

# AWWA WLCC Free Water Audit Software: Reporting Worksheet

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WAS v4.2

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Water Audit Report for: **San Antonio Water System - 2012 WATER LOSS AUDIT DATA**  
 Reporting Year: **2012** 1/2012 - 12/2012

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: **MILLION GALLONS (US) PER YEAR**

## WATER SUPPLIED

<< Enter grading in column 'E'

Volume from own sources:	<a href="#">?</a>	9	75,037.147	Million gallons (US)/yr (MG/Yr)
Master meter error adjustment (enter positive value):	<a href="#">?</a>	8	528.963	<input type="text" value="under-registered"/> MG/Yr
Water imported:	<a href="#">?</a>	8	7,498.209	MG/Yr
Water exported:	<a href="#">?</a>	8	4,038.431	MG/Yr
<b>WATER SUPPLIED:</b>			<b>79,025.888</b>	<b>MG/Yr</b>

## AUTHORIZED CONSUMPTION

Billed metered:	<a href="#">?</a>	8	65,147.096	MG/Yr
Billed unmetered:	<a href="#">?</a>	n/a		MG/Yr
Unbilled metered:	<a href="#">?</a>	8	174.231	MG/Yr
Unbilled unmetered:	<a href="#">?</a>	7	1,031.187	MG/Yr

**AUTHORIZED CONSUMPTION:** [?](#) **66,352.514** MG/Yr

Click here: [?](#)  
for help using option buttons below

Pcnt:  Value:

Use buttons to select percentage of water supplied **OR** value

## WATER LOSSES (Water Supplied - Authorized Consumption)

**12,673.374** MG/Yr

### Apparent Losses

Unauthorized consumption: [?](#) **197.565** MG/Yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	<a href="#">?</a>	7	4,169.446	MG/Yr
Systematic data handling errors:	<a href="#">?</a>	5	150.000	MG/Yr

Apparent Losses: [?](#) **4,517.011**

Pcnt:  0.25% Value:

6.00% Value:

Choose this option to enter a percentage of billed metered consumption. This is **NOT** a default value

### Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: [?](#) **8,156.363** MG/Yr

**WATER LOSSES:** **12,673.374** MG/Yr

## NON-REVENUE WATER

**NON-REVENUE WATER:** [?](#) **13,878.792** MG/Yr

= Total Water Loss + Unbilled Metered + Unbilled Unmetered

## SYSTEM DATA

Length of mains:	<a href="#">?</a>	10	6,600.0	miles
Number of <u>active AND inactive</u> service connections:	<a href="#">?</a>	8	513,354	
Connection density:			78	conn./mile main
Average length of customer service line:	<a href="#">?</a>	10	0.0	ft (pipe length between curbstop and customer meter or property boundary)
Average operating pressure:	<a href="#">?</a>	5	88.0	psi

## COST DATA

Total annual cost of operating water system:	<a href="#">?</a>	9	\$198,177,000	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<a href="#">?</a>	9	\$4.88	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<a href="#">?</a>	9	\$3,375.78	\$/Million gallons

## PERFORMANCE INDICATORS

### Financial Indicators

Non-revenue water as percent by volume of Water Supplied:	<b>17.6%</b>
Non-revenue water as percent by cost of operating system:	<b>27.1%</b>
Annual cost of Apparent Losses:	<b>\$22,043,014</b>
Annual cost of Real Losses:	<b>\$27,534,087</b>

### Operational Efficiency Indicators

Apparent Losses per service connection per day:	<b>24.11</b>	gallons/connection/day
Real Losses per service connection per day*:	<b>43.53</b>	gallons/connection/day
Real Losses per length of main per day*:	<b>N/A</b>	
Real Losses per service connection per day per psi pressure:	<b>0.49</b>	gallons/connection/day/psi
<a href="#">?</a> Unavoidable Annual Real Losses (UARL):	<b>3,620.22</b>	million gallons/year
From Above, Real Losses = Current Annual Real Losses (CARL):	<b>8,156.36</b>	million gallons/year
<a href="#">?</a> Infrastructure Leakage Index (ILI) [CARL/UARL]:	<b>2.25</b>	

\* only the most applicable of these two indicators will be calculated

## WATER AUDIT DATA VALIDITY SCORE:

**\*\*\* YOUR SCORE IS: 81 out of 100 \*\*\***

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

### PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

**1: Volume from own sources**

**2: Unauthorized consumption**

**3: Systematic data handling errors**

[For more information, click here to see the Grading Matrix worksheet](#)

2012 SAWS Water Loss Data - Actual vs. Data

	Source of Actual Data	Actual Volume (gals)	Reported Volume (gals)	Comments
Water Produced:		-	79,025,887,383	
Water Sold:		-	66,352,513,871	
Water Losses:		-	12,673,373,512	
<b>Authorized, Unbilled, Unmetered Losses***</b>				<p>*** The AWWA default for authorized, unmetered losses is 1.25% of production. SAWS used 1.3% in 2012 and 1.5% in 2011. In 2012, the actual percentage of SAWS' authorized, unmetered losses was less than 0.75%. The decision to use 1.3% was based on discussions with staff, with the realization that actual data for portions of this category are still unknown. Pending better data in 2013, SAWS may use the AWWA default for the 2013 report.</p> <p>Dead end, new construction flushing, DSP flushing, post-repair flushing. Calculated by water quality staff using approved methods and equations. Estimated/Calculated by D&amp;C staff. <i>MAY</i> include some main break losses.</p> <p>This is an area that needs study</p> <p>Estimated - probably vastly underreported. Working with SAFD in 2013 to try and develop a better estimate. 0.27% of total production - estimate based on research from Anastasia Valdes</p> <p>Estimated with data from Scott Okland and staff</p> <p>This is an area that needs investigation</p> <p>Hansen Report from Jeff Supplee</p>
Water Quality Hydrant Flushing	Water Quality Dept	289,583,330		
SAWS Construction Water Usage		unknown		
Firefighting	Estimated	3,000,000		
Hydrant Maintenance	Estimated calculation	208,371,852	1,031,186,871	
Potable Storage Tank Dumps	Production Dept	51,000,000		
Street Cleaning Usage		unknown		
Sewer Line Cleaning	Hansen Report from Distribution and Collection Dept	14,863,688		
Total ->		277,235,540		
<b>Apparent Losses</b>				
Unauthorized Use (Theft)	unknown	unknown	197,565,000	0.25% of total production - AWWA Default
Bypassed Meters	unknown	unknown	-	
Customer Metering Inaccuracies (94%)	Customer Service Dept	unknown	4,169,446,000	Percentage based on internal discussions and calculations
Systematic Data Handling Errors		unknown	150,000,000	Estimate. High probability that this number is being underreported. The current billing system makes collecting actual data difficult.
<b>Real Losses</b>				
Losses found by leak detection	Distribution and Collection Dept	2,330,291		Estimated data from Dan Velasquez for the service centers. Probably greatly underestimated because amount of leakage prior to discovery that is unknown.
Storage Tank Overflows	Production Dept	unknown	8,156,363,000	
Reported leaks and main breaks	Distribution and Collection Dept	10,978,433		Some estimates provided by staff, but calculated amount (amount reported) is what is left over after subtracting the amount of apparent losses from the total water losses on the official report. SAWS didn't start including main break water loss amounts on Hansen work orders until mid-2012, so an "actual" amount isn't available.