



AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0

American Water Works Association.
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?	Click to access definition
+	Click to add a comment

Water Audit Report for: **Las Cruces Utilities (3511707)**
 Reporting Year: **2018** / 1/2018 - 12/2018

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 (n/a or 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: ACRE-FEET PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

<----- Enter grading in column 'E' and 'J' ----->

WATER SUPPLIED

Volume from own sources:	+ ? 7	22,352.000	acre-ft/yr
Water imported:	+ ?	0.000	acre-ft/yr
Water exported:	+ ?	0.000	acre-ft/yr

Master Meter and Supply Error Adjustments

Pcnt:	0	Value:	111.117	acre-ft/yr
Pcnt:	0	Value:		acre-ft/yr
Pcnt:	0	Value:		acre-ft/yr

Enter negative % or value for under-registration
 Enter positive % or value for over-registration

WATER SUPPLIED: 22,240.883 acre-ft/yr

AUTHORIZED CONSUMPTION

Billed metered:	+ ? 9	18,681.000	acre-ft/yr
Billed unmetered:	+ ? 3	0.000	acre-ft/yr
Unbilled metered:	+ ? 9	17.209	acre-ft/yr
Unbilled unmetered:	+ ? 8	165.626	acre-ft/yr

Click here: ?
 for help using option buttons below

Pcnt:	0	Value:	165.626	acre-ft/yr
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Use buttons to select percentage of water supplied OR value

AUTHORIZED CONSUMPTION: 18,863.835 acre-ft/yr

WATER LOSSES (Water Supplied - Authorized Consumption)

3,377.048 acre-ft/yr

Apparent Losses

Unauthorized consumption: + ? 55.602 acre-ft/yr

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

Customer metering inaccuracies:	+ ?	1,067.340	acre-ft/yr
Systematic data handling errors:	+ ?	167.925	acre-ft/yr

Apparent Losses: 1,290.867 acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 2,086.181 acre-ft/yr

WATER LOSSES: 3,377.048 acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: 3,559.883 acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	+ ? 8	713.0	miles
Number of <u>active AND inactive</u> service connections:	+ ? 8		
Service connection density:	?	0	conn./mile main

Are customer meters typically located at the curbside or property line? Yes (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: + ? 75.0 psi

COST DATA

Total annual cost of operating water system:	+ ? 10	\$13,537,474	\$/Year
Customer retail unit cost (applied to Apparent Losses):	+ ?		
Variable production cost (applied to Real Losses):	+ ?	\$184.90	\$/acre-ft <input type="checkbox"/> Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 76 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: Customer metering inaccuracies

3: Unauthorized consumption



AWWA Free Water Audit Software: System Attributes and Performance Indicators

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Water Audit Report for: Las Cruces Utilities (3511707)
 Reporting Year: 2018 1/2018 - 12/2018

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 76 out of 100 ***

System Attributes:

	Apparent Losses:	1,290.867	acre-ft/yr
+	Real Losses:	2,086.181	acre-ft/yr
=	Water Losses:	3,377.048	acre-ft/yr

? Unavoidable Annual Real Losses (UARL): 324.06 acre-ft/yr

Annual cost of Apparent Losses: \$3,516,473

Annual cost of Real Losses: \$385,735 Valued at **Variable Production Cost**
 Return to Reporting Worksheet to change this assumption

Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied: 16.0%

Non-revenue water as percent by cost of operating system: 29.1% Real Losses valued at Variable Production Cost

Operational Efficiency: {

Apparent Losses per service connection per day: gallons/connection/day

Real Losses per service connection per day: gallons/connection/day

Real Losses per length of main per day*: N/A

Real Losses per service connection per day per psi pressure: gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 2,086.18 acre-feet/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 6.44

* This performance indicator applies for systems with a low service connection density of less than 32 service connections/mile of pipeline



**AWWA Free Water Audit Software:
User Comments**

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Use this worksheet to add comments or notes to explain how an input value was calculated, or to document the sources of the information used.

General Comment:

Audit Item	Comment
Volume from own sources:	All active production meters were tested in 2017 through an audit performed by JCI
Vol. from own sources: Master meter error adjustment:	SCADA logs meter data on a continuous basis. Data is reviewed daily by Water Production and monthly by Engineering Operations. The system does not have the capability to employ changes in tank and storage facilities to calculate "Volume from own sources". However, the City well operators check individual well operation and data daily, to detect any variances and makes corrections as needed.
Water imported:	N/A
Water imported: master meter error adjustment:	N/A
Water exported:	N/A
Water exported: master meter error adjustment:	N/A
Billed metered:	LCU believes that all customers have volume based billing reads. As of December 2018 30,148 AMI Meters have been installed throughout the system. Johnson Controls, Inc. (JCI) conducted an energy audit on the LCU water system and we are currently reviewing changing out 38,175 meters, with these meter replacement goals, based on accuracy test results, we have assigned a rating of 8.
Billed unmetered:	LCU is currently operating in a way that exceeds the standards set forth for a grade of 10. At least 99% of all accounts are metered and billed for consumption
Unbilled metered:	LCU grants no exemptions from payment. Municipal departments budget for water use, and are metered and billed monthly. Johnson Controls, Inc. (JCI) conducted an energy audit on the LCU water system and we are currently reviewing changing out all meters to AMI, which sets us up to set meter replacement goals based on accuracy test results, so we have assigned a rating of 9.
Unbilled unmetered:	There are some uses, such as firefighting and training, hydrant flushing, fire flow and pressure testing, which are estimated.
Unauthorized consumption:	LCU actively evaluates accounts with zero usage to identify tampering and bypass, and assesses tampering fees.

Audit Item	Comment
Customer metering inaccuracies:	Includes updates made based on meter accuracy testing by Johnson Controls, Inc. (JCI)
Systematic data handling errors:	New account activation and billing operations policy and procedures are reviewed annually. Computerized billing system includes an array of reports to confirm billing data and system functionality. Checks are conducted routinely to flag and explain zero consumption accounts and consumption lost to billing lapses is well quantified and reducing year by year, so we have assigned a rating of 8.
Length of mains:	Sound written policy exists for managing water main extensions and replacements. Length of new mainlines are indicated in building permits. Information from new subdivision is initially in paper form and is converted to GIS format and are used to store and manage data.
Number of active AND inactive service connections:	Policies and procedures for new account activation and overall billing operations are written, well-structured and reviewed annually. Well-managed computerized information management system exists and periodic field checks and internal system audits are conducted.
Average length of customer service line:	N/A
Average operating pressure:	A current SCADA system exists to monitor water distribution system and collect data, including real time pressure readings at representative sites across the system.
Total annual cost of operating water system:	
Customer retail unit cost (applied to Apparent Losses):	
Variable production cost (applied to Real Losses):	



AWWA Free Water Audit Software: Water Balance

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Water Audit Report for:	Las Cruces Utilities (3511707)	
Reporting Year:	2018	1/2018 - 12/2018
Data Validity Score:	76	

	Water Exported	Billed Water Exported				
	<i>0.000</i>		Billed Authorized Consumption	Billed Metered Consumption (water exported is removed)	Revenue Water	
Own Sources (Adjusted for known errors) 22,240.883	Water Supplied 22,240.883	Authorized Consumption 18,863.835	18,681.000	18,681.000	18,681.000	
			Unbilled Authorized Consumption	182.835		0.000
		Water Losses 3,377.048	Apparent Losses 1,290.867	Unbilled Metered Consumption	17.209	Non-Revenue Water (NRW) 3,559.883
				Unbilled Unmetered Consumption	165.626	
Unauthorized Consumption	55.602					
Water Imported 0.000	Real Losses 2,086.181	Customer Metering Inaccuracies	1,067.340	Leakage on Transmission and/or Distribution Mains <i>Not broken down</i>		
		Systematic Data Handling Errors	167.925		Leakage and Overflows at Utility's Storage Tanks	
		Leakage on Service Connections	167.925		Leakage on Service Connections	