.1 Circulation systems and heat trace systems for maintaining heated water temperature in distribution systems. For Group R2, R3 and R4 occupancies that are three stories or less in height above grade plane, the installation of heated water circulation and temperature maintenance systems shall be in accordance with Section R403.5.1 of the *International Energy Conservation Code*. For other than Group R2, R3 and R4 occupancies that are three stories or less in height above grade plane, the installation of heated water circulation and heat trace systems shall be in accordance with Section C404.6 of the *International Energy Conservation Code*.

607.2.1.1 Pump controls for hot water storage systems. The controls on pumps that circulate water between a water heater and a storage tank for heated water shall limit operation of the pump from heating cycle startup to not greater than 5 minutes after the end of the cycle.

607.2.1.2 Demand recirculation controls for distribution systems. A water distribution system having one or more recirculation pumps that pump water from a heated water supply pipe back to the heated water source through a cold water supply pipe shall be a demand recirculation water system. Pumps shall have controls that comply with both of the following:

1. The control shall start the pump upon receiving a signal from the action of a user of a fixture or appliance, sensing the presence of a user of a fixture, or sensing the flow of hot or tempered water to a fixture fitting or appliance.
2. The control shall limit the temperature of the water entering the cold water piping to 104°F (40°C).

607.2.2 Piping for recirculation systems having master thermostatic valves. Where a thermostatic mixing valve is used in a system with a hot water recirculating pump, the *hot* water or *tempered* water return line shall be routed to the cold water inlet pipe of the water heater and the cold water inlet pipe or the hot water return connection of the thermostatic mixing valve.

607.3 Thermal expansion control. Where a storage water heater is supplied with cold water that passes through a check valve, pressure reducing valve or backflow preventer, a thermal expansion tank shall be connected to the water heater cold water supply pipe at a point that is downstream of all check valves, pressure reducing valves and backflow preventers. Thermal expansion tanks shall be sized in accordance with the tank manufacturer's instructions and shall be sized such that the pressure in the water distribution system shall not exceed that required by Section 604.8.

607.4 Flow of hot water to fixtures. Fixture fittings, faucets and diverters shall be installed and adjusted so that the flow of hot water from the fittings corresponds to the left-hand side of the fixture fitting.

Exception: Shower and tub/shower mixing valves conforming to ASSE 1016/ASME A112.1016/CSA B125.16 or ASME A112.18.1/CSA B125.1, where the flow of hot water corresponds to the markings on the device.

[E] 607.5 Insulation of piping. For other than Group R2, R3 and R4 occupancies that are three stories or less in height above grade plane, piping to the inlet of a water heater and piping conveying water heated by a water heater shall be insulated in accordance with Section C404.4 of the *International Energy Conservation Code*. For Group R2, R3 and R4 occupancies that are three stories or less in height above grade plane, piping to the inlet of a water heater and piping conveying water heated by a water heater shall be insulated in accordance with Section R403.5.3 of the *International Energy Conservation Code*.

SECTION 608

PROTECTION OF POTABLE WATER SUPPLY

608.1 General. A potable water supply system shall be designed, installed and maintained in such a manner so as to prevent contamination from nonpotable liquids, solids or gases being introduced into the potable water supply through cross connections or any other piping connections to the system. Backflow preventer applications shall conform to Table 608.1, except as specifically stated in Sections 608.2 through 608.16.10.

608.2 Plumbing fixtures. The supply lines and fittings for plumbing fixtures shall be installed so as to prevent backflow. Plumbing fixture fittings shall provide backflow protection in accordance with ASME A112.18.1/CSA B125.1.

608.3 Devices, appurtenances, appliances and apparatus. Devices, appurtenances, appliances and apparatus intended to serve some special function, such as sterilization, distillation, processing, cooling, or storage of ice or foods, and that connect to the water supply system, shall be provided with protection against backflow and contamination of the water supply system. Water pumps, filters, softeners, tanks and other appliances and devices that handle or treat potable water shall be protected against contamination.

608.3.1 Special equipment, water supply protection. The water supply for hospital fixtures shall be protected against backflow with a reduced pressure principle backflow prevention assembly, an atmospheric or spill-resis-

① See sheet 1.

tant vacuum breaker assembly, or an *air gap*. Vacuum breakers for bedpan washer hoses shall not be located less than 5 feet (1524 mm) above the floor. Vacuum breakers for hose connections in health care or laboratory areas shall not be less than 6 feet (1829 mm) above the floor.

608.4 Water service piping. Water service piping shall be protected in accordance with Sections 603.2 and 603.2.1.

608.5 Chemicals and other substances. Chemicals and other substances that produce either toxic conditions, taste, odor or discoloration in a potable water system shall not be introduced into, or utilized in, such systems.

608.6 Cross connection control. Cross connections shall be prohibited, except where *approved* backflow prevention assemblies, backflow prevention devices or other means or methods are installed to protect the potable water supply.

608.6.1 Private water supplies. Cross connections between a private water supply and a potable public supply shall be prohibited.

608.7 Valves and outlets prohibited below grade. Potable water outlets and combination stop-and-waste valves shall not be installed underground or below grade. Freezeproof yard hydrants that drain the riser into the ground are considered to be stop-and-waste valves.

Exception: Freezeproof yard hydrants that drain the riser into the ground shall be permitted to be installed, provided that the potable water supply to such hydrants is protected upstream of the hydrants in accordance with Section 608 and the hydrants are permanently identified as nonpotable outlets by *approved* signage that reads as follows: "Caution, Nonpotable Water. Do Not Drink."

608.8 Identification of nonpotable water systems. Where nonpotable water systems are installed, the piping conveying the nonpotable water shall be identified either by color marking, metal tags or tape in accordance with Sections 608.8.1 through 608.8.2.3.

608.8.1 Signage required. Nonpotable water outlets, such as hose connections, open ended pipes and faucets, shall be identified with signage that reads as follows: "Nonpotable water is utilized for [application name]. CAUTION: NONPOTABLE WATER – DO NOT DRINK." The words shall be legibly and indelibly printed on a tag or sign constructed of corrosion-resistant waterproof material or shall be indelibly printed on the fixture. The letters of the words shall be not less than 0.5 inch (12.7 mm) in height and in colors in contrast to the background on which they are applied. In addition to the required wordage, the pictograph shown in Figure 608.8.1 shall appear on the required signage.

608.8.2 Distribution pipe labeling and marking. Nonpotable distribution piping shall be purple in color and shall be embossed, or integrally stamped or marked, with the words: "CAUTION: NONPOTABLE WATER – DO NOT DRINK" or the piping shall be installed with a purple identification tape or wrap. Pipe identification shall include the contents of the piping system and an arrow indicating the direction of flow. Hazardous piping systems

shall also contain information addressing the nature of the hazard. Pipe identification shall be repeated at intervals not exceeding 25 feet (7620 mm) and at each point where the piping passes through a wall, floor or roof. Lettering shall be readily observable within the room or space where the piping is located.

608.8.2.1 Color. The color of the pipe identification shall be discernable and consistent throughout the building. The color purple shall be used to identify reclaimed, rain and gray water distribution systems.

608.8.2.2 Lettering size. The size of the background color field and lettering shall comply with Table 608.8.2.2.

TABLE 608.8.2.2
SIZE OF PIPE IDENTIFICATION

PIPE DIAMETER (inches)	LENGTH BACKGROUND COLOR FIELD (inches)	SIZE OF LETTERS (inches)
$\frac{3}{4}$ to $1\frac{1}{4}$	8	0.5
$1\frac{1}{2}$ to 2	8	0.75
$2\frac{1}{2}$ to 6	12	1.25
8 to 10	24	2.5
over 10	32	3.5

For SI 1 inch = 25.4 mm.

608.8.2.3 Identification tape. Where used, identification tape shall be at least 3 inches (76 mm) wide and have white or black lettering on a purple field stating "CAUTION: NONPOTABLE WATER – DO NOT DRINK." Identification tape shall be installed on top of nonpotable rainwater distribution pipes, fastened at least every 10 feet (3048 mm) to each pipe length and run continuously the entire length of the pipe.

608.9 Reutilization prohibited. Water utilized for the cooling of equipment or other processes shall not be returned to the potable water system. Such water shall be discharged into a drainage system through an *air gap* or shall be utilized for nonpotable purposes.



FIGURE 608.8.1
PICTOGRAPH—DO NOT DRINK

TABLE 608.1
APPLICATION OF BACKFLOW PREVENTERS

DEVICE	DEGREE OF HAZARD ^a	APPLICATION ^b	APPLICABLE STANDARDS
Backflow prevention assemblies:			
Double check backflow prevention assembly and double check fire protection backflow prevention assembly	Low hazard	Backpressure or backsiphonage Sizes $\frac{3}{8}$ "–16"	ASSE 1015, AWWA C510, CSA B64.5, CSA B64.5.1
Double check detector fire protection backflow prevention assemblies	Low hazard	Backpressure or backsiphonage Sizes 2"–16"	ASSE 1048
Pressure vacuum breaker assembly	High or low hazard	Backsiphonage only Sizes $\frac{1}{2}$ "–2"	ASSE 1020, CSA B64.1.2
Reduced pressure principle backflow prevention assembly and reduced pressure principle fire protection backflow assembly	High or low hazard	Backpressure or backsiphonage Sizes $\frac{3}{8}$ "–16"	ASSE 1013, AWWA C511, CSA B64.4, CSA B64.4.1
Reduced pressure detector fire protection backflow prevention assemblies	High or low hazard	Backsiphonage or backpressure (Fire sprinkler systems)	ASSE 1047
Spill-resistant vacuum breaker assembly	High or low hazard	Backsiphonage only Sizes $\frac{1}{4}$ "–2"	ASSE 1056
Backflow preventer plumbing devices:			
Antisiphon-type fill valves for gravity water closet flush tanks	High hazard	Backsiphonage only	ASSE 1002, CSA B125.3
Backflow preventer for carbonated beverage machines	Low hazard	Backpressure or backsiphonage Sizes $\frac{1}{4}$ "– $\frac{3}{8}$ "	ASSE 1022
Backflow preventer with intermediate atmospheric vents	Low hazard	Backpressure or backsiphonage Sizes $\frac{1}{4}$ "– $\frac{3}{4}$ "	ASSE 1012, CSA B64.3
Dual-check-valve-type backflow preventer	Low hazard	Backpressure or backsiphonage Sizes $\frac{1}{4}$ "–1"	ASSE 1024, CSA B64.6
Hose connection backflow preventer	High or low hazard	Low head backpressure, rated working pressure, backpressure or backsiphonage Sizes $\frac{1}{2}$ "–1"	ASME A112.21.3, ASSE 1052, CSA B64.2.1.1
Hose connection vacuum breaker	High or low hazard	Low head backpressure or backsiphonage Sizes $\frac{1}{2}$ ", $\frac{3}{4}$ ", 1"	ASME A112.21.3, ASSE 1011, CSA B64.2, CSA B64.2.1
Laboratory faucet backflow preventer	High or low hazard	Low head backpressure and backsiphonage	ASSE 1035, CSA B64.7
Pipe-applied atmospheric-type vacuum breaker	High or low hazard	Backsiphonage only Sizes $\frac{1}{4}$ "–4"	ASSE 1001, CSA B64.1.1
Vacuum breaker wall hydrants, frost-resistant, automatic-draining-type	High or low hazard	Low head backpressure or backsiphonage Sizes $\frac{3}{4}$ ", 1"	ASME A112.21.3, ASSE 1019, CSA B64.2.2
Other means or methods:			
Air gap	High or low hazard	Backsiphonage or backpressure	ASME A112.1.2
Air gap fittings for use with plumbing fixtures, appliances and appurtenances	High or low hazard	Backsiphonage or backpressure	ASME A112.1.3
Barometric loop	High or low hazard	Backsiphonage only	(See Section 608.13.4)

For SI: 1 inch = 25.4 mm.

- a. Low hazard—See Pollution (Section 202).
High hazard—See Contamination (Section 202).

- b. See Backpressure, low head (Section 202).
See Backsiphonage (Section 202).

② See Sheet 2

My Review: RPBA valve is required on new installs, under adopted code. Q is on existing OSSF—that falls under TCEQ

① See blas.
Don't think
language here impacts
backflow.
Included
for
completeness.

CHAPTER 6

WATER SUPPLY AND DISTRIBUTION

SECTION 601 GENERAL

601.1 Scope. This chapter shall govern the materials, design and installation of water supply systems, both hot and cold, for utilization in connection with human occupancy and habitation and shall govern the installation of individual water supply systems.

601.2 Solar energy utilization. Solar energy systems used for heating potable water or using an independent medium for heating potable water shall comply with the applicable requirements of this code. The use of solar energy shall not compromise the requirements for cross connection or protection of the potable water supply system required by this code.

601.3 Existing piping used for grounding. Existing metallic water service piping used for electrical grounding shall not be replaced with nonmetallic pipe or tubing until other *approved* means of grounding is provided.

601.4 Tests. The potable water distribution system shall be tested in accordance with Section 312.5.

601.5 Rehabilitation of piping systems. Where pressure piping systems are rehabilitated using an epoxy lining system, such lining system shall comply with ASTM F 2831.

SECTION 602 WATER REQUIRED

602.1 General. Structures equipped with plumbing fixtures and utilized for human occupancy or habitation shall be provided with a potable supply of water in the amounts and at the pressures specified in this chapter.

602.2 Potable water required. Only potable water shall be supplied to plumbing fixtures that provide water for drinking, bathing or culinary purposes, or for the processing of food, medical or pharmaceutical products. Unless otherwise provided in this code, potable water shall be supplied to all plumbing fixtures.

602.3 Individual water supply. Where a potable public water supply is not available, individual sources of potable water supply shall be utilized.

602.3.1 Sources. Dependent on geological and soil conditions and the amount of rainfall, individual water supplies are of the following types: drilled well, driven well, dug well, bored well, spring, stream or cistern. Surface bodies of water and land cisterns shall not be sources of individual water supply unless properly treated by *approved* means to prevent contamination.

602.3.2 Minimum quantity. The combined capacity of the source and storage in an individual water supply system shall supply the fixtures with water at rates and pressures as required by this chapter.

602.3.3 Water quality. Water from an individual water supply shall be *approved* as potable by the authority having jurisdiction prior to connection to the plumbing system.

602.3.4 Disinfection of system. After construction, the individual water supply system shall be purged of deleterious matter and disinfected in accordance with Section 610.

602.3.5 Pumps. Pumps shall be rated for the transport of potable water. Pumps in an individual water supply system shall be constructed and installed so as to prevent contamination from entering a potable water supply through the pump units. Pumps shall be sealed to the well casing or covered with a water-tight seal. Pumps shall be designed to maintain a prime and installed such that ready *access* is provided to the pump parts of the entire assembly for repairs.

602.3.5.1 Pump enclosure. The pump room or enclosure around a well pump shall be drained and protected from freezing by heating or other *approved* means. Where pumps are installed in basements, such pumps shall be mounted on a block or shelf not less than 18 inches (457 mm) above the basement floor. Well pits shall be prohibited.

SECTION 603 WATER SERVICE

603.1 Size of water service pipe. The water service pipe shall be sized to supply water to the structure in the quantities and at the pressures required in this code. The water service pipe shall be not less than $\frac{3}{4}$ inch (19.1 mm) in diameter.

603.2 Separation of water service and building sewer. Where water service piping is located in the same trench with the *building sewer*, such *sewer* shall be constructed of materials listed in Table 702.2. Where the *building sewer* piping is not constructed of materials listed in Table 702.2, the water service pipe and the *building sewer* shall be horizontally separated by not less than 5 feet (1524 mm) of undisturbed or compacted earth. The required separation distance shall not apply where a water service pipe crosses a *sewer* pipe, provided the water service is sleeved to a point not less than 5 feet (1524 mm) horizontally from the *sewer* pipe centerline on both sides of such crossing. The sleeve shall be of pipe materials listed in Table 605.3, 702.2 or 702.3. The required separation distance shall not apply where the bottom of the water service pipe, located within 5 feet (1524 mm) of the *sewer*, is not less than 12 inches (305 mm) above the highest point of the top of the *building sewer*.

① **603.2.1 Water service near sources of pollution.** Potable water service pipes shall not be located in, under or above cesspools, septic tanks, septic tank drainage fields or seepage pits (see Section 605.1 for soil and ground water conditions).

DEFINITIONS

② Definitions for pollution/contamination.
Under these definitions OSSF would be
a contamination and be a "High Hazard"

devices and appurtenances within a structure or premises; and the water service, *building sewer* and building storm sewer serving such structure or premises.

POLLUTION. An impairment of the quality of the potable water to a degree that does not create a hazard to public health but that does adversely and unreasonably affect the aesthetic qualities of such potable water for domestic use.

POTABLE WATER. Water free from impurities present in amounts sufficient to cause disease or harmful physiological effects and conforming to the bacteriological and chemical quality requirements of the Public Health Service Drinking Water Standards or the regulations of the public health authority having jurisdiction.

PRIVATE. In the classification of plumbing fixtures, "*private*" applies to fixtures in residences and apartments, and to fixtures in nonpublic toilet rooms of hotels and motels and similar installations in buildings where the plumbing fixtures are intended for utilization by a family or an individual.

PUBLIC OR PUBLIC UTILIZATION. In the classification of plumbing fixtures, "*public*" applies to fixtures in general toilet rooms of schools, gymnasiums, hotels, airports, bus and railroad stations, public buildings, bars, public comfort stations, office buildings, stadiums, stores, restaurants and other installations where a number of fixtures are installed so that their utilization is similarly unrestricted.

PUBLIC WATER MAIN. A water supply pipe for public utilization controlled by public authority.

QUICK-CLOSING VALVE. A valve or faucet that closes automatically when released manually or that is controlled by a mechanical means for fast-action closing.

RAINWATER. Water from natural precipitation.

[M] READY ACCESS. That which enables a fixture, appliance or equipment to be directly reached without requiring the removal or movement of any panel, door or similar obstruction and without the use of a portable ladder, step stool or similar device.

RECLAIMED WATER. Nonpotable water that has been derived from the treatment of waste water by a facility or system licensed or permitted to produce water meeting the jurisdiction's water requirements for its intended uses. Also known as "recycled water."

REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY. A backflow prevention device consisting of two independently acting check valves, internally force-loaded to a normally closed position and separated by an intermediate chamber (or zone) in which there is an automatic relief means of venting to the atmosphere, internally loaded to a normally open position between two tightly closing shutoff valves and with a means for testing for tightness of the checks and opening of the relief means.

[A] REGISTERED DESIGN PROFESSIONAL. An individual who is registered or licensed to practice professional architecture or engineering as defined by the statutory requirements of the professional registration laws of the state or jurisdiction in which the project is to be constructed.

RELIEF VALVE.

Pressure relief valve. A pressure-actuated valve held closed by a spring or other means and designed to relieve pressure automatically at the pressure at which such valve is set.

Temperature and pressure relief (T&P) valve. A combination relief valve designed to function as both a temperature relief and a pressure relief valve.

Temperature relief valve. A temperature-actuated valve designed to discharge automatically at the temperature at which such valve is set.

RELIEF VENT. A vent whose primary function is to provide circulation of air between drainage and vent systems.

RIM. An unobstructed open edge of a fixture.

RISER. See "Water pipe, riser."

ROOF DRAIN. A drain installed to receive water collecting on the surface of a roof and to discharge such water into a leader or a conductor.

ROUGH-IN. Parts of the plumbing system that are installed prior to the installation of fixtures. This includes drainage, water supply, vent piping and the necessary fixture supports and any fixtures that are built into the structure.

SELF-CLOSING FAUCET. A faucet containing a valve that automatically closes upon deactivation of the opening means.

SEPARATOR. See "Interceptor."

SEWAGE. Any liquid waste containing animal or vegetable matter in suspension or solution, including liquids containing chemicals in solution.

SEWAGE EJECTOR. A device for lifting sewage by entraining the sewage in a high-velocity jet of steam, air or water.

SEWER.

Building sewer. See "Building sewer."

Public sewer. That part of the drainage system of pipes, installed and maintained by a city, township, county, public utility company or other public entity, and located on public property, in the street or in an approved dedicated easement of public or community use.

Sanitary sewer. A *sewer* that carries sewage and excludes storm, surface and ground water.

Storm sewer. A *sewer* that conveys rainwater, surface water, subsurface water and similar liquid wastes.

SLOPE. The fall (pitch) of a line of pipe in reference to a horizontal plane. In drainage, the slope is expressed as the fall in units vertical per units horizontal (percent) for a length of pipe.

SOIL PIPE. A pipe that conveys sewage containing fecal matter to the *building drain* or *building sewer*.

SPILLPROOF VACUUM BREAKER. An assembly consisting of one check valve force-loaded closed and an air-inlet vent valve force-loaded open to atmosphere, positioned

COMBINED BUILDING SEWER. See “*Building sewer, combined.*”

COMMON VENT. A vent connecting at the junction of two *fixture drains* or to a fixture *branch* and serving as a vent for both fixtures.

CONCEALED FOULING SURFACE. Any surface of a plumbing fixture that is not readily visible and is not scoured or cleansed with each fixture operation.

CONDUCTOR. A pipe inside the building that conveys storm water from the roof to a storm or combined *building drain*.

[A] CONSTRUCTION DOCUMENT. All of the written, graphic and pictorial documents prepared or assembled for describing the design, location and physical characteristics of the elements of the project necessary for obtaining a building permit. The construction drawings shall be drawn to an appropriate scale.

CONTAMINATION. An impairment of the quality of the potable water that creates an actual hazard to the public health through poisoning or the spread of disease by sewage, industrial fluids or waste. *→ OSSF definite spread disease*

CRITICAL LEVEL (C-L). An elevation (height) reference point that determines the minimum height at which a backflow preventer or vacuum breaker is installed above the *flood level rim* of the fixture or receptor served by the device. The critical level is the elevation level below which there is a potential for backflow to occur. If the critical level marking is not indicated on the device, the bottom of the device shall constitute the critical level.

CROSS CONNECTION. Any physical connection or arrangement between two otherwise separate piping systems, one of which contains potable water and the other either water of unknown or questionable safety or steam, gas or chemical, whereby there exists the possibility for flow from one system to the other, with the direction of flow depending on the pressure differential between the two systems (see “Backflow”).

DEMAND RECIRCULATION WATER SYSTEM. A water distribution system where one or more pumps prime the service hot water piping with heated water upon a demand for hot water.

DEPTH OF TRAP SEAL. The depth of liquid that would have to be removed from a full trap before air could pass through the trap.

[BS] DESIGN FLOOD ELEVATION. The elevation of the “design flood,” including wave height, relative to the datum specified on the community’s legally designated flood hazard map. In areas designated as Zone AO, the *design flood elevation* shall be the elevation of the highest existing grade of the building’s perimeter plus the depth number (in feet) specified on the flood hazard map. In areas designated as Zone AO where a depth number is not specified on the map, the depth number shall be taken as being equal to 2 feet (610 mm).

DEVELOPED LENGTH. The length of a pipeline measured along the centerline of the pipe and fittings.

DISCHARGE PIPE. A pipe that conveys the discharge from plumbing fixtures or appliances.

DRAIN. Any pipe that carries waste water or water-borne wastes in a building drainage system.

DRAINAGE FITTING. The type of fitting or fittings utilized in the drainage system. Drainage fittings are similar to cast-iron fittings, except that instead of having a bell and spigot, drainage fittings are recessed and tapped to eliminate ridges on the inside of the installed pipe.

DRAINAGE FIXTURE UNIT.

Drainage (dfu). A measure of the probable discharge into the drainage system by various types of plumbing fixtures. The drainage fixture-unit value for a particular fixture depends on its volume rate of drainage discharge, on the time duration of a single drainage operation and on the average time between successive operations.

DRAINAGE SYSTEM. Piping within a *public* or *private* premise that conveys sewage, rainwater or other liquid waste to a point of disposal. A drainage system does not include the mains of a *public sewer* system or a private or public sewage treatment or disposal plant.

Building gravity. A drainage system that drains by gravity into the *building sewer*.

Sanitary. A drainage system that carries sewage and excludes storm, surface and ground water.

Storm. A drainage system that carries rainwater, surface water, subsurface water and similar liquid waste.

DRINKING FOUNTAIN. A plumbing fixture that is connected to the potable water distribution system and the drainage system. The fixture allows the user to obtain a drink directly from a stream of flowing water without the use of any accessories.

EFFECTIVE OPENING. The minimum cross-sectional area at the point of water supply discharge, measured or expressed in terms of the diameter of a circle or, if the opening is not circular, the diameter of a circle of equivalent cross-sectional area. For faucets and similar fittings, the *effective opening* shall be measured at the smallest orifice in the fitting body or in the supply piping to the fitting.

EMERGENCY FLOOR DRAIN. A floor drain that does not receive the discharge of any drain or indirect waste pipe, and that protects against damage from accidental spills, fixture overflows and leakage.

ESSENTIALLY NONTOXIC TRANSFER FLUID. Fluids having a Gosselin rating of 1, including propylene glycol; mineral oil; polydimethylsiloxane; hydrochlorofluorocarbon, chlorofluorocarbon and carbon refrigerants; and FDA-approved boiler water additives for steam boilers.

ESSENTIALLY TOXIC TRANSFER FLUID. Soil, waste or gray water and fluids having a Gosselin rating of 2 or more, including ethylene glycol, hydrocarbon oils, ammonia refrigerants and hydrazine.

EXISTING INSTALLATION. Any plumbing system regulated by this code that was legally installed prior to the effective date of this code.

Existing backflow regulations - 2015 IPC No City Amendments

2. Tests requiring a pressure of greater than 10 psi (69 kPa) but less than or equal to 100 psi (689 kPa) shall utilize a testing gauge having increments of 1 psi (6.9 kPa) or less.
3. Tests requiring a pressure of greater than 100 psi (689 kPa) shall utilize a testing gauge having increments of 2 psi (14 kPa) or less.

312.2 Drainage and vent water test. A water test shall be applied to the drainage system either in its entirety or in sections. If applied to the entire system, all openings in the piping shall be tightly closed, except the highest opening, and the system shall be filled with water to the point of overflow. If the system is tested in sections, each opening shall be tightly plugged except the highest openings of the section under test, and each section shall be filled with water, but no section shall be tested with less than a 10-foot (3048 mm) head of water. In testing successive sections, at least the upper 10 feet (3048 mm) of the next preceding section shall be tested so that no joint or pipe in the building, except the uppermost 10 feet (3048 mm) of the system, shall have been submitted to a test of less than a 10-foot (3048 mm) head of water. This pressure shall be held for not less than 15 minutes. The system shall then be tight at all points.

312.3 Drainage and vent air test. Plastic piping shall not be tested using air. An air test shall be made by forcing air into the system until there is a uniform gauge pressure of 5 psi (34.5 kPa) or sufficient to balance a 10-inch (254 mm) column of mercury. This pressure shall be held for a test period of not less than 15 minutes. Any adjustments to the test pressure required because of changes in ambient temperatures or the seating of gaskets shall be made prior to the beginning of the test period.

312.4 Drainage and vent final test. The final test of the completed drainage and vent systems shall be visual and in sufficient detail to determine compliance with the provisions of this code. Where a smoke test is utilized, it shall be made by filling all trans with smoke.

the ent e or mo back ope and a pres hall be h

Section 312.10 reinforces that the RPBA should be tested annually.

Examples of ordinances we have been looking at also echo the same

312.6 pluggi

tion w water, water a maintaining such pressure for 15 minutes.

312.7 Forced sewer test. Forced sewer tests shall consist of plugging the end of the building sewer at the point of connection with the public sewer and applying a pressure of 5 psi (34.5 kPa) greater than the pump rating, and maintaining such pressure for 15 minutes.

tion with the public sewer and applying a pressure of 5 psi (34.5 kPa) greater than the pump rating, and maintaining such pressure for 15 minutes.

312.8 Storm drainage system test. Storm drain systems within a building shall be tested by water or air in accordance with Section 312.2 or 312.3.

312.9 Shower liner test. Where shower floors and receptors are made water tight by the application of materials required by Section 417.5.2, the completed liner installation shall be tested. The pipe from the shower drain shall be plugged water tight for the test. The floor and receptor area shall be filled with potable water to a depth of not less than 2 inches (51 mm) measured at the threshold. Where a threshold of at least 2 inches (51 mm) high does not exist, a temporary threshold shall be constructed to retain the test water in the lined floor or receptor area to a level not less than 2 inches (51 mm) deep measured at the threshold. The water shall be retained for a test period of not less than 15 minutes, and there shall not be evidence of leakage.

312.10 Inspection and testing of backflow prevention assemblies. Inspection and testing shall comply with Sections 312.10.1 and 312.10.2.

312.10.1 Inspections. Annual inspections shall be made of all backflow prevention assemblies and air gaps to determine whether they are operable.

312.10.2 Testing. Reduced pressure principle, double check, pressure vacuum breaker, reduced pressure detector fire protection, double check detector fire protection, and spill-resistant vacuum breaker backflow preventer assemblies and hose connection backflow preventers shall be tested at the time of installation, immediately after repairs or relocation and at least annually. The testing procedure shall be performed in accordance with one of the following standards: ASSE 5013, ASSE 5015, ASSE 5020, ASSE 5047, ASSE 5048, ASSE 5052, ASSE 5056, CSA B64.10 or CSA B64.10.1.

SECTION 313 EQUIPMENT EFFICIENCIES

313.1 General. Equipment efficiencies shall be in accordance with the *International Energy Conservation Code*.

SECTION 314 CONDENSATE DISPOSAL

[M] 314.1 Fuel-burning appliances. Liquid combustion by-products of condensing appliances shall be collected and discharged to an approved plumbing fixture or disposal area in accordance with the manufacturer's instructions. Condensate piping shall be of approved corrosion-resistant material and shall not be smaller than the drain connection on the appliance. Such piping shall maintain a horizontal slope in the direction of discharge of not less than one-eighth unit vertical in 12 units horizontal (1-percent slope).

[M] 314.2 Evaporators and cooling coils. Condensate drain systems shall be provided for equipment and appliances containing evaporators or cooling coils. Condensate drain sys-