JUSTIN P. WILSON
Comptroller

JASON E. MUMPOWER
Chief of Staff

AGENDA
Water and Wastewater Financing Board
November 15, 2018
10:00 am

I. **Water Loss**
   a. Benton
   b. Bluff City
   c. Byrdstown
   d. Cowan
   e. Dowell Town Liberty
   f. Englewood
   g. Henning
   h. Parsons
   i. Selmer

Visitors to the Cordell Hull Building are required to pass through a metal detector and must present photo identification. Individuals with disabilities who wish to participate in this meeting or to review filings should contact the Office of Administration, Comptroller of the Treasury, to discuss any auxiliary aids or services need to facilitate such participation. Such contact may be in person or by writing, telephone or other means, and should be made prior to the scheduled meeting date to allow time to provide such aid or service. Contact the Office of the Comptroller (John Greer) for further information.

425 Fifth
Avenue
Nashville, TN
37243
Telephone (615) 747-5260
Utilities@cot.tn.gov

Benton

TENNESSEE COMPTROLLER OF THE TREASURY

JUSTIN P. WILSON
Comptroller

JASON E. MUMPOWER
Chief of Staff

September 12, 2018

The Honorable Jerry T. Stephens
City of Benton
6496 HWY 411 North
Benton, TN 37307-1010

Dear Mayor Stephens,

The Tennessee Comptroller of the Treasury has referred the City of Benton to the Water & Wastewater Financing Board (hereinafter "Board") pursuant to Tennessee Code Annotated § 68-221-1010(a) and for incorrectly filling out the AWWA Reporting Worksheet.

Please fill out the enclosed questionnaire, and a corrected AWWA Reporting Worksheet, and return it and all supporting documentation to our office no later than December 14, 2018. Please submit this to either utilities@cot.tn.gov, and/or the following mailing address:

Water & Wastewater Financing Board
ATTN: John Greer
Cordell Hull Building
425 Fifth Avenue North
Nashville, Tennessee 37243

While we recognize that this questionnaire may be difficult to fill out, it is necessary to determine how we can help you achieve long-term financial success. After we receive your information, we will decide whether it is necessary for the City to (1) meet with our staff or (2) go directly before the Board.

If you need further assistance or have any questions, please feel free to contact me at (615) 747-5260 or utilities@cot.tn.gov.

Sincerely,

John Greer
Technical Secretary

enclosure
cc (w/out encl.): Mr. Joe Jenkins

BENTON WATER WORKS
PO BOX 687
6496 HWY 411 NORTH
BENTON, TN. 37307
423-338-5733

October 23, 2018

Water & Wastewater Financing Board
ATT: John Greer
Cordell Hull Building
425 Fifth Avenue North
Nashville, TN 37243

Dear Mr. Greer,

We are replying to your letter on September 12, 2018 concerning our 2016-2017 AWWA Water Audit which was completed incorrectly.

Please be advised that the inaccuracy was on the Total Cost of Operating Water System. This was accidentally entered as $458.00 when it should have been $458,000.00. This caused our Non-revenue Water Real Losses on the Performance Indicator to be 7672%. After correction of the typo, it is now at 7.7%.

Please find attached the corrected Water Audit. TAUD will be coming to prepare our Audit every year in the future. Please let us know what other actions are required to properly resolve this issue.

If you have any questions, please call.

Sincerely,

Jerry T. Stephens
Mayor

Corrected Copy

AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0
American Water Works Association
Copyright © 2014, All Rights Reserved

Click to access definition
Click to add a comment

Water Audit Report for: Benton Waterworks (0000048)
Reporting Year: 2017 7/2016 - 6/2017

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: MILLION GALLONS (US) 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.

WATER SUPPLIED

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

					Master Meter and Supply Error Adjustments		
					Pcnt:	Value:	
Volume from own sources:	9	144.336	MG/Yr	3	1.00%		MG/Yr
Water imported:	n/a	0.000	MG/Yr				MG/Yr
Water exported:	n/a	0.000	MG/Yr				MG/Yr

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

WATER SUPPLIED: 142.907 MG/Yr

AUTHORIZED CONSUMPTION

Click here: for help using option buttons below

				Pcnt:	Value:	
Billed metered:	6	65.703	MG/Yr			
Billed unmetered:	n/a	0.000	MG/Yr			
Unbilled metered:	8	1.982	MG/Yr			
Unbilled unmetered:		1.786	MG/Yr	1.25%		MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

AUTHORIZED CONSUMPTION: 69.471 MG/Yr

Use buttons to select percentage of water supplied OR value

WATER LOSSES (Water Supplied - Authorized Consumption) 73.436 MG/Yr

Apparent Losses

				Pcnt:	Value:	
Unauthorized consumption:		0.357	MG/Yr	0.25%		MG/Yr

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

Customer metering inaccuracies:	8	2.274	MG/Yr	3.25%		MG/Yr
Systematic data handling errors:		0.164	MG/Yr	0.25%		MG/Yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 2.795 MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 70.640 MG/Yr

WATER LOSSES: 73.436 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 77.204 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	8	50.0	miles
Number of active AND inactive service connections:	8	1,066	
Service connection density:		21	conn./mile main

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line: (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: 7 75.0 psi

COST DATA

Total annual cost of operating water system:	8	$458,000	$/Year	
Customer retail unit cost (applied to Apparent Losses):	10	$6.01	$/1000 gallons (US)	
Variable production cost (applied to Real Losses):	10	$246.24	$/Million gallons	☐ Use Customer Retail Unit Cost to value real losses

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: Billed metered
2: Volume from own sources
3: Unauthorized consumption

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

Water Audit Report for: **Benton Waterworks (0000048)**
Reporting Year: **2017** **7/2016 - 6/2017**

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 81 out of 100 ***

System Attributes:

	Apparent Losses:	2.795	MG/Yr
+	Real Losses:	70.640	MG/Yr
=	**Water Losses:**	**73.436**	MG/Yr
?	Unavoidable Annual Real Losses (UARL):	See limits in definition	MG/Yr
	Annual cost of Apparent Losses:	$16,799	
	Annual cost of Real Losses:	$17,394	Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumpiton

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	54.0%	
	Non-revenue water as percent by cost of operating system:	7.7%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	7.18	gallons/connection/day
	Real Losses per service connection per day:	N/A	gallons/connection/day
	Real Losses per length of main per day*:	3,870.71	gallons/mile/day
	Real Losses per service connection per day per psi pressure:	N/A	gallons/connection/day/psi
	From Above, Real Losses = Current Annual Real Losses (CARL):	70.64	million gallons/year
?	Infrastructure Leakage Index (ILI) [CARL/UARL]:		

* 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: Water Balance

WAS v5.0

Water Audit Report for:	Benton Waterworks (0000048)	
Reporting Year:	2017	7/2016 - 6/2017
Data Validity Score:	81	

Own Sources (Adjusted for known errors) 142.907	Water Exported 0.000	Billed Water Exported			
	Water Supplied 142.907	Authorized Consumption 69.471	Billed Authorized Consumption 65.703	Billed Metered Consumption (water exported is removed) 65.703	Revenue Water 65.703
				Billed Unmetered Consumption 0.000	
			Unbilled Authorized Consumption 3.768	Unbilled Metered Consumption 1.982	Non-Revenue Water (NRW) 77.204
				Unbilled Unmetered Consumption 1.786	
		Water Losses 73.436	Apparent Losses 2.795	Unauthorized Consumption 0.357	
				Customer Metering Inaccuracies 2.274	
				Systematic Data Handling Errors 0.164	
Water Imported 0.000			Real Losses 70.640	Leakage on Transmission and/or Distribution Mains *Not broken down*	
				Leakage and Overflows at Utility's Storage Tanks *Not broken down*	
				Leakage on Service Connections *Not broken down*	

Bluff City

STATE OF TENNESSEE
Water & Wastewater Financing Board
Cordell Hull Building
425 Fifth Avenue North
Nashville, Tennessee 37243
Phone (615) 747-5260 Fax (615) 741-1551

January 18, 2018

Mayor Irene Wells
City of Bluff City
P.O. Box 70
Bluff City, TN 37618

Dear Mayor Wells:

The Bluff City Water System has been reported to the Water & Wastewater Financing Board (hereinafter "Board") for having excessive non-revenue water of 22.5%. This is above the maximum of 20% as set by the Board.

Please fill out the attached questionnaire and return it and all supporting documentation, as well as a detailed plan for lowering your non-revenue water, to our office no later than February 28, 2018. Please submit this to either utilities@cot.tn.gov, and/or the following mailing address:

Water and Wastewater Financing Board
ATTN: John Greer
Cordell Hull Building
425 Fifth Avenue North
Nashville, Tennessee 37243

While we recognize that this questionnaire may be difficult to fill out, it is necessary to determine how we can help you achieve long-term financial success. After we receive your information, we will decide whether it is necessary for the Town to (1) meet with our staff or (2) go directly before the Board.

If you need further assistance or have any questions, please feel free to contact me at (615) 747-5260 or utilities@cot.tn.gov.

Sincerely,

John Greer
Utilities Specialist

STATE OF TENNESSEE
Water & Wastewater Financing Board
Cordell Hull Building
425 Fifth Avenue North
Nashville, Tennessee 37243
Phone (615) 747-5260 Fax (615) 741-1551

January 18, 2018

Mayor Irene Wells
City of Bluff City
P.O. Box 70
Bluff City, TN 37618

Dear Mayor Wells:

The Bluff City Water and Sewer has been reported to the Water & Wastewater Financing Board (hereinafter "Board") for having a validity score of 70. This is below the minimum of 75 as set by the Board.

Please fill out the attached questionnaire and return it and all supporting documentation, as well as a detailed plan for raising your low validity score, to our office no later than February 28, 2018. Please submit this to either utilities@cot.tn.gov, and/or the following mailing address:

Water and Wastewater Financing Board
ATTN: John Greer
Cordell Hull Building
425 Fifth Avenue North
Nashville, Tennessee 37243

While we recognize that this questionnaire may be difficult to fill out, it is necessary to determine how we can help you achieve long-term financial success. After we receive your information, we will decide whether it is necessary for the Town to (1) meet with our staff or (2) go directly before the Board.

If you need further assistance or have any questions, please feel free to contact me at (615) 747-5260 or utilities@cot.tn.gov.

Sincerely,

John Greer
Utilities Specialist

City of Bluff City

4391 Bluff City Highway • Bluff City, TN 37618
Telephone: (423) 538-7144 • Fax: (423) 538-7138
Email: bluffcitycityof@aol.com

Mailing Address:
P.O. Box 70
Bluff City, Tennessee 37618

Tri-Cities TN/VA
All-America City
1999

February 3, 2018

John Greer
Utilities Specialist
State of Tennessee
Water & Wastewater Financing Board
Cordell Hull Building
425 Fifth Avenue North
Nashville, TN 37243

Dear John Greer:

Thank you for giving us additional time to respond to this survey by using TAUD we have made several changes and plan more in the future.

Bluff City Board and Alderman met April 3, 2018, and voted 5 to 1 to approve these recommendations that consultant/operator Teresa Nidiffer has provided in this letter to ensure Bluff City will be in compliance with the Annual Water Audit.

Addressing Bluff City Water completion of the Tennessee check list for Excessive Non-Revenue Water Loss Compliance.

Bluff City is also re-submitting the 2016/2017 AWWA Water Audit Report which is in full compliance since we have started doing additional meter calibrations, and replacements at our water treatment plant and distribution system. The 2017/2018 will also be in compliance since additional plans are to continue with by-annual calibrations and other recommended procedures to ensure Bluff City Validity score is above 80, and the excessive non-revenue water will be under 20%.

To the best of our abilities the following survey has been completed, if you have any additional questions please contact me at 423-538-7144, or bcwaterreport@gmail.com

Sincerely,

Irene Wells

Irene Wells, Mayor/City Manager

Lowering The City of Bluff City

Non-Revenue Water Loss:

We will use acoustic leak detection to identify and account for non-revenue water, and purchase additional components to assist us in finding leaks before they get larger. We will attend additional training classes to educate our staff on new practices and techniques in finding leaks.

Perform District Metering Analysis

We will hire a company to provide flow data by mag meters to determine how much water is going into our distribution system. In addition, we will do night monitoring on lines going into subdivisions where we can get specific data for that area. This will also be used in other parts of our distribution area. Once the district metering analysis has been conducted and the analytics application has ranked the various districts according to severity, we can prioritize where to look for leaks.

Distribution System Pressure

We will try to maintain specific pressures so during the night we can reduce the amount of water loss by reducing pressure in our system.

Your Name

I	**PART 1: Authorized Consumption**
1	All customers and businesses including city hall, city garage, parks, and police department are metered using badger auto read metering system and billed monthly. The water treatment plant is not metered or billed for in-house water since the in-house water pressure is less than 20 psi and unable to meter. We also have less than 20 free customers that we meter, but are not billed for water use; In the past an agreement was made and place on their deed that we can do nothing about customer getting free water for lines going across property.
	a. Only Water Treatment Plant
	b. This is the only unmetered location we have – due to the very low pressure and limited use; at this location a meter is not an option.
2	The distribution / utility staff has a log sheet for each hydrant or blow off they calculate the flow, and when cleaning sewers, they log the amount of the tank they fill each time and date. (This will be monitored more closely) At the water treatment plant backwash water is calculated and logged on the monthly worksheet. In the plant water will start being estimated upon flow and time used.
	a. Water Treatment Plant
	b. This is the only operation that is not metered due to such low pressure, but water is calculated based upon pump size and time used.
3	No Industrial Users
	a. We have a large flea market, and School that does have metered fire lines.
4	The only source we know of is the Fire Department, a letter is sent every year that requires them to send us the usage monthly. They have started sending monthly data on usage.
	a. Unmetered users unknown

1	Program is in the process of being drafted
	Inspecting, Calibrating, Repair, and Replacement of meter will be based upon calibration results and age. All meters must be within the 90% + range or the meter will be rebuilt or replaced. Leaks will be pinned on a system map with the exact location of the address and if more than 6 leaks in a specific area appears the line will be placed on a replacement list. The City will then work on appropriate funds to replace the line. All galvanized lines will also be placed upon a list for replacement. When a leak is on a galvanized lateral the crew will replace immediately, if a service line is galvanized the line will be placed on the replacement list and funds will be appropriated for the replacement with the priority being on replacement.
2	We use Badger displacement meters ½, ¾, and larger meters including compound meters for larger users.
	a. The customer normally requests larger meters. We are in the process of developing more detailed requirements for meter and sizing for customers and business.
3	When locked a meter cannot be turned on. When an address is off more than 2 months we will take the meter out and use a plug to secure the connection, and lock the valve. Also a more defined policy is being drafted.
4	In the process of developing a program. The existing meters are approximately 8 years old and are replaced when they are not reading. We plan to start sending 24 meters off each year for accuracy testing if below 90% they will be replaced. We will start replacing 75 -100 meters a year just due to age alone.
	a. Age, low flow or excessively high flow, and repair history.
	b. 24 meters a year will be sent for testing, if results indicate a problem the meter will be replaced.
5	This is based upon the billing records, and rechecks the percentage is an estimate.
6	We do have a program for unauthorized consumption for customers turning meters back on without authorization.
	a. Unauthorized consumption due to meter tampering, or steeling water through other means are prosecuted by legal means.

III	**PART 3: Real Losses**
1	Leak Detection Program Most of the staff have been trained in leak detection. We zone leak detect starting from the water plant or tank and go to the end of our system. We also have specific areas that give us more problems and we leak detect those areas more often. In addition when we have calls about a leak we take the equipment out to pin point that leak if it can be found.
2	YES
3	Heath Leak Detection Equipment – Ultrasonic device protected in a case the staff takes out in the distribution system to listen for leaks.
4	NO
5	YES
	a. 1/3 or more yearly
6	We will hire a third party to leak detect our system every five years. Currently NO, but we have had other utility personnel experienced in leak detection to help us, and train us. Also Health Consultants has given training to our men.
7	We have specific locations with pressure gauges in meter boxes we verify the pressure and recheck those places to ensure the system is not losing additional water. We also use water billing to determine high usage on the free metered customers. We also check and monitor tank levels by SCADA and water plant / purchase water
8	NO, but we can isolate some specific location to ensure leak location.
	A. We will contract once every 2-3 years for a private company to check the flow using updated monitoring equipment in specific areas to determine the amount of water being delivered to customer's vs the customer meters during that period. If we have funds we will purchase our own metering device and do more often.
	b. The meter at the water plant will be calibrated two times a year, this alone will raise our validity score to mid-80's.
9	No specific metering location, but we are in the process of developing a program to install a pit over the water mains in specific areas to determine high flows during the night. We will be able to measure flow without digging enabling us to install a mag meter at any time.
10	Cost may not always be justified, but Bluff City plans to repair all leaks.
11	Number of leaks last year were 27 leaks found and repaired.
	a. Staff will start estimating each leak based upon time reported to time repaired.
12	Maintenance to water mains – currently we have an on-going flushing program, and some older mains are in the process of being replaced.
13	We are developing a plan currently as stated in item #part II, 1
14	Mains are Cast Iron, Ductile, and PVC, percentage is not available. Approximately 40% have Galvanized 60% Plastic service lines. And 70% are approximately 40 - 60 years old.
15	We are starting a valve exercising program, 95% of valves have been located on our map.
16	No Tank overflows, all SCADA Controlled, and checked multiple times a day.
17	Bluff City will show the local Fire Department how to operate hydrants to prevent surges.
18	Yes we have pressure zones, we use a pressure regulating valve to assist us with the zone difference since the water treatment plant is higher than our tank.
19	Just maintaining the tank level.
20	No only a pressure regulating valve (not reducing valve) this is a special device.

IV	**PART 4: System Data**
1	Operating pressure was based upon numerous pressure gauges in system and averaged.
V	**PART 5: Cost Data**
1	Yes, Wastewater is provided and based upon water usage.
2	Yes, Includes water and sewer charges
VI	**PART 6: Policy**
1	Yes, we have a written adjustment policy
	a. Staff follows policy as close as possible.
2	Policy to notify customer about leaks are when the meter is re-read due to high consumption and the reading is correct the meter reader will place a tag on the door indicating a leak and to contact us.
3	We do have a policy for water tampering and theft – Prosecuted by legal means if found.
4	We are in the process of writing a policy for Non Revenue Water Loss and a copy will be sent to your office when completed.
VII	**PART 7: Education**
1	We are in discussions about how to educate our customers and what incentive if any to give. We will address leaks and customer assistance on our website.
	a. Starting to educate all our employees on water loss and water theft.
2	Employees are asked when a leak is found to report it to city hall. We are addressing unauthorized use and what to do about reporting it.
	a. No incentive to report unauthorized use, or leaks in system. It is part of their job to report leaks and unauthorized use.

AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0

? Click to access definition
+ Click to add a comment

Water Audit Report for: Bluff City (0000061)
Reporting Year: 2016/2017 7/2016 - 6/2017

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: MILLION GALLONS (US) 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' ---------->

Master Meter and Supply Error Adjustments

WATER SUPPLIED				Pcnt:	Value:	
Volume from own sources:	9	89.100	MG/Yr	0.00%		MG/Yr
Water imported:	7	15.600	MG/Yr	1.25%		MG/Yr
Water exported:	n/a	0.000	MG/Yr			MG/Yr
WATER SUPPLIED:		**104.507**	MG/Yr			

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

AUTHORIZED CONSUMPTION			
Billed metered:	9	62.330	MG/Yr
Billed unmetered:	n/a	0.000	MG/Yr
Unbilled metered:	9	5.400	MG/Yr
Unbilled unmetered:		1.306	MG/Yr
AUTHORIZED CONSUMPTION:		**69.036**	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

Click here: ? for help using option buttons below

Pcnt: 1.25% Value: MG/Yr

Use buttons to select percentage of water supplied OR value

WATER LOSSES (Water Supplied - Authorized Consumption)				Pcnt:	Value:	
		35.471	MG/Yr			
Apparent Losses						
Unauthorized consumption:		0.261	MG/Yr	0.25%		MG/Yr
Customer metering inaccuracies:	9	1.031	MG/Yr	1.50%		MG/Yr
Systematic data handling errors:		0.156	MG/Yr	0.25%		MG/Yr
Apparent Losses:		**1.449**	MG/Yr			

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

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Real Losses (Current Annual Real Losses or CARL)		
Real Losses = Water Losses - Apparent Losses:	**34.023**	MG/Yr
WATER LOSSES:	**35.471**	MG/Yr

NON-REVENUE WATER		
NON-REVENUE WATER:	**42.177**	MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA				
Length of mains:	8	34.1	miles	
Number of active AND inactive service connections:	7	1,186		
Service connection density:		35	conn./mile main	
Are customer meters typically located at the curbstop or property line?		No		
Average length of customer service line:	8	20.0	ft	(length of service line, beyond the property boundary, that is the responsibility of the utility)
Average operating pressure:	7	70.0	psi	

COST DATA				
Total annual cost of operating water system:	9	$417,609	$/Year	
Customer retail unit cost (applied to Apparent Losses):	9	$21.99	$/1000 gallons (US)	
Variable production cost (applied to Real Losses):	8	$1,183.73	$/Million gallons	☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 83 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

STATE OF TENNESSEE
Water & Wastewater Financing Board
Cordell Hull Building
425 Fifth Avenue North
Nashville, Tennessee 37243
Phone (615) 747-5260 Fax (615) 741-1551

January 18, 2018

Mayor Irene Wells
City of Bluff City
P.O. Box 70
Bluff City, TN 37618

Dear Mayor Wells:

The Bluff City Water System has been reported to the Water & Wastewater Financing Board (hereinafter "Board") for having excessive non-revenue water of 22.5%. This is above the maximum of 20% as set by the Board.

Please fill out the attached questionnaire and return it and all supporting documentation, as well as a detailed plan for lowering your non-revenue water, to our office no later than February 28, 2018. Please submit this to either utilities@cot.tn.gov, and/or the following mailing address:

Water and Wastewater Financing Board
ATTN: John Greer
Cordell Hull Building
425 Fifth Avenue North
Nashville, Tennessee 37243

While we recognize that this questionnaire may be difficult to fill out, it is necessary to determine how we can help you achieve long-term financial success. After we receive your information, we will decide whether it is necessary for the Town to (1) meet with our staff or (2) go directly before the Board.

If you need further assistance or have any questions, please feel free to contact me at (615) 747-5260 or utilities@cot.tn.gov.

Sincerely,

STATE OF TENNESSEE
WATER AND WASTEWATER FINANCING BOARD

John Greer
Utilities Specialist

Cordell Hull Building
425 Fifth Avenue North
Nashville, Tennessee 37243
Phone (615) 747-5260 Fax (615) 741-1551

_____ I.I _____

tility Today's Date

_____

Tennessee Check List for Excessive Non-Revenue Water Loss Compliance

Part 1: Authorized Consumption

1. Describe your method for metering or otherwise measuring delivery of water to and billing for use by general government operations such as City Hall, Parks, Community Centers, etc.
    a. Are any such users unmetered?
    b. If so, provide a list of such users and how you determine which users are metered and which are not.
2. How do you account for water used by the Utility's water and/or sewer operations (ñcilities use, water line flushing, sewer line cleaning, etc.)?
    a. Are any such uses unmetered?
    b. If so, provide a list of such uses and how you determine which are metered and which are not.
3. Do you have any major industñ[users in your system and what percentage of the water sold are they purchasing?
    a. Do they have fre lines and are they metered?
4. How do you account ñr water used by other unmetered users such as the Sfreet / Highway Deparfrnent, fre departments, etc.?
    a. Provide a list of unmetered users whose consumption you monitor.

Part 2: Apparent Losses

STATE OF TENNESSEE

WATER AND WASTEWATER FINANCING BOARD

1.Describe your program inspecting, testing, calibrating and rebuilding / replacing 2inch and larger water meters.

2. What types of meters (e.g., compound, turbine, etc.) are used for larger customers?
    a. How do you determine which meter is the correct application?
3. How do you ensure that meter bypasses are not opened by the customer?
4. Describe your small meter (< 2-inch) replacement proyam including the threshold (e.g., age, gallons of water metered, etc.) at which the meter is replaced.
    a. How did you determine the threshold?
5. How did you determine the 'Customer meteñg friaccuracies" in the water audit?
6. Do you have a program to hispect for unauthorized consumption?
    a. What are the consequences if unauthorized consumption is discovered?

Cordell Hull Building
425 Fifth Avenue North
Nashville, Tennessee 37243
Phone (615) 747-5260 Fax (615) 741-1551

Part 3: Real Losses

1.Describe your leak detection progam.

2. Do you have or have access to leak detection equipment?
3. Describe the leak detection equipment that your Utility owns and/or rents on a routine basis and how it is employed detection of leaks.
4. Do you search for leaks at night when there is little fraffic or small household usage?
5. Are you performing periodic leak detection surveys with leak detection equipment?
    a. If so, what percentage of the system is sounded each year?
6. Do you use a third-party leak detection firm?
7. Describe your methods for monitoring the water system for leaks.
8. Is your system "zoned" to and isolate water loss?
    a. Describe how that has been used to identify potential water loss.
9. Have you established any permanent District Metered Areas to monitor minimum night flows in these discrete zones to identify areas of leakage?
10. Is the cost to repair the leak justified based on the amount of water being lost?
11. 11. How many leaks have been repaired within the past year?
    a. What is the estimated water loss from those leaks?
12. What if any water main maintenance are you performing?
13. Do you have a plan/criteria for replacing water mains?
14. What are the general ages and composition of the mains and services in your system?

15. Are the system valves being exercised and have they all been located for repair . emergencies?
16. Do you have tank overflows as a part of the operation of the tanks or are they SCADA confrolled?
17. What methods have you implemented for controlling system pressure surges?
18. Are there pressure zones within your system?
    a. Are they based on topogaphy?
19. Are you doing anything to manage the pressure in your system?
20. Do you have any pressure reducing valves within the distribution system?

Part 4.• System Data

1. How did you determine average operating pressure of the distribution system for the water audit?

Cordell Hull Building
425 Fifth Avenue North
Nashville, Tennessee 37248
Phone (615) 747-5260 Fax (615) 741-1551

Part 5: Cost Data

1. Do you provide, and bill, wastewater based on water consumption?
2. Does the customer retail unit cost in the water audit include charges for water and sewer?

Part 6: Policies

1. Do you have a written policy for billing adjustments?
    a. Is the policy followed correctly by all levels of staff?
2. What is your policy ñr noti$'ing customers they have a leak?
3. Do you have a policy to prosecute for unauthorized consumption such as water theft or meter tampering/damage?
4. Has your utility adopted an overall Non-Revenue Water Policy?

Part 7.• Education

1. By what means are customers encouraged to report leaks and educated in water loss and its hnpact on the Utility?

a. What methods are available to customers for reporting leaks, unatúhorized water use, etc.?

2. How have you educated your employees (both Water system and other City / Utility departments) on the of non-revenue water on the Utility's operations?

a. By what means are employees provided to report leaks, unauthorized water use,

b. Are there any incentives for the reporting of unauthorized water use?

Byrdstown

TENNESSEE COMPTROLLER OF THE TREASURY

JUSTIN P. WILSON
Comptroller

JASON E. MUMPOWER
Chief of Staff

MEMORANDUM

TO: Water and Wastewater Financing Board

FROM: Division of Local Government Audit - Municipalities and Utility Districts

SUBJECT: Division of Local Government Audit Referral Pursuant to TCA 68-221-1010(d)

In accordance with the requirements of Tennessee Code Annotated, we are hereby filing the following vendor with the board(s) noted above.

Record Number	Vendor Name	Component Unit
1618	Byrdstown	☐

Report Year	Utility Type	Date Received	Date Referred	Reviewer	Report Status
6/30/2017	Water and Sewer	2/1/2018	2/13/2018	TMH	Not Yet Reviewed

FINANCIAL DISTRESS

☐ **A** **Has deficit net position for the fiscal year ended.**

☐ **B** **Decrease in net position for two consecutive years.**

Fiscal Year End	Decrease in NP

☐ **C** **Is in default on certain outstanding debt.**

Holders of the Bonds, etc.	Principal	Interest

WATER LOSS

☑ **D** **Water Loss Referral**

AWWA water audit info

Water Loss Schedule - Status	AWWA Excel File
☐	☐

☐ **Validity score below the amount established by the board** — Validity Score: 82

☑ **Excessive non-revenue water % as established by the board** — Non-Rev Water %: 58.8

(Non-Revenue Water as Percent by Cost of Operating System)

Comments:

Form Revised March 2017

TOWN OF BYRDSTOWN

Home of Dale Hollow Lake

109 West Main Street • P.O. Box 325
Byrdstown, Tennessee 38549
Phone: (931) 864-6215 • Fax: (931-864-6120 • www.townofbyrdstown.com

June 25,2018

John Greer
Water & Wastewater Financing Board
Cordell Hull Building
425 Fifth Avenue North
Nashville Tn 37243

John Greer,

The Town of Byrdstown upon receipt of your letter Dated April 10,2018 which reported we had an excessive non-revenue of 58.8%, upon further inspection of our report we have found some calculation errors in the way the AWWA software tallied the input. With the assistance of Johnny Walker of TAUD (Formerly of TDEC) the errors were found and corrected. The new figures are 12.2% for non-revenue water.

I have attached the original report and the revised report. We apologize for the mistake in reporting of our water loss.

Thank You and your staff for their assistance.

Sincerely,

Malcolm "Buster" Harmon

Water Plant / Water loss Superintendent

Sincerely,

Sam Gibson

Byrdstown Mayor

AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0

Click to access definition
Click to add a comment

Water Audit Report for: Byrdstown Water System (0000088)
Reporting Year: 2017 7/2016 - 6/2017

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: MILLION GALLONS (US) 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.

Master Meter and Supply Error Adjustments

		Pcnt:	Value:	
Volume from own sources:	9	308.815	MG/Yr	MG/Yr
Water imported:	n/a		MG/Yr	MG/Yr
Water exported:	9	49.176	MG/Yr	MG/Yr

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

WATER SUPPLIED: 259.639 MG/Yr

AUTHORIZED CONSUMPTION

Click here: for help using option buttons below

				Pcnt:	Value:	
Billed metered:	8	138.234	MG/Yr			
Billed unmetered:	8	0.200	MG/Yr			
Unbilled metered:	9	0.300	MG/Yr			
Unbilled unmetered:	9	0.010	MG/Yr		0.010	MG/Yr

Use buttons to select percentage of water supplied OR value

AUTHORIZED CONSUMPTION: 138.744 MG/Yr

WATER LOSSES (Water Supplied - Authorized Consumption) 120.895 MG/Yr

Apparent Losses

			Pcnt:	Value:	
Unauthorized consumption:		0.649	MG/Yr	0.25%	MG/Yr

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

Customer metering inaccuracies:	5	8.843	MG/Yr	6.00%	MG/Yr
Systematic data handling errors:	7	0.010	MG/Yr	0.010	MG/Yr

Apparent Losses: 9.502 MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 111.393 MG/Yr

WATER LOSSES: 120.895 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 121.205 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	6	200.0	miles
Number of active AND inactive service connections:	6	3,000	
Service connection density:		15	conn./mile main

Are customer meters typically located at the curbstop or property line? yes

Average length of customer service line: (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:	8	100.0	psi

COST DATA

Total annual cost of operating water system:	8	$1,353,030	$/Year	
Customer retail unit cost (applied to Apparent Losses):	8	$10.94	$/1000 gallons (US)	
Variable production cost (applied to Real Losses):	8	$552.14	$/Million gallons	☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 80 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: Customer metering inaccuracies
2: Volume from own sources
3: Unauthorized consumption

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

Water Audit Report for: Byrdstown Water System (0000088)
Reporting Year: 2017 | 7/2016 - 6/2017

***** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 80 out of 100 *****

System Attributes:

	Apparent Losses:	9.502	MG/Yr
+	Real Losses:	111.393	MG/Yr
=	**Water Losses:**	120.895	MG/Yr
?	Unavoidable Annual Real Losses (UARL):	55.92	MG/Yr
	Annual cost of Apparent Losses:	$103,949	
	Annual cost of Real Losses:	$61,505	Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumpiton

Performance Indicators:

Financial:

Non-revenue water as percent by volume of Water Supplied:	46.7%	
Non-revenue water as percent by cost of operating system:	12.2%	Real Losses valued at Variable Production Cost

Operational Efficiency:

Apparent Losses per service connection per day:	8.68	gallons/connection/day
Real Losses per service connection per day:	N/A	gallons/connection/day
Real Losses per length of main per day*:	1,525.94	gallons/mile/day
Real Losses per service connection per day per psi pressure:	N/A	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL):	111.39	million gallons/year
? Infrastructure Leakage Index (ILI) [CARL/UARL]:	1.99	

* 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:
Reporting Worksheet

Click to access definition
Click to add a comment

Water Audit Report for: Town of Byrdstown water Dept (0000088)
Reporting Year: 2016-2017 7/2016 - 6/2017

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: MILLION GALLONS (US) 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.

WATER SUPPLIED

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

				Master Meter and Supply Error Adjustments Pcnt:	Value:	
Volume from own sources:	10	308.800	MG/Yr			MG/Yr
Water imported:			MG/Yr			MG/Yr
Water exported:	10	35.200	MG/Yr			MG/Yr
WATER SUPPLIED:		273.600	MG/Yr			

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

AUTHORIZED CONSUMPTION

Click here: for help using option buttons below

				Pcnt:	Value:	
Billed metered:	8	138.200	MG/Yr			
Billed unmetered:			MG/Yr			
Unbilled metered:	10	3.300	MG/Yr			
Unbilled unmetered:		3.420	MG/Yr	1.25%		MG/Yr
AUTHORIZED CONSUMPTION:		144.920	MG/Yr			

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

Use buttons to select percentage of water supplied OR value

WATER LOSSES (Water Supplied - Authorized Consumption)

128.680 MG/Yr

Apparent Losses

			Pcnt:	Value:	
Unauthorized consumption:	0.684	MG/Yr	0.25%		MG/Yr
Customer metering inaccuracies:	1.429	MG/Yr	1.00%		MG/Yr
Systematic data handling errors:	0.346	MG/Yr	0.25%		MG/Yr
Apparent Losses:	2.459	MG/Yr			

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

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses:	126.221	MG/Yr
WATER LOSSES:	128.680	MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER:	135.400	MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	9	200.0	miles
Number of active AND inactive service connections:	9	3,000	
Service connection density:		15	conn./mile main
Are customer meters typically located at the curbstop or property line?		No	
Average length of customer service line:	8	20.0	ft
Average operating pressure:	8	100.0	psi

(length of service line, beyond the property boundary, that is the responsibility of the utility)

COST DATA

Total annual cost of operating water system:	8	$170,508	$/Year
Customer retail unit cost (applied to Apparent Losses):	8	$10.94	$/1000 gallons (US)
Variable production cost (applied to Real Losses):	8	$552.16	$/Million gallons

☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 82 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: Customer metering inaccuracies
2: Unauthorized consumption
3: Systematic data handling errors

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

Water Audit Report for: Town of Byrdstown water Dept (0000088)
Reporting Year: 2016-2017 | 7/2016 - 6/2017

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 82 out of 100 ***

System Attributes:

	Apparent Losses:	2.459	MG/Yr
+	Real Losses:	126.221	MG/Yr
=	**Water Losses:**	128.680	MG/Yr
?	Unavoidable Annual Real Losses (UARL):	59.03	MG/Yr
	Annual cost of Apparent Losses:	$26,899	
	Annual cost of Real Losses:	$69,694	Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumpiton

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	49.5%	
	Non-revenue water as percent by cost of operating system:	58.8%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	2.25	gallons/connection/day
	Real Losses per service connection per day:	N/A	gallons/connection/day
	Real Losses per length of main per day*:	1,729.06	gallons/mile/day
	Real Losses per service connection per day per psi pressure:	N/A	gallons/connection/day/psi
	From Above, Real Losses = Current Annual Real Losses (CARL):	126.22	million gallons/year
?	Infrastructure Leakage Index (ILI) [CARL/UARL]:	2.14	

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

Cowan

TENNESSEE COMPTROLLER OF THE TREASURY

JUSTIN P. WILSON
Comptroller

JASON E. MUMPOWER
Chief of Staff

MEMORANDUM

TO: Water and Wastewater Financing Board

FROM: Division of Local Government Audit - Municipalities and Utility Districts

SUBJECT: Division of Local Government Audit Referral Pursuant to TCA 68-221-1010(d)

In accordance with the requirements of Tennessee Code Annotated, we are hereby filing the following vendor with the board(s) noted above.

Record Number	Vendor Name	Component Unit
1646	Cowan	☐

Report Year	Utility Type	Date Received	Date Referred	Reviewer	Report Status
6/30/2017	Water and Sewer	2/21/2018	2/23/2018	mlb	Not Yet Reviewed

FINANCIAL DISTRESS

☐ **A** **Has deficit net position for the fiscal year ended.**

☐ **B** **Decrease in net position for two consecutive years.**

Fiscal Year End	Decrease in NP

☐ **C** **Is in default on certain outstanding debt.**

Holders of the Bonds, etc.	Principal	Interest

WATER LOSS

☑ **D** **Water Loss Referral**

AWWA water audit info

Water Loss Schedule - Status	AWWA Excel File
☐	☐

☐ **Validity score below the amount established by the board** — Validity Score: 78

☑ **Excessive non-revenue water % as established by the board** — Non-Rev Water %: 22.3

(Non-Revenue Water as Percent by Cost of Operating System)

Comments:

Form Revised March 2017

TENNESSEE COMPTROLLER OF THE TREASURY

JUSTIN P. WILSON
Comptroller

JASON E. MUMPOWER
Chief of Staff

April 10, 2018

The Honorable Joyce Brown
City of Cowan
301 East Cumberland
Cowan, TN 37318

Dear Mayor Brown,

The City of Cowan has been reported to the Water & Wastewater Financing Board (hereinafter "Board") for having excessive non-revenue water of 22.3%. This is above the maximum of 20% as set by the Board.

Please fill out the attached questionnaire and return it and all supporting documentation, as well as a detailed plan for lowering your non-revenue water, to our office no later than **June 15, 2018.** Please submit this to either utilities@cot.tn.gov, and/or the following mailing address:

Water & Wastewater Financing Board
Cordell Hull Building
425 Fifth Avenue North
Nashville, Tennessee 37243

While we recognize that this questionnaire may be difficult to fill out, it is necessary to determine how we can help you achieve long-term financial success. After we receive your information, we will decide whether it is necessary for the City to (1) meet with our staff or (2) go directly before the Board.

If you need further assistance or have any questions, please feel free to contact me at (615) 747-5260 or utilities@cot.tn.gov.

Sincerely,

John Greer
Technical Secretary

enclosure
cc (w/out encl.): Mr. Kenny Henshaw

CITY OF COWAN

P.O. Box 338
Cowan, TN 37318
Office: (931) 967-7318
Fax: (931) 967-7990
ashley.recorder@gmail.com

May 16, 2018

Water & Wastewater Financing Board
Cordell Hull Building
425 Fifth Avenue North
Nashville, TN 37243

RE: Excessive Non-Revenue Water

To whom it may concern,

The City of Cowan is working relentlessly to lower our non-revenue water. In 2016 The City of Cowan received a CDBG Grant and at the completion of the project the City of Cowan installed 6,702 linear feet of 6-inch water line, 4-inch water line, and service line. The City of Cowan is currently working on a CDBG Grant to replace 5,300 linear feet of 6-inch water line in the older section of the water distribution system.

Attached you will find the answers to the questionnaire. Please feel free to contact me with any questions.

Thank you,

Lori Ashley
City Recorder

TENNESSEE COMPTROLLER OF THE TREASURY

JUSTIN P. WILSON
Comptroller

JASON E. MUMPOWER
Chief of Staff

Cowan Board Public Utility
May 15, 2018 Today's Date

Tennessee Check List for Excessive Non-Revenue Water Loss Compliance

Part 1: Authorized Consumption

1. Describe your method for metering or otherwise measuring delivery of water to and billing for use by general government operations such as City Hall, Parks, Community Centers, etc.
    a. Are any such users unmetered?
    b. If so, provide a list of such users and how you determine which users are metered and which are not.
2. How do you account for water used by the Utility's water and/or sewer operations (facilities use, water line flushing, sewer line cleaning, etc.)?
    a. Are any such uses unmetered?
    b. If so, provide a list of such uses and how you determine which are metered and which are not.
3. Do you have any major industrial users in your system and what percentage of the water sold are they purchasing?
    a. Do they have fire lines and are they metered?
4. How do you account for water used by other unmetered users such as the Street / Highway Department, fire departments, etc.?
    a. Provide a list of unmetered users whose consumption you monitor.

Part 2: Apparent Losses

1. Describe your program for inspecting, testing, calibrating and rebuilding / replacing 2- inch and larger water meters.
2. What types of meters (e.g., compound, turbine, etc.) are used for larger customers?
    a. How do you determine which meter is the correct application?
3. How do you ensure that meter bypasses are not opened by the customer?
4. Describe your small meter (< 2-inch) replacement program including the threshold (e.g., age, gallons of water metered, etc.) at which the meter is replaced.
    a. How did you determine the threshold?
5. How did you determine the "Customer metering inaccuracies" in the water audit?
6. Do you have a program to inspect for unauthorized consumption?
    a. What are the consequences if unauthorized consumption is discovered?

Part 3: Real Losses

1. Describe your leak detection program.
2. Do you have or have access to leak detection equipment?
3. Describe the leak detection equipment that your Utility owns and/or rents on a routine basis and how it is employed for detection of leaks.
4. Do you search for leaks at night when there is little traffic or small household usage?
5. Are you performing periodic leak detection surveys with leak detection equipment?
    a. If so, what percentage of the system is sounded each year?
6. Do you use a third-party leak detection firm?
7. Describe your methods for monitoring the water system for leaks.
8. Is your system "zoned" to identify and isolate water loss?
    a. Describe how that has been used to identify potential water loss.
9. Have you established any permanent District Metered Areas to monitor minimum night flows in these discrete zones to identify areas of leakage?
10. Is the cost to repair the leak justified based on the amount of water being lost?
11. How many leaks have been repaired within the past year?
    a. What is the estimated water loss from those leaks?
12. What if any water main maintenance are you performing?
13. Do you have a plan/criteria for replacing water mains?
14. What are the general ages and composition of the mains and services in your system?
15. Are the system valves being exercised and have they all been located for repair emergencies?
16. Do you have tank overflows as a part of the operation of the tanks or are they SCADA controlled?
17. What methods have you implemented for controlling system pressure surges?
18. Are there pressure zones within your system?
    a. Are they based on topography?
19. Are you doing anything to manage the pressure in your system?
20. Do you have any pressure reducing valves within the distribution system?

Part 4: System Data

1. How did you determine average operating pressure of the distribution system for the water audit?

Part 5: Cost Data

1. Do you provide, and bill, wastewater based on water consumption?
2. Does the customer retail unit cost in the water audit include charges for water and sewer?

Part 6: Policies

1. Do you have a written policy for billing adjustments?
    a. Is the policy followed correctly by all levels of staff?
2. What is your policy for notifying customers they have a leak?

CITY OF COWAN

P.O. Box 338
Cowan, TN 37318
Office: (931) 967-7318
Fax: (931) 967-7990
ashley.recorder@gmail.com

May 15, 2018

RE: Tennessee Check List for Excessive Non-Revenue Water Loss Compliance

Part 1: Authorized Consumption

1. All government operations water is metered, and they receive a bill just as any household.
    a. No.
2. Water line flushing, cleaning is accounted for by a daily log.
    a. No.
3. No, we do not have any major industrial users in Cowan currently.
4. The Cowan Street Department receives a bill for metered use. The Cowan Volunteer Fire Department turns all unmetered water use into the water plant.

Part 2: Apparent Losses

1. The Cowan Board of Public Utilities has only eight, 2-inch meters in the system. Four have been replaced in the past three years.
2. Turbines are used for larger customers.
    a. We have a meter sales representative visit the City of Cowan, he suggests the best meter for the customer.
3. Our employees manually check the meters monthly.
4. We replace all meters that read one million or if we find a problem with the meter.
5. Water loss spreadsheets are completed monthly.
6. Employees manually check the meters monthly, the water clerk questions any discrepancies and the meters are re-checked.
    a. The Police Department is called to a residence that has proven unauthorized consumption.

Part 3: Real Losses

1. The entire water system is checked quarterly for leak detection.
2. The City owns leak detection equipment.

3. A professional leak detector was purchased by the City of Cowan in 2015 from Dan Weaver out of Nashville, training was provided to the Water Superintendent.
4. We do not leak detect at night unless we are detecting on the State Highway that runs through the center of town.
5. We complete a water loss spreadsheet monthly to keep up with yearly loss.
6. We do not use a third-party leak detection company, we own our leak detection equipment.
7. The meters are read manually each month and the employee checks for visible leaks. Every quarter the Water Supervisor accompanies the employees on their monthly meter reads and listens to each meter. If a main line leak is heard, the Water Superintendent goes to the valves and up the main to find the leak.
8. Only small parts of the system are zoned to identify and isolate water loss. The Water Superintendent goes to the main valve during low usage times and shuts down the main valve. He explains that once you start to open the main valve, if there is a main valve leak you can hear water pinching under the valve with the leak detector.
9. Most areas have new P.V.C in place.
10. No, water is only pumped seven to eight hours per day. The City cannot afford to tear up a road to repair a small leak. There are only twenty-eight gallons being lost per minute within the entire system. There are many old water lines that the City has plans to replace in the future.
11. There have been forty-seven leaks repaired in the past year.
    a. Those leaks accounted for approximately 12% of water loss.
12. All valves are maintenance at least one time per year.
13. Yes, the City has replaced 12,000 feet of lines in the last year. We are currently working on another 6,000 feet of lines.
14. The mains are from 1 year old to 70 years old. They are P.V.C and cast iron.
15. All valves are exercised and located to repair emergencies.
16. We do have tank overflows from time to time, they are SCADA controlled.
17. None, the system is all gravity fed.
18. There are no pressure zones within our system.
19. We are only pushing 100 psi on mains and 55 psi on services.
20. Pressure is not a problem for the City of Cowan.

Part 4: System Data

1. Gauges are used to determine the average operating pressure of the distribution system.

Part 5: Cost Data

1. We provide, and bill wastewater based on water consumption.
2. The customer retail unit cost in the water audit includes charges for water and sewer.

Part 6: Policies

1. We have a written policy to adjust the sewer, adjustments are not done for water.
    a. The policy is followed correctly by all levels of staff.
2. Door knockers are left for any household with a high reading or a turn when meters are read monthly.

Dowelltown-Liberty Waterworks

TENNESSEE
COMPTROLLER
OF THE TREASURY

JUSTIN P. WILSON
Comptroller

JASON E. MUMPOWER
Chief of Staff

April 16, 2018

Mr. Danny Driver, Chairman
Dowellton-Liberty Waterworks
P.O. Box 40
Dowellton, TN 37059

Dear Chairman Driver,

Dowellton-Liberty Waterworks' water loss case was heard at the March 29, 2018. Water and Wastewater Financing Board (hereafter the "Board") meeting. At this meeting, the Board took no action. Dowellton-Liberty Waterworks will remain under Board oversight as future audits are received.

If you need further assistance or have any questions, please feel free to contact me at (615) 747-5260 or utilities@cot.tn.gov.

Sincerely,

John Greer
Technical Secretary

Cc: Cynthia Agee

BEFORE THE TENNESSEE WATER AND WASTEWATER FINANCING BOARD

IN THE MATTER OF:

T.C.A. § 68-221-1010—WATER LOSS
DOWELLTOWN-LIBERTY WATER SYSTEM

ORDER

Pursuant to T.C.A. § 68-221-1010, the Tennessee Water and Wastewater Financing Board (the "Board") on March 29, 2018 reviewed the water loss of the Dowelltown-Liberty Water System (the "System"). Based on the System's excessive water loss, the Board directs the System to comply with the following:

1. The System shall identify a mechanism for preventing tank overflows.
2. The System shall provide an update to Water and Wastewater Financing Board staff with an implemented or proposed plan of action by August 31, 2018.

Entered this 17th day of April 2018.

Ann V. Butterworth, Chair
Water and Wastewater Financing Board

DOWELLTOWN-LIBERTY
WATER SYSTEM

July 7, 2018

Re: Plan of Action

To Whom It May Concern:

The Dowelltown-Liberty Water System had Thomas Controls to come in on May 1, 2018 and check the cutoff valve and overflow mechanism at tank. They made necessary repairs and are in good working condition. The system also has hired additional help to start locating all lines and checking for leaks. They will also be checking all cutoff valves in the system and repairing if needed.

Sincerely,

Cynthia Agee

Cynthia Agee
Secretary

Englewood

TENNESSEE COMPTROLLER OF THE TREASURY

JUSTIN P. WILSON
Comptroller

JASON E. MUMPOWER
Chief of Staff

April 10, 2018

The Honorable James Cox
Town of Englewood
111 So. Niota Road
Englewood, TN 37329

Dear Mayor Cox,

The Town of Englewood has been reported to the Water & Wastewater Financing Board (hereinafter "Board") for having excessive non-revenue water of 25.1%. This is above the maximum of 20% as set by the Board.

Please provide a written update on the Town's plan to reduce excessive non-revenue water, with any necessary supporting documentation, to our office no later than **June 15, 2018.** Please submit this to either utilities@cot.tn.gov, and/or the following mailing address:

Water & Wastewater Financing Board
Cordell Hull Building
425 Fifth Avenue North
Nashville, Tennessee 37243

After we receive your information, we will decide whether it is necessary for the Town to (1) meet with our staff or (2) go directly before the Board.

If you need further assistance or have any questions, please feel free to contact me at (615) 747-5260 or utilities@cot.tn.gov.

Sincerely,

John Greer
Technical Secretary

cc: Ms. Brittany Freeman

John Greer

Office of the Comptroller of the Treasury

Water and Wastewater Financing Board

Cordell Hull Building

425 Fifth Avenue

Nashville, TN 37243

Dear Mr. Greer,

In response to your letter of April 17, 2018 the town of Englewood would like to update you on our efforts to reduce our non-revenue water loss to below the required 20%.

In late March 2018 the town hired a new clerk who began using the AWWA water loss reporting software and is currently tracking the fiscal year 2017-2018 water loss with this program. In addition to this our water plant and water distribution personnel have implemented a leak detection program to help locate leaks and to thwart the possible theft of water from hydrants. We are closely monitoring our storage facilities to detect any unusual activity or an unusually longer than normal fill time of our tanks. We will then began to search our system to locate any leaks or other distribution system issues. We have also began working with our fire department to eliminate any misuse of water from hydrants.

It is with these changes and upgrades to our recording and detection systems that the Town of Englewood hopes and expects to have our water loss under the required 20% during our next water audit. Please find enclosed documentation of our efforts to date to overcome this issue with our non-revenue water loss.

Sincerely,

Brittany Freeman

Town Manager, Town of Englewood

Englewood Utility District
Schedule of Unaccounted For Water
July, 2017 to June, 2018

(All amounts in gallons)

A	**Water Treated and Purchased**			
B	Water Pumped (potable)		32,139,000	
C	Water Purchased		44,244,000	
D	**Total Water Treated and Purchased (Sum Lines B and C)**			76,383,000
E	**Accounted for Water:**			
F	Water Sold		47,261,700	
G	Metered for Consumption (in house usage)		13,665,060	
H	Fire Department(s) Usage		145,000	
I	Flushing		2,866,100	
J	Tank Cleaning/Filling		241,000	
K	Street Cleaning		0	
L	Bulk Sales		0	
M	Water Bill Adjustments	(+/-)	0	
N	**Total Accounted for Water (Sum Lines F thru M)**			64,178,860
O	**Unaccounted for Water (Line D minus Line N)**			12,204,140
P	**Percent Unaccounted for Water (Line O divided by Line D times 100)**			15.978%

Q Other (explain) See Below

Explain Other:

All amounts included in this schedule are supported by documentation on file at the water system. If no support is on file for a line item or if line item is not applicable, a "0" is shown.

Englewood Utility District 2017-2018 Water Loss Report

	Etowah Purchased	Englewood Made	Etowah Statistical	Englewood Statistical	Englewood WP	Englewood SP	Etowah Loss	Etowah Flush/Tank	Englewood Loss	Englewood Flush / tank	Etowah Fire Dept	EWD Fire Dept	EWD Pool	EWD CON	Total
July	4307000	4203000	1275100	3524400	915000	391000	40000	0	0	0	0	60000	101560	5200	6307060
August	4244000	3793000	1423600	3648700	915000	392000	0	12000	60000	0	0	8000	0	5200	6464500
September	3998000	3223000	1412900	3837300	940000	412000	0	0	25000	0	0	12500	0	6000	6645700
October	4675000	2731000	1270100	3234600	1380000	348000	0	12000	110000	0	0	10000	0	4400	6369100
November	4142000	2965000	1427800	3440700	1400000	431000	0	0	10000	0	0	95000	0	2900	6807400
December	4066000	3309000	1255300	3102800	2020000	299000	0	0	100	0	0	85000	0	0	6762200
January	5602000	3499000	1416000	3696700	540000	445000	45000		360000	30000	0	15000	0	0	6547700
February	3986000	3053000	1284400	3226500	127000	559000	0	0	40000	0	0	5000	0	0	5241900
March	4842000	2634000	1248600	3035300	380000	342000	0	0	231900	30000	0	0	276000	0	5543800
April	4382000	2729000	1182900	3318000	1080000	510000	50000	23000	90000	45000	0	0	473000	4300	6776200
May															0
June															0
TOTALS	44244000	32139000	13196700	34065000	9697000	4129000	135000	47000	927000	105000	0	290500	850560	28000	139853760

	Expense	Expense	ET PERC	EW PERC	%			MADE/PUR	SMFLF/T	SOLD	MF.CONSUMP	FD	LOSS	Flush/Tank	TOTALS
July	13,868.22	15,233.29	5.22	2.37	7.60	3.80	July	8510000	6352260	4799500	1472760	0	40000	40000	6352260
August	13,671.66	17,279.95	5.38	2.49	7.87	3.94	August	8037000	6472500	5072300	1320200	8000	72000	0	6472500
September	12,904.14	14,682.71	4.86	2.29	7.15	3.57	September	7221000	6658200	5250200	1370500	12500	25000	0	6658200
October	15,016.38	18,066.03	6.73	2.69	9.43	4.71	October	7406000	6379100	4504700	1742400	10000	122000	0	6379100
November	13,353.42	24,904.67	5.03	3.88	8.91	4.46	November	7107000	6902400	4868500	1928900	95000	10000	0	6902400
December	13,116.30	16,144.09	4.94	2.52	7.46	3.73	December	7375000	6847200	4358100	2404000	85000	100	0	6847200
January	17,908.62	20,489.78	6.75	3.19	9.94	4.97	January	9101000	6637700	5112700	1000000	15000	435000	75000	6637700
February	12,866.70	19,233.29	4.85	3.00	7.84	3.92	February	7039000	5246900	4510900	691000	5000	40000	0	5246900
March	15,537.42	14,922.97	5.85	2.33	8.18	4.09	March	7476000	5578100	4283900	1002300	0	261900	30000	5578100
April	14,102.22	22,607.00	5.31	3.52	8.83	4.42	April	7111000	6839900	4500900	2063000	0	208000	68000	6839900
May			-	-	-	-	May	0	0	0	0	0	0	0	0
June			-	-	-	-	June	0	0	0	0	0	0	0	0
	142,345.08	183,563.78	37.51	30.00	83.20	41.60	TOTALS	76383000	63913260	47261700	14995060	290500	1214000	152000	63914260

"NOTE"

TO GET THE WATER COST

12468740

16%

Henning

STATE OF TENNESSEE
Water & Wastewater Financing Board
Cordell Hull Building
425 Fifth Avenue North
Nashville, Tennessee 37243
Phone (615) 747-5260 Fax (615) 741-1551

January 18, 2018

The Honorable Baris Douglas
Town of Henning
260 North Main Street
Henning, TN 38041

Dear Mayor Douglas,

The Town of Henning has been reported to the Water & Wastewater Financing Board (hereinafter "Board") for having excessive non-revenue water of 78.1%. This is above the maximum of 20% as set by the Board.

Please update the attached questionnaire and return it and all supporting documentation, as well as an updated plan for lowering your non-revenue water, to our office no later than February 28, 2018. Please submit this to either utilities@cot.tn.gov, and/or the following mailing address:

Water and Wastewater Financing Board
ATTN: John Greer
Cordell Hull Building
425 Fifth Avenue North
Nashville, Tennessee 37243

While we recognize that this questionnaire may be difficult to fill out, it is necessary to determine how we can help you achieve long-term financial success. After we receive your information, we will decide whether it is necessary for the Town to (1) meet with our staff or (2) go directly before the Board.

If you need further assistance or have any questions, please feel free to contact me at (615) 747-5260 or utilities@cot.tn.gov.

Sincerely,

John Greer
Utilities Specialist

Baris Douglas
P.O. Box 488
Henning, TN
38041

MEMPHIS TN 380
16 APR 2018 PM 2 L

TN Dept. of Env. & Conservation

APR 16 2018

Division of Water Resources

State of TN Wastewater
Cordell Hull Bldg.
425 5th Ave North
Nashville, TN 37243

37243-

Part 1: Authorized Consumption:

1. Described your method for metering or otherwise measuring delivery of water to and billing for use general government operations such as City Hall, Parks, Community Centers, etc.
   A. Are any such users unmetered? All city functions are metered, they are read every month. There are no unmetered city properties. The town's general fund pays the water department for usage.

2. How do you account for water used by the Utility's water and or sewer operations (facilities use, water line flushing, sewer line cleaning, etc.?

A. Currently, the sewer plant is not being used. There is no meter at the sewer plant. At this time the town keeps dates on when a line or hydrant is flushed along with chlorine volumes, but no volume estimates are calculated.

3. Do you have any major industrial users in your system and what percentage of the water sold are they purchasing? We have one factory which use 20% of water generated by the system.
   Do they have fire lines and are they metered? They have a fire line and it is not metered. They have 2 2-inch lines for restrooms which are metered. The factory has a 10-inch line for supplying the sprinkler system that is not metered.
4. How do you account for water used by other unmetered users such as the Street, Highway Department, fire departments? The fire department sends us a report of a fire and it includes an estimate on how many gallons they use.

Part 2: Apparent Losses:

1. Describe your program for inspecting, testing, calibrating, and rebuilding/ replacing 2-inch and larger water meters. We do not have a program for 2" meters.
2. What types of meters (e.g., compound, turbine, etc.) are used for larger customers? How do you determine which meter is the correct

application? We use Zenner meters. Residential customers have 5/8-inch meters. Commercial customers have 2-inch meters (V-F Image Wear, Center Point Apartments, Choctaw ball field, Choctaw Recreational Center).

3. How do you ensure that meter bypasses are not opened by the customer? The Town do not use locking bypass water meters.
4. Describe your small meter (<2-inch) replacement program including the threshold (e.g. age, gallons of water metered, etc.) at which the meter is replaced. How did you determine the threshold? We currently don't have a meter replacement program for our <2" meters.
5. How did you determine the "Customer metering inaccuracies" in the water audit? We use the AWWA default value as provided in the software.
6. Do you have a program to inspect for unauthorized consumption? What are the consequences if unauthorized consumption is discovered? We do not have a program requiring inspection but when found we have an ordinance on how to deal with the theft of service (attach ordinance language).

Part 3: Real Losses

1. Describe your leak detection program? We do not have a program
2. Do you have or have access to leak detection equipment? We do not have any city owned leak equipment
3. Describe the leak detection equipment that your Utility owns and/or rents on a routine basis and how it is employed for detection of leaks. We do not have any city owned leak equipment
4. Do you search for leaks at night when there is little traffic or small household usage? No
5. Are you performing periodic leak detection surveys with leak detection equipment? If so, what percentage of the system is sounded each year? No
6. Do you use a third-party leak firm? No
7. Describe your methods for monitoring the water system for leaks. Currently as meters are read, the meter reader checks for observable leaks.

8. Is your system "zoned" to identify and isolate water loss? No
9. Have you established any permanent District Metered Areas to monitor minimum night flows in these discrete zones to identify areas of leakage? No
10. Is the cost to repair the leak justified based on the amount of water being lost? No
11. How many leaks have been repaired within the past year? The Town has repaired about 60 water leaks. What is the estimated water loss from those leaks?
    a. The estimated water loss is about 50,000 gallons of water.
12. What if any water main maintenance are you performing? None
13. Do you have a plan/criterion for replacing water mains? No at the present time. In 2016, we replaced 5 miles of water mains. 130 Service lines were replaced in 2016.
14. What are the general ages and composition of the mains and services in your system? The general age is about 15 years old.
15. Are the system valves being exercised and have they all been located for repair emergencies? Yes
16. Do you have tank overflows as a part of the operation of the tanks or are they SCADA controlled? Out tanks or SCADA controls due pressure control
17. What methods have you implemented for controlling system pressure surges? None
18. Are there pressure zones within your system? Are they based on topography? None
19. Are you doing anything to manage the pressure in your system? Our pressure is determined either by high service pumps being on or pressure from other 2 tanks when the pumps are off
20. Do you have any pressure reducing valves within the distribution system? We have 4 RP devices serving individual customers.

Part 4: System Data

1. How did you determine average operating pressure of the distribution system for the water audit? Service lines average 35-60 lbs. system pressure

Part 5: Cost Data

1. Do you provide, and bill, wastewater based on water consumption? Yes
2. Does the customer retail unit cost in the water audit include charges for water and sewer? yes

Part 6: Policies

1. Do you have a written policy for billing adjustments? Yes
2. What is your policy for notifying customers they have a leak? Yes
3. Do you have a policy to prosecute for unauthorized consumption such as water theft or meter tampering/damage? Yes
4. Has your utility adopted an overall Non-Revenue Water Policy? No

Part 7: Education

1. By what means are customers encouraged to report leaks and educated water loss and its impact on the Utility? What methods are available to customers for reporting leaks? We do not have an education program, they can call city hall about leaks and unauthorized leaks
2. How have you educated employees (both Water System and other City/ Utility departments) on the impact of non-revenue water on the Utility's operations? By what means are employees provided to report leaks, unauthorized water use, etc. Are there any incentives for the reporting of unauthorized water use? We haven't yet

Parsons

STATE OF TENNESSEE
Water & Wastewater Financing Board
Cordell Hull Building
425 Fifth Avenue North
Nashville, Tennessee 37243
Phone (615) 747-5260 Fax (615) 741-1551

January 19, 2018

Lee Villaflor, Utilities Manager
Parsons Utility System
P.O. Box 128
Parsons, TN 38363

Dear Mr. Villaflor:

The Parsons Utility System has been reported to the Water & Wastewater Financing Board (hereinafter "Board") for having excessive non-revenue water of 22.4%. This is above the maximum of 20% as set by the Board.

Please fill out the attached questionnaire and return it and all supporting documentation, as well as a detailed plan for lowering your non-revenue water, to our office no later than February 28, 2018. Please submit this to either utilities@cot.tn.gov, and/or the following mailing address:

Water and Wastewater Financing Board
ATTN: John Greer
Cordell Hull Building
425 Fifth Avenue North
Nashville, Tennessee 37243

While we recognize that this questionnaire may be difficult to fill out, it is necessary to determine how we can help you achieve long-term financial success. After we receive your information, we will decide whether it is necessary for the City to (1) meet with our staff or (2) go directly before the Board.

If you need further assistance or have any questions, please feel free to contact me at (615) 747-5260 or utilities@cot.tn.gov.

Sincerely,

John Greer
Utilities Specialist

Cc: Mayor Tim D. Boaz

CITY OF PARSONS

February 8, 2018

John Greer, Utilities Specialist
Cordell Hull Building
425 Fifth Avenue North
Nashville, Tennessee 37243

Dear Mr. Greer,

Lee Villaflor, City of Parsons Utilities Director, along with Tony Wyatt, Tennessee Association of Utility Districts, has performed an extensive review of the required 2017 AWWA Water Audit and found imprecise data entered in multiple cells. The City of Parsons would like for you to review the attached correct audit and relieve the water department from it's current status of having excessive non-revenue water. We apologize for any inconvenience that this may cause.

If you need further assistance or have any questions, please feel free to contact me at (731) 847-6358 or admin@cityofparsons.com or Lee Villaflor at utility@cityofparsons.com

Sincerely,

Tim D. Boaz
City of Parsons, Mayor

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0

? Click to access definition
+ Click to add a comment

Water Audit Report for: City of Parsons (0000541)
Reporting Year: 2016-2017 | 7/2016 - 6/2017

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: MILLION GALLONS (US) 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.

Master Meter and Supply Error Adjustments

WATER SUPPLIED

<---------- Enter grading in column 'E' and 'J' ----------> Pcnt: Value:

Volume from own sources:	9	361.766	MG/Yr	9			MG/Yr
Water imported:	n/a	0.000	MG/Yr				MG/Yr
Water exported:	9	158.680	MG/Yr	9	-2.00%		MG/Yr

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

WATER SUPPLIED: 199.848 MG/Yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

				Pcnt:	Value:	
Billed metered:	9	109.782	MG/Yr			
Billed unmetered:	n/a		MG/Yr			
Unbilled metered:	9	1.355	MG/Yr			
Unbilled unmetered:		2.498	MG/Yr	1.25%		MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

Use buttons to select percentage of water supplied OR value

AUTHORIZED CONSUMPTION: 113.635 MG/Yr

WATER LOSSES (Water Supplied - Authorized Consumption)

86.213 MG/Yr

Apparent Losses

				Pcnt:	Value:	
Unauthorized consumption:		0.500	MG/Yr	0.25%		MG/Yr

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

Customer metering inaccuracies:	7	2.268	MG/Yr	2.00%		MG/Yr
Systematic data handling errors:		0.274	MG/Yr	0.25%		MG/Yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 3.042 MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 83.170 MG/Yr

WATER LOSSES: 86.213 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 90.066 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	9	70.0	miles
Number of active AND inactive service connections:	9	1,850	
Service connection density:		26	conn./mile main

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line: (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: 8 60.0 psi

COST DATA

Total annual cost of operating water system:	9	$773,000	$/Year	
Customer retail unit cost (applied to Apparent Losses):	9	$9.81	$/1000 gallons (US)	
Variable production cost (applied to Real Losses):	9	$549.89	$/Million gallons	☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 84 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: Unauthorized consumption
2: Systematic data handling errors
3: Volume from own sources

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

Water Audit Report for: City of Parsons (0000541)
Reporting Year: 2016-2017 | 7/2016 - 6/2017

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 84 out of 100 ***

System Attributes:

	Apparent Losses:	3.042	MG/Yr
+	Real Losses:	83.170	MG/Yr
=	**Water Losses:**	**86.213**	MG/Yr
?	Unavoidable Annual Real Losses (UARL):	14.37	MG/Yr
	Annual cost of Apparent Losses:	$29,844	
	Annual cost of Real Losses:	$45,735	Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumpiton

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	45.1%	
	Non-revenue water as percent by cost of operating system:	10.1%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	4.51	gallons/connection/day
	Real Losses per service connection per day:	N/A	gallons/connection/day
	Real Losses per length of main per day*:	3,255.20	gallons/mile/day
	Real Losses per service connection per day per psi pressure:	N/A	gallons/connection/day/psi
	From Above, Real Losses = Current Annual Real Losses (CARL):	83.17	million gallons/year
?	Infrastructure Leakage Index (ILI) [CARL/UARL]:	5.79	

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

Selmer

TENNESSEE COMPTROLLER OF THE TREASURY

JUSTIN P. WILSON
Comptroller

JASON E. MUMPOWER
Chief of Staff

April 10, 2018

The Honorable John Smith
Town of Selmer
144 North Second Street
Selmer, TN 38375

Dear Mayor Smith,

The Town of Selmer has been reported to the Water & Wastewater Financing Board (hereinafter "Board") for having a validity score of 69. This is below the minimum of 80 as set by the Board.

Please fill out the attached questionnaire and return it and all supporting documentation, as well as a detailed plan for raising your validity score, to our office no later than June 15, 2018. Please submit this to either utilities@cot.tn.gov, and/or the following mailing address:

Water & Wastewater Financing Board
Cordell Hull Building
425 Fifth Avenue North
Nashville, Tennessee 37243

While we recognize that this questionnaire may be difficult to fill out, it is necessary to determine how we can help you achieve long-term financial success. After we receive your information, we will decide whether it is necessary for the Town to (1) meet with our staff or (2) go directly before the Board.

If you need further assistance or have any questions, please feel free to contact me at (615) 747-5260 or utilities@cot.tn.gov.

Sincerely,

John Greer
Technical Secretary

enclosure
cc (w/out encl.): Mr. Richard Ashe

TENNESSEE COMPTROLLER OF THE TREASURY

JUSTIN P. WILSON
Comptroller

JASON E. MUMPOWER
Chief of Staff

April 10, 2018

The Honorable John Smith
Town of Selmer
144 North Second Street
Selmer, TN 38375

Dear Mayor Smith,

The Town of Selmer has been reported to the Water & Wastewater Financing Board (hereinafter "Board") for having a validity score of 69. This is below the minimum of 80 as set by the Board.

Please fill out the attached questionnaire and return it and all supporting documentation, as well as a detailed plan for raising your validity score, to our office no later than June 15, 2018. Please submit this to either utilities@cot.tn.gov, and/or the following mailing address:

Water & Wastewater Financing Board
Cordell Hull Building
425 Fifth Avenue North
Nashville, Tennessee 37243

While we recognize that this questionnaire may be difficult to fill out, it is necessary to determine how we can help you achieve long-term financial success. After we receive your information, we will decide whether it is necessary for the Town to (1) meet with our staff or (2) go directly before the Board.

If you need further assistance or have any questions, please feel free to contact me at (615) 747-5260 or utilities@cot.tn.gov.

Sincerely,

John Greer
Technical Secretary

enclosure
cc (w/out encl.): Mr. Richard Ashe

STATE OF TENNESSEE
WATER AND WASTEWATER FINANCING BOARD
Cordell Hull Building
425 Fifth Avenue
Nashville, Tennessee 37243
Phone (615) 747-5260 Fax (615) 741-1551

Selmer Utility Division

Today's Date: May 21, 2018

Tennessee Check List for Water Audit Data Validity Score Compliance

Part 1: Water Supplied

Volume from own sources

Do you produce your own water? **Yes** If yes, then answer the following questions. If no, then proceed to **Water imported.**

1. Is the water supplied into your distribution system from your own sources 100% metered? **Yes**
2. List type of each source meter. **We have three treatment plants and each plant has a turbine meter.**
3. When was the last time a comparative flow test was conducted on each source meter via a clear well drop test or with another calibrated meter? **January 2018**
    a. Do you have records of the last accuracy test? **Yes**
4. At what frequency are the source meters tested for accuracy? **Annually, however it was overlooked in 2017 leading to the low validity score.**
5. How often are electronic calibrations of related instrumentation conducted (4-20mA signal, etc.)? **Annually**
6. How many source meters tested outside of +/- 6% accuracy in last test? **One, this meter was replaced.**
7. How many source meters tested outside of +/- 3% accuracy in last test? **One**

Volume from own sources master meter and supply error adjustment

1. How often is production meter data recorded? **Daily**
2. How often is meter data reviewed and adjusted if inaccuracies are found? **Monthly**
3. Are tank/storage level variations calculated and employed when determining "Water Supplied" component? **No**
    a. If yes, how often?
    b. If yes, is it a manual process or automated via SCADA?

Water imported

Do you purchase water from a neighboring water utility? **No** If yes, then answer the following questions. If no, then proceed to **Water exported**.

1. Is the water supplied into your distribution system from the neighboring water utility 100% metered?

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2. List type of each import meter
3. When was the last time a comparative flow test was conducted on each import meter?
    a. Do you have records of the last accuracy test?
4. At what frequency are the import meters tested for accuracy?
5. How often is electronic calibrations of related instrumentation conducted (4-20mA signal, etc.)?
6. How many import meters tested outside of +/- 6% accuracy in last test?
7. How many import meters tested outside of +/- 3% accuracy in last test?

Water imported master meter and supply error adjustments

1. How often is import meter data recorded?
    a. Is this a manual process or automated via SCADA?
2. How often is meter data reviewed and adjusted if inaccuracies are found?

Water exported

Do you sell water to a neighboring water utility? **Yes** If yes, then answer the following questions. If no, then proceed to **Billed metered.**

1. Is the water supplied to the neighboring water utility 100% metered? **Yes**
2. List type of each export meter. **We sell to two utilities through five turbine meters.**
3. When was the last time a comparative flow test was conducted on each export meter? **The meters have not been tested but are relatively new meters.**
    a. Do you have records of the last accuracy test? **N/A**
4. At what frequency are the export meters tested for accuracy? **We are in the process of scheduling accuracy testing and will conduct it annually in the future.**
5. How often is electronic calibrations of related instrumentation conducted (4-20mA signal, etc.)? **N/A**
6. How many export meters tested outside of +/- 6% accuracy in last test? **N/A**
7. How many export meters tested outside of +/- 3% accuracy in last test? **N/A**

Water export master meter and supply error adjustments

1. How often is export meter data recorded? **Monthly**
2. Is this a manual process or automated via SCADA? **Manually using AMR**
3. How often is meter data reviewed and adjusted if inaccuracies are found? **Adjustments are made when inaccuracies are found.**

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Part 2: Authorized Consumption

Billed metered

1. Are your billing records computerized? **Yes**
2. Do you manually read your meters or do you use AMR or AMI? **AMR**
3. Do you have a meter accuracy testing and replacement program? **Yes**
    a. If yes, please describe the program including how you determine which meters to test and/or replace. **Currently all meters are less than six years old and are replaced if they stop working.**

Unbilled metered

1. If you produce water, is water plant usage supplied from location before or after finished water meter? **Before**
    a. If after finished water meter, is plant usage metered?
        i. If yes, is it billed?
2. If you also operate a wastewater plant, is the potable water metered? **Yes**
    a. Is it billed? **No**
3. Do you have any other accounts that are metered but not billed? **Yes**
    a. If yes, please list. **Utility Office, utility shop and lift stations.**

Customer metering inaccuracies

Is your entire customer population unmetered? **No** If no, then answer the following questions. If yes, then proceed to **Systematic data handling errors.**

1. Are customer meters 2" and larger routinely tested for accuracy? **No**
    a. If so, how often?
2. Do you routinely test the accuracy of older or high usage residential meters? **All meters are six years old or newer**
    a. If so, what percentage of your meters are tested annually? **None presently**
3. Describe how your meter records are maintained and what type of information is contained in the records? **They are maintained electronically in the billing system. It contains meter size, installation date and serial number.**
4. How did you determine the overall percent or value for the inaccuracies? **Age of meters**

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Systematic data handling errors

Did you use the default option? **Yes** If no, then answer the following questions. If yes, then proceed to **Average operating pressure.**

1. Are zero consumption accounts flagged and investigated?
    a. If yes, how often?
2. Are the effects of misreads and billing adjustments on measured consumption well understood?

Part 3: System Data

Average operating pressure

1. How did you determine the average operating pressure of the distribution system? **Experience in the field having taken pressure readings in various places such as customer plumbing and fire hydrants.**

Failing to have our master meters checked for accuracy in 2017 led to the low validity score. We have already had the master meters tested and plan to have them tested annually. We are also scheduling to have our export meters tested annually. This should also help raise the validity score.

Water Plants Master Meter

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Accuracy Assurance Program

Test Data Sheet

Participant: Selmer, TN WTP/WWTP | Contact:

Location: Selmer, TN | 52293

Equipment / Type / ID	As Found	Pass	As Left	Correction factor	Pass	Nominal Value	Standard / ID
Hach 1720E Turb 08120030368l	20.705 NTU	✓	19.937 NTU	—	✓	20 NTU	Formazin # A7250 G=.78
Sensus Propeller Flowmeter 04078	701 GPM	✓	701 GPM	CHD	✓	700.7 GPM	Eastech # 403034
Hach CL17 CL2 08120030328G	.77 mg/L	✓	—	—	–	.80 mg/L	Hach Pocket II #10050E 148797
" " "	.77 mg/L	✓	.77 mg/L	—	–	.81 mg/L	" "
Hach CL17 CL2 08120030328	2.25 mg/L	X	—	—	–	1.9 mg/L	" "
" " "	1.60 mg/L	✓	1.49 mg/L	—	✓	1.49 mg/L	" "
Hach 1720E Turb 08120003 3684	20.69 NTU	✓	19.914 NTU	—	✓	20 NTU	Formazin # A7250 G=.69
Hach 1720E Turb 08100012 2013	PM	-	19.950 NTU	—	✓	20 NTU	" " G=.68
Sensus Propeller Flowmeter 54607	1184 GPM	X	1184 GPM	Purdy Rd.	X	813 GPM	Eastech # 403034
Sparling FT194 Magmeter F-1515-1	328 GPM	✓	328 GPM	Lab	✓	312 GPM	Eastech # 403034
Sparling Figure Magmeter M191823015	1187 GPM	✓	1187 GPM	—	✓	1212 GPM	" "
Magnetrol 345 Flowmeter 1120801001	678.6 GPM	✓	678.6 GPM	—	✓	671.8 GPM	Dry Measurment #LX011
" " "	7.4 in	✓	7.4 in	—	✓	7.5 in	Primary Device
Hach CL17 CL2 08120030376O	2.62 mg/L	✓	2.80 mg/L	—	✓	2.8 mg/L	Hach Pocket II #10050E 148797

✓ = in tolerance X = out of tolerance OP/CK = operations check (###) = Calculated Value PM = Preventative Maintenance

Technician: Jason McMurtry Test Kit: JM-LX010

Signature: Date: 1-10-18 Page 3 of 3

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Accuracy Assurance Program

Test Data Sheet

Participant: Selmer, TN WTP/WWTP Contact: Richard Ashe 52293

Location: Selmer, TN

Equipment / Type / ID	As Found	Pass	As Left	Correction factor	Pass	Nominal Value	Standard / ID
Sparling F9194 Propeller Flow F-1515-1	328 GPM	✓	328 GPM	—	✓	342 GPM	Eastech 403034

✓ = In tolerance X = out of tolerance OP/CK = operations check (###) = Calculated Value PM = Preventative Maintenance

Technician: Jason McMurray

Signature:

Test Kit: JM-LX010

Date: 1-9-18

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