

# Water Loss Audit Validations

Presented by: Karen Sanders, Program Specialist III  
*Municipal Water Conservation*





## What is a Water Loss Audit Validation?

Evaluates the water system records and system control measures, such as meters accuracy and accurate data tracking to ensure a valid result.

In addition, it ensures there are policy and procedures in place to guide water system employees with data tracking and mitigating apparent and real water loss.



# Who's Required to be Validated?



All utilities with an active financial obligation to TWDB are required to be validated annually until the loan is paid off.



All submitting for a new loan regardless of connections.

In addition, depending on the loan process you may be validated twice in one calendar year.



All audits are to be submitted by May 1<sup>st</sup>, but when coming in for a loan we highly recommend you submit the most current data as soon as possible.

# Who's Required to be in the Validation Meeting?

- **Billing**
- **Distribution**
- **Metering**
- **Production**
- Other staff the utility feels are appropriate



# Data Request for Validation

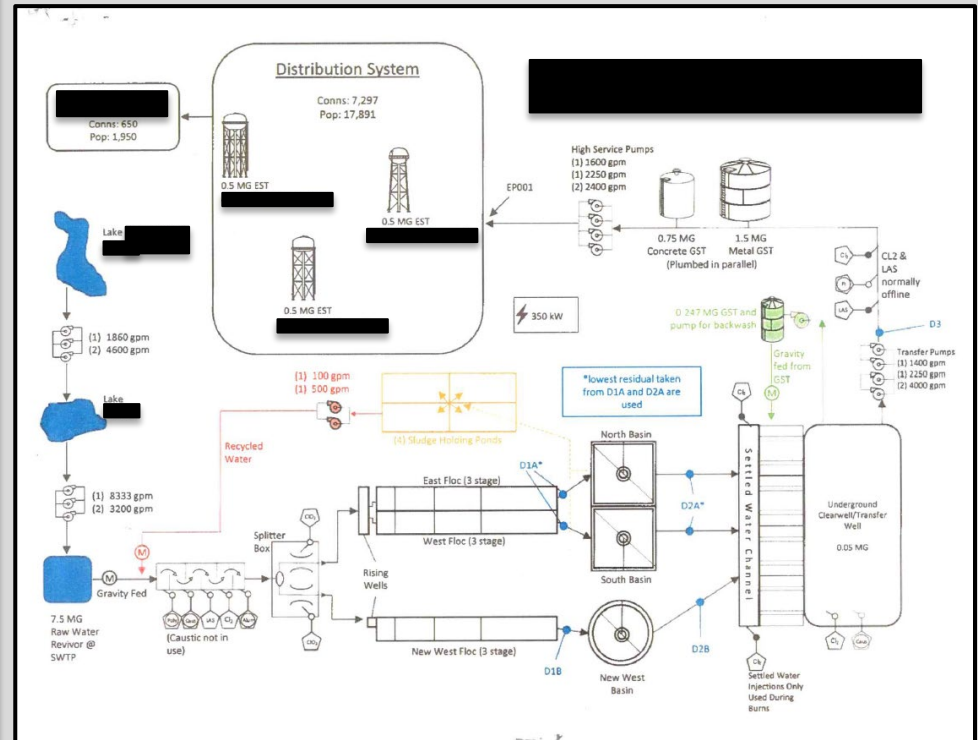
- Do you have a schematic?
- Are you saving your data/reports used to enter your data?
- Do you have your calculation methods written down?



# Document Request for Validation

## System Schematic

- Well and/or Surface Water Treatment Schematic with Raw and Treated Production Meter locations
- Distribution Map/Pressure Plane Map



PDF version of the schematic is best for the purpose of storage and ease of sharing.

# Document Request for Validation

## Data Tracking

- Produced, Treated, Wholesale Water and Meter Accuracy
- Billed Meter and Customer Meter Accuracy
- Billed Unmetered
- Unbilled Metered
- Unbilled Unmetered
- Reported Breaks and Leaks

	Total System Input Volume (B)		Authorized Consumption (C)						
Values reported in Gallons	Water Produced	Corrected Input Volume	Billed Metered	Billed Unmetered	Unbilled Unmetered				Total Authorized Consumption
	Operators Report	Production Meter Accuracy (100%)	LID Monthly Billing Report	Bulk Sales	Total from City Use (Factor, Letter & Sweepers)	Hydrant Flushing	FD Use	Flushing w/Leak Repairs	
January	87,804,000	87,804,000	53,336,321	74,400	300,000	404,000	12,000	200,000	54,326,721
February	78,120,000	78,120,000	44,039,604	8,600	250,000	404,000	2,000	250,000	44,954,204
March	76,151,000	76,151,000	54,202,424	10,200	520,000	404,000	10,000	750,000	55,896,624
April	73,300,000	73,300,000	52,173,418	8,700	500,000	404,000	2,000	400,000	53,488,118
May	76,022,000	76,022,000	54,770,378	46,300	550,000	404,000	9,000	500,000	56,279,678
June	72,954,000	72,954,000	54,562,000	14,400	400,000	404,000	44,000	500,000	55,924,400
July	81,590,000	81,590,000	54,070,000	13,100	400,000	404,000	17,000	475,000	55,379,100
August	89,008,000	89,008,000	56,872,100	8,800	450,000	404,000	34,000	400,000	58,168,900
September	78,767,000	78,767,000	53,326,300	29,300	500,000	404,000	2,000	400,000	54,661,600
October	89,488,000	89,488,000	57,340,800	-	500,000	404,000	8,000	425,000	58,677,800
November	73,343,000	73,343,000	62,633,905	-	300,000	405,000	3,000	425,000	63,766,905
December	70,662,000	70,662,000	46,833,632	-	300,000	405,000	63,000	425,000	48,026,632
Totals	947,209,000	947,209,000	644,160,882	213,800	4,970,000	4,850,000	206,000	5,150,000	
							UBUM Totals	15,176,000	

(D)	Apparent Losses (E)				Real Losses (F)		
Water Losses	Customer Meter Accuracy Loss	Systematic Data Handling Discrepancy	Unauthorized Consumption	Total Apparent Losses	Reported Breaks and Leaks	Unreported Loss	Total Real Losses
	Customer Meter Accuracy (99.5%)	Unbilled Consumption on Monthly Billing Report = 107,208. Used Default	TWDIS Default Value (.25%)		From City works	Water losses minus Total Apparent Losses minus Reported Breaks	Reported Breaks plus Unreported Loss
33,477,279	53,390	134,200	133,341	320,931		33,156,348	33,156,348
33,165,796	44,084	134,200	110,099	288,383		33,127,413	33,127,413
20,254,376	54,257	134,200	135,506	323,963		20,680,413	20,680,413
19,811,882	52,226	134,200	130,434	316,859		19,895,023	19,895,023
19,742,322	54,825	134,200	136,926	325,951		19,916,371	19,916,371
17,029,600	54,617	134,200	136,405	325,222		17,204,378	17,204,378
26,210,900	54,124	134,200	135,175	323,499		26,362,401	26,362,401
30,839,100	56,929	134,200	142,180	333,309		30,905,791	30,905,791
24,105,400	53,380	134,200	133,316	320,895		24,184,505	24,184,505
30,810,200	57,398	134,200	143,352	334,950		30,900,250	30,900,250
9,576,095	62,697	134,200	156,585	353,481		9,647,614	9,647,614
22,635,368	46,881	134,202	117,084	298,167		22,762,201	22,762,201
	644,806	1,610,402	1,610,402				



# Document Request for Validation

## Data Tracking

- Produced, Treated, Wholesale Water and Meter Accuracy
- Billed Meter and Customer Meter Accuracy**
- Billed Unmetered**
- Unbilled Metered
- Unbilled Unmetered
- Reported Breaks and Leaks

	Total System Input Volume (B)		Authorized Consumption (C)						
Values reported in Gallons	Water Produced	Corrected Input Volume	Billed Metered	Billed Unmetered	Unbilled Unmetered			Total Authorized Consumption	
	Operators Report	Production Meter Accuracy (100%)	LIC Monthly Billing Report	Bulk Sales	Total from City Use (Factor, Letter & Sweeper)	Hydrant Flushing	FD Use	Flushing w/Leak Repairs	
January	87,804,000	87,804,000	53,336,321	74,400	300,000	404,000	12,000	200,000	54,326,721
February	78,120,000	78,120,000	44,039,604	8,600	250,000	404,000	2,000	250,000	44,954,204
March	76,151,000	76,151,000	54,202,424	10,200	520,000	404,000	10,000	750,000	55,696,624
April	73,300,000	73,300,000	52,173,418	8,700	500,000	404,000	2,000	400,000	53,488,118
May	76,022,000	76,022,000	54,770,378	46,300	550,000	404,000	9,000	500,000	56,279,678
June	72,954,000	72,954,000	54,562,000	14,400	400,000	404,000	44,000	500,000	55,924,400
July	81,590,000	81,590,000	54,070,000	13,100	400,000	404,000	17,000	475,000	55,379,100
August	89,008,000	89,008,000	56,872,100	8,800	450,000	404,000	34,000	400,000	58,168,900
September	78,767,000	78,767,000	53,326,300	29,300	500,000	404,000	2,000	400,000	54,661,600
October	89,488,000	89,488,000	57,340,800	-	500,000	404,000	8,000	425,000	58,677,800
November	73,343,000	73,343,000	62,633,905	-	300,000	405,000	3,000	425,000	63,766,905
December	70,662,000	70,662,000	46,833,632	-	300,000	405,000	63,000	425,000	48,026,632
Totals	947,209,000	947,209,000	644,160,882	213,800	4,970,000	4,850,000	206,000	5,150,000	
							UBUM Totals	15,176,000	

(D)	Apparent Losses (E)				Real Losses (F)		
Water Losses	Customer Meter Accuracy Loss	Systematic Data Handling Discrepancy	Unauthorized Consumption	Total Apparent Losses	Reported Breaks and Leaks	Unreported Loss	Total Real Losses
	Customer Meter Accuracy (99.5%)	Unbilled Consumption on Monthly Billing Report = 107,208 Used Default	TvDB Default Value (.25%)		From City works	Water losses minus Total Apparent Losses minus Reported Breaks	Reported Breaks plus Unreported Loss
33,477,279	53,390	134,200	133,341	320,931		33,156,348	33,156,348
33,165,796	44,084	134,200	110,099	288,383		33,127,413	33,127,413
20,254,376	54,257	134,200	135,506	323,963		20,680,413	20,680,413
19,811,882	52,226	134,200	130,434	316,859		19,895,023	19,895,023
19,742,322	54,825	134,200	136,926	325,951		19,916,371	19,916,371
17,029,600	54,617	134,200	136,405	325,222		17,204,378	17,204,378
26,210,900	54,124	134,200	135,175	323,499		26,362,401	26,362,401
30,839,100	56,929	134,200	142,180	333,309		30,905,791	30,905,791
24,105,400	53,380	134,200	133,316	320,895		24,184,505	24,184,505
30,810,200	57,398	134,200	143,352	334,950		30,900,250	30,900,250
9,576,095	62,697	134,200	156,585	353,481		9,647,614	9,647,614
22,635,368	46,881	134,202	117,084	298,167		22,762,201	22,762,201
	644,806	1,610,402	1,610,402				



# Document Request for Validation

## Data Tracking

- Produced, Treated, Wholesale Water and Meter Accuracy
- Billed Meter and Customer Meter Accuracy
- Billed Unmetered
- Unbilled Metered
- Unbilled Unmetered
- Reported Breaks and Leaks

Values reported in Gallons	Total System Input Volume (B)		Authorized Consumption (C)						Total Authorized Consumption
	Water Produced	Corrected Input Volume	Billed Metered	Billed Unmetered	Unbilled Unmetered				
	Operators Report	Production Meter Accuracy (100%)	LID Monthly Billing Report	Bulk Sales	Total from City Use (Factor, Letter & Sweeper)	Hydrant Flushing	FD Use	Flushing w/Leak Repairs	
January	87,804,000	87,804,000	53,336,321	74,400	300,000	404,000	12,000	200,000	54,326,721
February	78,120,000	78,120,000	44,039,604	8,600	250,000	404,000	2,000	250,000	44,954,204
March	76,151,000	76,151,000	54,202,424	10,200	520,000	404,000	10,000	750,000	55,696,624
April	73,300,000	73,300,000	52,173,418	8,700	500,000	404,000	2,000	400,000	53,488,118
May	76,022,000	76,022,000	54,770,378	46,300	550,000	404,000	9,000	500,000	56,279,678
June	72,954,000	72,954,000	54,562,000	14,400	400,000	404,000	44,000	500,000	55,924,400
July	81,590,000	81,590,000	54,070,000	13,100	400,000	404,000	17,000	475,000	55,379,100
August	89,008,000	89,008,000	56,872,100	8,800	450,000	404,000	34,000	400,000	58,168,900
September	78,767,000	78,767,000	53,326,300	29,300	500,000	404,000	2,000	400,000	54,661,600
October	89,488,000	89,488,000	57,340,800	-	500,000	404,000	8,000	425,000	58,677,800
November	73,343,000	73,343,000	62,633,905	-	300,000	405,000	3,000	425,000	63,766,905
December	70,662,000	70,662,000	46,833,632	-	300,000	405,000	63,000	425,000	48,026,632
Totals	947,209,000	947,209,000	644,160,882	213,800	4,970,000	4,850,000	206,000	5,150,000	
							UBUM Totals	15,176,000	

Water Losses	Apparent Losses (E)				Real Losses (F)		
	Customer Meter Accuracy Loss	Systematic Data Handling Discrepancy	Unauthorized Consumption	Total Apparent Losses	Reported Breaks and Leaks	Unreported Loss	Total Real Losses
	Customer Meter Accuracy (99.5%)	Unbilled Consumption on Monthly Billing Report = 107,208 Used Default	TxDOT Default Value (.25%)		From City works	Water losses minus Total Apparent Losses minus Reported Breaks	Reported Breaks plus Unreported Loss
33,477,279	53,390	134,200	133,341	320,931		33,156,348	33,156,348
33,165,796	44,084	134,200	110,099	288,383		33,127,413	33,127,413
20,254,376	54,257	134,200	135,506	323,963		20,680,413	20,680,413
19,811,882	52,226	134,200	130,434	316,859		19,895,023	19,895,023
19,742,322	54,825	134,200	136,926	325,951		19,916,371	19,916,371
17,029,600	54,617	134,200	136,405	325,222		17,204,378	17,204,378
26,210,900	54,124	134,200	135,175	323,499		26,362,401	26,362,401
30,839,100	56,929	134,200	142,180	333,309		30,905,791	30,905,791
24,105,400	53,380	134,200	133,316	320,895		24,184,505	24,184,505
30,810,200	57,398	134,200	143,352	334,950		30,900,250	30,900,250
9,576,095	62,697	134,200	156,585	353,481		9,647,614	9,647,614
22,635,368	46,881	134,202	117,084	298,167		22,762,201	22,762,201
	644,806	1,610,402	1,610,402				



# Document Request for Validation

## Method of Calculation

- Average Operating Pressure
- Retail Price of Water
- Variable Production Cost of Water

### AOP

Explain how and where you are tracking your pressure and provide the calculation for the **Average Operating Pressure**.

### RPW

Provide how you calculated the **Retail Price of Water** entered in the WLA and provide the water rate sheet(s) that were utilized during the audit period.

### VPC

Provide how you calculated the **Variable Production Cost** and provide the electricity and chemical cost for the audit period.

Refer to the AWWA M36 manual for further guidance on calculation methods.





On time reporting when submitting a loan or when having a financial obligation

Early 😊

On Time 😊

Keeping Up to Date 😊

Delinquent 😞

1<sup>st</sup> Water Use Survey

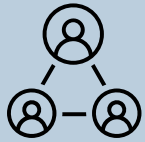
2<sup>nd</sup> Water Loss Audit

3<sup>rd</sup> Annual Report

4<sup>th</sup> Utility Profile

5<sup>th</sup> Water Conservation Plan  
(UP and WCP every 5 years)

Water Conservation Plan is required for entities applying for or currently receiving FINANCIAL ASSISTANCE of greater than \$500,000 from the TWDB.



## Resources and Contacts

New naming convention, WLA help document, troubleshooting negative numbers, water loss control planning, leak detection loan form, and more:

<http://www.twdb.texas.gov/conservation/resources/waterloss-resources.asp>

**Water Use Survey** - 512.463.7952

[waterusesurvey@twdb.texas.gov](mailto:waterusesurvey@twdb.texas.gov)

**Water Loss Audit** - 512.463.0987

[WLA-Group@twdb.texas.gov](mailto:WLA-Group@twdb.texas.gov)

**Water Conservation Team** -  
512.475.1639

[wcpteam@twdb.texas.gov](mailto:wcpteam@twdb.texas.gov)



All teams rely on each other, and water is no different. We are all on the team of water and must work together to be successful for the future of water for Texas.



Questions?

Presented by: Karen Sanders, Program Specialist III  
*Municipal Water Conservation*

