

To: Brazos G RWPG Members	
From: Kristi Shaw, P.E.	Project: Brazos G 2016 Plan
CC: David Dunn, P.E.	
Date: 3/31/2014	Job No: 000000000176238

**RE:** Evaluation of Water Loss Reduction as a Water Management Strategy for Brazos G RWPG Consideration for the 2016 Brazos G Plan

The TWDB provided results of their 2010 Water Loss Audit on December 5, 2011 for regional water planning groups to consider when developing the regional water plans (Texas Administrative Code §357.34 (f)(2)D). Furthermore, water management strategy evaluations for the 2016 Brazos G Plan are to take into account anticipated water losses associated with the each strategy when calculating the quantify of water delivered and treated, according to TWDB guidelines (Texas Administrative Code §357.34 (d)(3)A). Figure 1 summarizes the TWDB-compiled water loss audit data for Brazos G, which shows an annual water loss of 13.67 billion gallons<sup>1</sup> (or 16.1%) for the region based on 234 audits submitted from Brazos G municipal water user groups. The reported water losses include both real and apparent losses. Real Loss is water lost through distribution system leakage and line breaks; Apparent Loss includes water that was not read accurately by a meter, unauthorized consumption, including water taken by theft, and data analysis errors. The opportunity for water savings for Brazos G entities lies in water management strategies to reduce Real Loss, which amounts to 10.9 billion gallons annually in Brazos G.

Municipal water entities seeking infrastructure replacement programs to reduce water loss may be eligible for state supported programs, including State Water Implementation Fund for Texas (SWIFT), which has been allocated \$2 billion to make financing of water projects more affordable and provide consistent state financial assistance for development of water supply projects identified in the State Water Plan.

It is important to note that the water loss data provided by the TWDB are often inaccurate, and rely heavily on entity-reported information. HDR's evaluation is based on reported Main Line Miles, Service Connection Density, System Input Volume, and Real Loss values.

For the 2016 Brazos G Plan, HDR recommends that the Brazos G RWPG consider recommending infrastructure replacement programs for municipal entities that report real losses greater than 15% of water system input volume. Ninety-five (95) of the 234 reported entities, or 40%, report real losses exceeding 15%, as shown in Table 1. The real losses for these entities range from 15% to 99%<sup>2</sup>. For these entities, the water management strategy to consider recommending would consist of a water loss program targeting annual replacement of 5% of a utility's existing water main lines. This would replace the entire existing distribution system (100%) in 20 years. Note that this does not deal

<sup>1</sup> The statewide total water loss for Texas is estimated at about 16.7%.

<sup>2</sup> Ten entities report real losses exceeding 50%, which is likely erroneous data. HDR will review the data reported for these 10 entities and revise water loss recommendations accordingly.

with new distribution system infrastructure installed to accommodate growth and expansion of the system, but only with losses experienced from a utility's existing distribution system.

Some water losses are still expected to occur from the replaced system due to aging, pipe joints, minor connection leaks, and other factors (estimated at 5% of existing system input). For this reason, the full 20-year pipe replacement program is assumed to provide a total water savings to achieve an ultimate real loss of 5% from a utility's existing distribution system after 20 years.

This total water savings is divided by 20 years to calculate the annual water savings expected through annual replacement of 5% of the existing water supply mains. This assumes that losses are distributed uniformly over the existing distribution system. In early years of a main replacement program, however, areas with higher loss rates would be identified and likely replaced first, depending upon coordination with other utilities (sewer, electric, gas, telecommunications) and the municipality's plans for pavement replacement. Water savings, therefore, would actually be greater in the early years of the main replacement program because the larger loss areas of a system would be targeted and corrected earliest.

The cost of line replacement, at 5% of the utility's main lines annually, was estimated based on the Unified Costing Model Tool for Regional Water Planning with the following assumptions:

- Entities reporting < 32 connections per mile were assumed to be more rural in nature. The pipeline unit cost was assumed for 12" diameter replacement in soil in a rural environment at a cost of \$35 per linear foot<sup>3</sup> (or \$184,500 per mile).
- Entities reporting > 32 connections per mile were assumed to be more urban in nature. Pipeline unit cost was assumed for 16" diameter replacement in soil in an urban environment at a cost of \$81 per linear foot<sup>3</sup> (or \$427,680 per mile).

The annual cost of pipe replacement varies from \$18,480 to \$7,854,000 depending on the utility and number of water main line miles reported. The annual unit costs for a 10-year program amortized over 20 years range from \$20 per acre-foot of water saved to more than \$2.5 million/acft, based strictly upon the loss data and number of miles of pipe reported in data provided by the TWDB. Obviously the water loss data need to be reviewed individually for each utility for which this option might be considered as a water management strategy. Overall, as shown by this initial analysis, pipe replacement programs generally are expensive.

Note that the quality of much of these data, including System Input Volume (water supplied), is questionable and can lead to erroneous savings, annual replacement costs, and unit cost estimates. These data will need to be reviewed individually for each WUG for which this water management strategy is considered.

HDR requests that the Brazos G RWPG consider the methodology proposed by HDR, with the recognition that some data will need to be corrected in the final analysis.

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<sup>3</sup> The unit costs include installed cost of the pipeline and appurtenances, such as markers, valves, thrust restraint systems, corrosion monitoring and control equipment, air and vacuum valves, blow-off valves, erosion control, revegetation of rights-of-way, fencing and gates.

Region G 234 Audits Submitted	System Input Volume 84,814,159,505	Authorized Consumption 71,214,766,011 84.0%	Billed Consumption 68,770,533,432 81.1%	Billed Metered 68,730,355,630 81.0%	Revenue Water 68,770,533,432 81.1%	
			Unbilled Consumption 2,444,232,579 2.9%	Billed Unmetered 40,177,802 0.0%	Non-Revenue Water 16,058,754,134 18.9%	
				Unbilled Metered 732,300,997 0.9%		
			Unbilled Consumption 2,444,232,579 2.9%	Unbilled Unmetered 1,711,931,582 2.0%	Unauthorized Consumption 195,052,528 0.2%	
				Apparent Loss 3,486,636,482 4.1%	Customer Meter Accuracy Loss 2,893,259,955 3.4%	
					Water Loss 13,672,505,378 16.1%	Systematic Data Handling Discrepancy 398,324,000 0.5%
						Reported Breaks and Leaks 3,070,665,979 3.6%
			Real Loss 10,949,177,116 12.9%	Unreported Loss 9,421,897,213 11.1%		

Figure 1 – TWDB Water Loss Audit Summary for Brazos G (TWDB, December 2011)

**Table 1 – Summary of Brazos G Water Loss Audit and Estimated Savings and Costs with Pipe Replacement Program**

Utility Name	Retail Pop Served 2018-20	Main Line Miles	Service Connection Density/min AV = 46.6	System Input Volume (gallons)	Real Loss (gallons)	Real Loss/ Input Volume	Total 20 Year Water Savings Needed to Achieve 5% Real Loss (gallons)	Annual Water Savings Needed to Achieve 5% Real Loss in 20 years (gallons)	Amount of Pipe (ft) to be Replaced Annually to Achieve 100% Replacement in 20 years	Annual Cost (\$)	Cost 10 Year Program (\$)	Amortized Annual Cost of 10-Year Program (\$)	Unit Cost (\$ per act saved)
LEE COUNTY WSC	10,000	700	5	290,230,140	44,235,160.00	15%	29,723,653	1,486,182.95	35.00	\$6,468,000	\$64,680,000	\$118,668	\$26,018
CITY OF TEHUACANA	307	12	14	10,141,000	1,584,128.33	16%	1,077,078	53,883.92	0.60	\$10,880	\$1,108,800	\$56,140	\$339,684
BLOCK HOUSE MUD	5,505	17	129	243,333,330	38,269,190.00	16%	26,102,624	1,305,126.18	0.85	\$363,528	\$3,635,280	\$7,595	\$1,896
CITY OF FLORENCE	1,148	4	110	54,917,356	8,051,847.73	16%	5,905,980	295,299.00	0.20	\$85,536	\$855,360	\$7,898	\$8,715
CITY OF WOODWAY	8,733	81	47	807,365,365	127,596,208.20	16%	87,227,939	4,361,396.95	4.05	\$1,732,104	\$17,321,040	\$10,829	\$809
WOODROW OSCEOLA WSC BLANTON WELL PLANT 1	2,046	100	7	59,030,396	9,566,470.71	16%	6,634,951	331,747.65	5.00	\$924,000	\$9,240,000	\$75,945	\$74,596
NORTH HAMILTON HILL WSC	51	3	9	3,000,000	480,000.00	16%	340,000	17,000.00	0.15	\$27,720	\$277,200	\$44,461	\$852,220
H & H WSC	1,593	48	11	44,526,238	7,294,788.50	16%	5,088,477	253,423.83	2.40	\$443,520	\$4,435,200	\$47,720	\$61,358
CITY OF MOUNT CALM	310	10	10	10,868,710	1,793,740.00	17%	1,250,305	62,515.23	0.50	\$92,400	\$924,000	\$40,302	\$210,066
439 WSC	6,459	60	36	324,142,000	55,305,900.00	17%	39,088,800	1,954,940.00	3.00	\$1,283,040	\$12,830,400	\$17,896	\$827,067
STEELE CREEK HARBOR	468	12	13	5,722,424	976,383.80	17%	690,283	34,513.13	0.60	\$10,880	\$1,108,800	\$87,600	\$87,600
PENLOPE WSC	198	2	47	6,067,800	1,038,359.26	17%	735,469	36,773.46	0.10	\$42,768	\$427,680	\$31,712	\$281,000
CITY OF ABBOTT	356	5	44	20,346,530	3,518,100.00	17%	2,500,774	125,038.68	0.25	\$106,920	\$1,069,200	\$23,316	\$60,761
BLAIR WSC	966	290	1	15,616,000	2,716,550.00	17%	1,935,750	96,787.50	14.50	\$2,679,600	\$26,796,000	\$754,897	\$2,541,486
MULTICOUNTY WSC	3,576	400	3	85,789,000	15,115,000.00	18%	10,825,950	541,277.50	20.00	\$3,696,000	\$36,960,000	\$186,187	\$112,085
LEROY TOURS GERALD WSC	1,557	35	14	48,008,710	8,580,250.00	18%	6,179,815	308,990.73	1.75	\$323,400	\$3,234,000	\$28,539	\$30,996
CITY OF MALONE	264	2	63	9,973,873	1,787,970.63	18%	1,289,277	64,463.85	0.10	\$42,768	\$427,680	\$18,090	\$91,441
ARMSTRONG WSC	2,526	90	9	105,319,000	18,882,960.00	18%	13,617,010	680,850.50	4.50	\$831,600	\$8,316,000	\$33,304	\$15,939
ROBERTSON COUNTY WSC	2,670	270	4	108,437,449	19,660,165.60	18%	14,238,293	711,974.66	13.50	\$2,494,800	\$24,948,000	\$95,553	\$43,736
ROSS WSC	2,388	69	12	76,041,410	13,997,560.00	18%	10,195,490	509,774.48	3.45	\$637,560	\$6,375,600	\$34,102	\$21,798
SANTO SUD	2,550	103	8	77,414,100	14,470,464.75	19%	10,599,760	529,987.99	5.15	\$951,720	\$9,517,200	\$48,964	\$30,105
CENTRAL WASHINGTON COUNTY WSC	2,049	96	7	59,704,950	11,197,540.00	19%	8,212,293	410,614.63	4.80	\$887,040	\$8,870,400	\$58,904	\$46,745
CITY OF CEDAR PARK	57,533	320	59	3,776,295,000	714,613,800.00	19%	525,802,050	26,290,102.50	16.00	\$6,862,880	\$68,628,800	\$7,097	\$88
STEPHENS REGIONAL SUD	3,132	250	6	102,714,939	19,998,658.43	19%	14,863,111	743,155.57	12.50	\$2,310,000	\$23,100,000	\$84,756	\$37,163
DOG RIDGE WSC	4,428	6	246	186,828,620	36,809,990.00	20%	27,468,559	1,373,427.95	0.30	\$128,304	\$1,283,040	\$2,547	\$604
WEST BELL COUNTY WSC	3,800	67	19	205,272,242	40,539,872.92	20%	30,276,261	1,513,813.04	3.35	\$619,080	\$6,190,800	\$11,151	\$2,400
CITY OF ASPERMONT	1,000	60	10	79,228,000	15,845,413.67	20%	11,894,074	594,200.68	3.00	\$554,400	\$5,544,000	\$25,441	\$13,951
WOODROW OSCEOLA WSC PLEASANT VW	1,278	100	4	36,200,396	7,326,604.39	20%	5,516,585	275,829.23	5.00	\$924,000	\$9,240,000	\$91,342	\$107,907
CITY OF MEXIA	10,980	85	32	437,814,000	89,787,530.00	21%	67,896,830	3,394,841.50	4.25	\$785,400	\$7,854,000	\$6,308	\$605
CITY OF COMANCHE	4,462	250	7	163,888,657	34,416,432.78	21%	26,222,000	1,311,100.00	12.50	\$2,310,000	\$23,100,000	\$48,041	\$11,940
CITY OF HASKELL	3,106	48	31	162,137,500	34,350,489.67	21%	26,243,615	1,312,180.73	2.40	\$443,520	\$4,435,200	\$9,216	\$2,289
CITY OF ITASCA	1,875	9	69	61,052,434	13,057,967.39	21%	10,005,366	500,288.29	0.45	\$192,456	\$1,924,560	\$10,490	\$6,833
ELM CREEK WSC	4,170	225	6	143,569,010	31,125,350.00	22%	23,946,900	1,197,344.98	11.25	\$2,079,000	\$20,790,000	\$47,345	\$12,885
POST OAK SUD	2,500	350	2	113,065,000	24,589,326.53	22%	16,966,577	946,828.83	17.50	\$3,234,000	\$32,340,000	\$93,133	\$32,052
CHALK BLUFF WSC	3,438	47	24	119,981,818	26,438,132.57	22%	20,439,042	1,021,952.08	2.35	\$434,280	\$4,342,800	\$11,587	\$3,695
FILES VALLEY WSC	3,024	206	5	200,725,000	44,783,005.00	22%	34,746,755	1,737,337.75	10.30	\$1,903,440	\$19,034,400	\$29,874	\$5,603
CEDAR CREEK WATER SYSTEM	4,086	83	16	112,125,569	25,234,185.16	23%	19,627,907	981,395.34	4.15	\$766,920	\$7,669,200	\$21,308	\$7,075
HILLTOP WSC	655	35	8	26,262,600	5,926,441.00	23%	4,613,311	230,685.55	1.75	\$323,400	\$3,234,000	\$38,229	\$54,005
JONAH WATER SUD	13,958	390	13	569,570,000	133,790,000.00	23%	104,311,500	5,215,575.00	19.50	\$3,603,000	\$36,030,000	\$18,840	\$1,177
FORT BELKNAP WSC	6,156	750	3	186,025,000	42,284,630.00	23%	32,983,380	1,649,169.00	37.50	\$6,930,000	\$69,300,000	\$314,579	\$22,639
CEGO DURANGO WSC	870	119	3	50,968,397	11,731,736.00	23%	9,183,316	458,185.81	5.95	\$1,099,560	\$10,995,600	\$65,296	\$46,338
CEDAR SHORES WATER CORPORATION	636	7	30	9,379,100	2,177,773.47	23%	1,708,818	86,440.92	0.35	\$64,680	\$646,800	\$20,642	\$78,722
WHITE ROCK WSC 2 FOREST GLADE	1,632	39	14	46,296,000	11,066,000.00	24%	8,751,200	437,560.00	1.95	\$360,600	\$3,606,000	\$22,456	\$16,723
CITY OF TOLAR	954	10	32	28,117,651	6,730,624.48	24%	5,324,747	266,237.35	0.50	\$92,400	\$924,000	\$9,463	\$11,582
CITY OF CARBON	660	17	13	16,075,050	3,679,332.42	24%	3,075,680	153,779.00	0.85	\$157,080	\$1,570,800	\$27,852	\$59,018
EAST BELL WSC	3,500	475	2	106,990,754	26,326,741.30	24%	20,880,234	1,044,011.68	23.75	\$4,389,000	\$43,890,000	\$114,630	\$5,841
CITY OF MERKEL	2,842	29	42	100,657,000	24,466,910.16	24%	19,424,060	971,203.01	1.45	\$620,136	\$6,201,360	\$17,411	\$5,841
CITY OF GOREE	321	10	10	10,972,700	2,687,438.50	24%	2,138,804	106,940.18	0.50	\$92,400	\$924,000	\$23,560	\$71,787

**Table 1 – Summary of Brazos G Water Loss Audit and Estimated Savings and Costs with Pipe Replacement Program (concluded)**

Utility Name	Retail Pop Served 20,608,300	Main Line Miles	Service Connection Density/min/mi AV = 46.6	System Input Volume (gallons)	Real Loss (gallons)	Real Loss/Input Volume	Total 20 Year Water Savings Needed to Achieve 5% Real Loss (gallons)	Annual Water Savings Needed to Achieve 5% Real Loss in 20 years (gallons)	Amount of Pipe (mi) to Be Replaced Annually to Achieve 100% Replacement in 20 years	Annual Cost (\$)	Cost-10 Year Program (\$)	Amortized Annual Cost of 10-Year Program (\$)	Unit Cost (\$ per a/cft saved)
BRUSHY CREEK MUD	19,630	63	100	1,087,000,000	266,990,000.00	25%	212,640,000	60,814.00	3.15	\$1,347,192	\$13,471,920	\$3,455	\$106
WHITE ROCK WSC 1	240	6	13	6,130,000	1,522,780.00	25%	1,216,280	60,814.00	0.30	\$55,440	\$554,400	\$24,857	\$133,190
ROCKY CREEK WATER SYSTEM	3,132	38	27	8,188,666	20,423,672.74	25%	16,328,844	816,442.22	1.90	\$351,120	\$3,511,200	\$11,726	\$4,680
CITY OF KOSSE	487	13	13	17,071,700	4,380,090.22	26%	3,526,905	176,325.26	0.95	\$175,560	\$1,755,600	\$27,149	\$50,171
CITY OF CALDWELL	4,104	45	42	244,203,061	64,011,917.32	26%	51,801,764	2,590,088.21	2.25	\$962,280	\$9,622,800	\$10,130	\$1,274
TRI COUNTY SJLD	4,075	430	4	197,983,124	54,192,758.29	27%	44,293,602	2,214,680.11	21.50	\$3,973,200	\$39,732,000	\$48,918	\$7,197
MORTON VALLEY WSC	900	55	4	25,785,000	7,221,587.50	28%	5,933,338	296,666.68	2.75	\$508,200	\$5,082,000	\$46,709	\$51,304
CENTRAL BOSQUE WSC	900	60	5	45,014,100	12,709,814.29	28%	10,459,108	522,955.48	3.00	\$554,400	\$5,544,000	\$28,907	\$18,012
CITY OF JAYTON	285	20	14	32,696,575	9,308,474.37	28%	7,673,646	383,662.28	1.00	\$184,800	\$1,848,000	\$13,133	\$11,154
CITY OF ROCKDALE	5,595	60	41	325,718,180	95,363,980.00	29%	79,078,071	3,963,903.55	3.00	\$1,283,040	\$12,830,400	\$8,848	\$7,229
CITY OF GEORGETOWN	51,000	360	58	4,829,042,660	1,421,960,800.00	29%	1,160,488,657	59,024,932.85	18.00	\$7,698,240	\$76,982,400	\$3,556	\$20
CITY OF ROSCOE	1,271	20	27	53,938,776	17,121,050.21	32%	14,424,111	721,205.57	1.00	\$184,800	\$1,848,000	\$6,987	\$3,157
CITY OF OGLESBY	829	30	9	35,101,400	11,180,566.76	32%	9,425,497	471,124.84	1.50	\$277,200	\$2,772,000	\$16,038	\$11,089
KEMPNER WSC	14,908	360	14	1,527,658,720	500,038,950.00	33%	423,656,014	21,182,800.70	18.00	\$3,326,400	\$33,264,000	\$4,282	\$66
TUSCOLA-TAYLOR COUNTY WCD 1	714	10	38	462,100,000	15,820,000.00	33%	13,409,500	670,475.00	0.50	\$213,840	\$2,138,400	\$8,696	\$4,226
GEDRON CREEK RANCH WATER SUPPLY	283	9	11	7,716,162	2,584,631.83	33%	2,198,824	109,941.19	0.45	\$83,160	\$831,600	\$20,625	\$61,129
CITY OF MUNDAY	1,300	16	23	84,210,530	28,210,530.00	34%	24,000,004	1,200,000.18	0.80	\$147,840	\$1,478,400	\$3,359	\$912
GAUSE WSC	1,015	24	14	22,767,895	7,689,850.00	34%	6,551,455	327,572.76	1.20	\$221,760	\$2,217,600	\$18,459	\$18,362
SHACKELFORD WSC	2,616	220	4	71,637,760	24,387,320.00	34%	20,805,432	1,040,271.60	11.00	\$2,032,800	\$20,328,000	\$53,283	\$16,660
CITY OF CISCO	3,851	150	10	200,673,367	68,346,016.94	34%	58,312,349	2,915,617.43	7.50	\$1,386,000	\$13,860,000	\$12,962	\$1,149
COMANCHE COUNTY WSC BEATTIE	484	189	2	21,402,010	7,309,300.00	34%	6,239,200	311,969.38	9.45	\$1,746,360	\$17,463,600	\$152,641	\$159,438
SHILOH WSC	585	21	9	16,488,032	5,638,905.85	34%	4,815,504	240,775.21	1.05	\$194,040	\$1,940,400	\$21,974	\$29,239
CITY OF RULE	636	11	30	26,095,000	9,136,950.00	35%	7,894,200	391,710.00	0.55	\$101,640	\$1,016,400	\$7,075	\$5,886
PRAIRIE HILL WSC	2,004	523	1	63,563,366	22,346,604.94	35%	19,168,437	958,421.83	26.15	\$4,832,520	\$48,325,200	\$137,485	\$46,743
SOUTHWEST MILAM WSC	4,925	575	5	435,200,940	155,229,780.00	36%	133,469,733	6,673,486.65	28.75	\$5,313,000	\$53,130,000	\$21,708	\$1,060
JARRELL SCHWERTNER WSC	4,950	210	7	209,454,545	77,351,400.74	37%	66,878,673	3,343,933.67	10.50	\$1,940,400	\$19,404,000	\$15,822	\$1,542
BELL MILAM FALLS WSC	4,568	170	11	220,015,568	83,139,703.31	38%	72,138,925	3,606,946.24	8.50	\$1,570,800	\$15,708,000	\$11,875	\$1,073
STAFF WSC OLDEN AREA	1,569	4	14	31,690,700	12,096,116.03	38%	10,511,581	525,579.05	2.00	\$369,600	\$3,696,000	\$19,175	\$11,888
MURRAY HILL WATER SYSTEM	1,278	35	12	50,859,093	19,495,186.13	38%	16,952,231	847,611.57	1.75	\$323,400	\$3,234,000	\$10,404	\$3,999
CHAPPELL HILL WSC	657	9	24	26,000,000	10,790,526.32	39%	9,390,526	469,526.32	0.45	\$83,160	\$831,600	\$4,829	\$3,352
MARLOW WSC	480	29	7	25,549,474	9,988,663.16	39%	8,711,389	435,569.47	1.45	\$267,960	\$2,679,600	\$16,775	\$12,549
CITY OF WEINERT	177	9	11	16,070,726	6,329,702.38	39%	5,526,166	276,308.30	0.45	\$83,160	\$831,600	\$8,206	\$9,578
LAKESHORE WATER SYSTEM	1,428	27	18	28,809,192	12,103,584.65	42%	10,663,125	533,156.25	1.35	\$249,480	\$2,494,800	\$12,759	\$7,798
NORTH MILAM WSC	1,948	154	4	63,089,815	26,662,715.40	42%	23,499,225	1,174,961.23	7.70	\$1,422,960	\$14,229,600	\$33,022	\$9,158
LCRA LOMETA REGIONAL WATER SYSTEM	2,789	223	4	146,631,935	66,622,693.78	45%	59,291,997	2,984,594.85	11.15	\$2,060,520	\$20,605,200	\$18,952	\$2,083
M & H WATER SUPPLY	135	2	23	6,592,600	3,101,874.27	47%	2,772,244	138,612.21	0.10	\$18,480	\$184,800	\$3,635	\$8,546
RRA TRUSCOTT GILLLAND WATER SYSTEM	202	90	1	11,975,600	5,713,935.70	48%	5,115,156	255,757.79	4.50	\$831,600	\$8,316,000	\$88,659	\$112,957
CITY OF LUEBERS	300	12	15	22,738,154	11,438,027.70	50%	10,301,120	515,066.00	0.60	\$110,880	\$1,108,800	\$5,870	\$3,714
MUSTANG VALLEY WSC	3,000	150	4	143,415,000	77,098,440.00	54%	69,887,890	3,494,384.50	7.50	\$1,386,000	\$13,860,000	\$10,815	\$1,009
HOG CREEK WSC	297	49	5	50,511,281	27,870,609.61	55%	25,345,046	1,267,252.28	2.45	\$452,760	\$4,527,600	\$9,742	\$2,905
CITY OF HARKER HEIGHTS	26,700	171	55	2,986,330,000	1,718,740,000.00	57%	1,568,923,500	78,446,175.00	8.55	\$3,656,664	\$36,566,640	\$1,271	\$5
BRANDON IRENE WSC	2,068	54	13	172,615,000	109,586,583.08	63%	100,955,833	5,047,791.65	2.70	\$498,960	\$4,989,600	\$2,695	\$174
CADE LAKES WSC	444	12	12	23,711,720	15,616,970.00	66%	14,431,384	721,569.20	0.60	\$110,880	\$1,108,800	\$4,190	\$1,892
BISTONE MUNICIPAL WATER SUPPLY	546	80	3	54,968,296	42,455,663.20	77%	39,707,248	1,985,662.42	4.00	\$739,200	\$7,392,000	\$10,152	\$1,666
WESTBOUND WSC CISCO SOURCE	2,400	850	1	24,490	24,120.00	98%	22,986	1,144.78	42.50	\$7,854,000	\$78,540,000	\$187,071,666	\$53,248,445,384
CHATT WSC	864	83	3	33,721,895	33,215,778.52	98%	31,529,864	1,576,484.19	4.15	\$766,920	\$7,669,200	\$13,265	\$2,742
BLUEBONNET WSC	-	51	0	39,476,000	38,883,860.00	99%	36,910,060	1,845,503.00	2.55	\$471,240	\$4,712,400	\$6,962	\$1,229
<b>Total (Region G Entities Evaluated for Water Loss Program)</b>				<b>23,423,463,745</b>	<b>7,076,118,029</b>		<b>5,906,944,841</b>	<b>295,347,242</b>	<b>6.11</b>	<b>\$1,282,019,936</b>	<b>\$1,280,199,360</b>	<b>\$190,894,922</b>	