

To: Brazos G Regional Water Planning Group	
From: Kristi Shaw, P.E. David D. Dunn, P.E.	Project: 2011 Brazos G Regional Water Plan
CC: Trey Buzbee	
Date: August 13, 2009	Job No: 100489

RE: Proposed Approach for Incorporating 2005 Water Loss Audit Survey Information in the 2011 Brazos G Regional Water Plan

Background

In December 2004 in response to 78th Texas Legislature House Bill 3338, the TWDB adopted rules to require retail public utilities, as defined by Texas Water Code §13.002, to perform a water loss audit and submit water loss audit forms to the TWDB every five years.¹ Pursuant to TWDB Rules² for regional water planning, regional water planning groups are to include information compiled by the TWDB from water loss audits performed by retail public utilities and shall consider strategies to address any issues identified in the water loss audit information compiled by the TWDB.

In January 2007, the TWDB issued a report titled “An Analysis of Water Loss as Reported by Public Water Suppliers in Texas (Final Report)”, which includes water loss data by region for regional water planning groups to consider while developing the 2011 Regional Water Plans. The report included data acquired as part of a 2005 Water Loss Audit, which is the first time that this water loss audit methodology has been used by retail public utilities. The report indicates that “some of the self-reported data may be suspect and in need of further refinement.” Furthermore, a “balancing adjustment” was used by the TWDB when compiling data from the 2005 Water Loss Audit to represent amounts of water left over after all known and unknown uses of consumption and losses were accounted for and subtracted from the input volume. Since it is difficult to determine if these unaccounted for supplies are attributed to actual losses, unbilled water supplies, fire fighting, or other uses, it is challenging to assess “water losses” as compared to beneficial unaccounted for supplies. It is anticipated that efforts to assess water losses will improve with future water audits filed on a five year basis, as retail public utilities become more familiar with reporting methodologies and the TWDB provides additional guidance and support.

Summary of Water Loss Audit Information for Brazos G Retail Public Utilities

According to the TWDB³, the 2005 Water Loss Audit was primarily intended to gather information about water losses from retail public utilities and identify any significant reporting issues. For future water loss audits, the TWDB plans to consider guidance from the American Water Works Association (AWWA) to establish goals. In August 2003, the AWWA Water Loss Control Committee published “Applying Worldwide Best Management Practices in Water Loss Control” which describes water loss best management practices. The AWWA measures water loss control performance by “gallons per service connection per day” for systems with a density greater than 32 service connections per mile and “gallons per mile of mains per day” for system density less than 32 service connections per mile.

¹ In accordance with Texas Administrative Code §358.6.

² In accordance with Texas Administrative Code §357.7(a)(1)(M) and Texas Administrative Code §357.7(a)(7)(a)(iv)

³ Based on phone conversation with John Sutton on August 11, 2009.

Table 1 presents a number of Brazos G Water User Groups with greater than or less than 32 service connections per mile of pipe and summarizes unaccounted for water supplies in gallons per service connection per day or gallons per mile of mains per day, respectively. Of the 254 Brazos G retail public utilities that submitted water loss audit forms, service connections per mile of pipe were reported for 239 entities. There were 150 Brazos G retail public utilities which reported less than 32 service connections per mile and 89 which reported more than 32 service connections per mile. The average service connections per mile of pipe reported for Brazos G retail public utilities was 27.35 connections per mile. As shown in the table, there is a large range of apparent loss per mile of mains per day for smaller utilities or per service connection per day for larger utilities. The range is most noticeable for the entities with less than 32 service connections per mile which reports an average apparent daily loss of 187 gallons per mile, ranging from 0.11 gallons to 4,457 gallons. These data appear suspect and are an unreliable basis upon which to make recommendations.

**Table 1.
Summary of Daily Water Loss Rates for Brazos G Retail Public Utilities
(Based on AWWA Performance Measure Analysis)**

Brazos Retail Public Entities	Number of Entities Reported	AWWA Performance Measure	Reported Zero (0)	Number of Entities Considered	Average "Apparent Loss" (gallons)	Range (gallons)	
						Minimum	Maximum
Less than 32 service connections per mile	150	gallons per mile of mains per day	22	128	186.68	0.11	4457.34
Greater than 32 service connections per mile	89	gallons per service connection per day	22	67	33.63	0.11	77.77
Total	239	--	44	195	--	--	--

Note that these apparent "losses" are more accurately described as "unaccounted-for" water, i.e., water that has been introduced to a water distribution system, but has not been metered and billed. This unaccounted-for water can be comprised of actual water leaks within the system, under-measured flows through retail and wholesale water meters, and unmetered beneficial uses of water such as fire fighting flows, water main flushing and hydrant testing flows, and unmetered construction water, among others.

Recommended Approach for Utilization of Water Loss Audit Data

The TWDB rules require that regional water planning groups consider water management strategies to address issues identified in the water loss audits, which were provided by the TWDB on August 3, 2009.

HDR recommends that the Brazos G RWPG consider the TWDB's water loss audit information and summarize this information in the 2011 Brazos G Regional Water Plan. However, much of the self-reported data from the water loss audits is highly suspect and is unreliable, and therefore it is unsuitable as a basis for recommendations concerning specific water management strategies for specific water user groups. It is hoped that future water loss audit information will improve in accuracy and be useful in the future as a basis for making specific water management strategy recommendations for water user groups.