AGENDA

Water and Wastewater Financing Board

May 14, 2015
10:00 am
Room 31, Legislative Plaza
301 Sixth Avenue North
(6th Avenue between Charlotte Avenue and Union Street)
Nashville, Tennessee

Call to Order

Approval of Minutes

Conflict of Interest

Cases:	City of Germantown	Shelby County
	City of Gleason	Weakley County
	Town of Newbern	Dyer County
	City of Niota	McMinn County
	Town of Vonore	Blount/Monroe
	City of Westmoreland	Sumner County
Status	Town of Brighton	Tipton County
	Town of Obion	Obion County
Cases – Water loss:	City of Bells	Crockett County
	Town of Byrdstown	Pickett County
	Town of Cumberland Gap	Claiborne County
	Town of Chapel Hill	Marshall County
	Town of Decaturville	Decatur County
	Town of Greenfield	Weakley County
	Lincoln County BPU	Lincoln County
	City of Lobelville	Perry County
	City of Rockwood	Roane County
Status – Water loss:	City of Erin	Houston County
	Town of Linden	Perry County
	Town of Oakland	Fayette County

Miscellaneous:
Compliance reports
Cases currently under WWFB jurisdiction
Next meeting

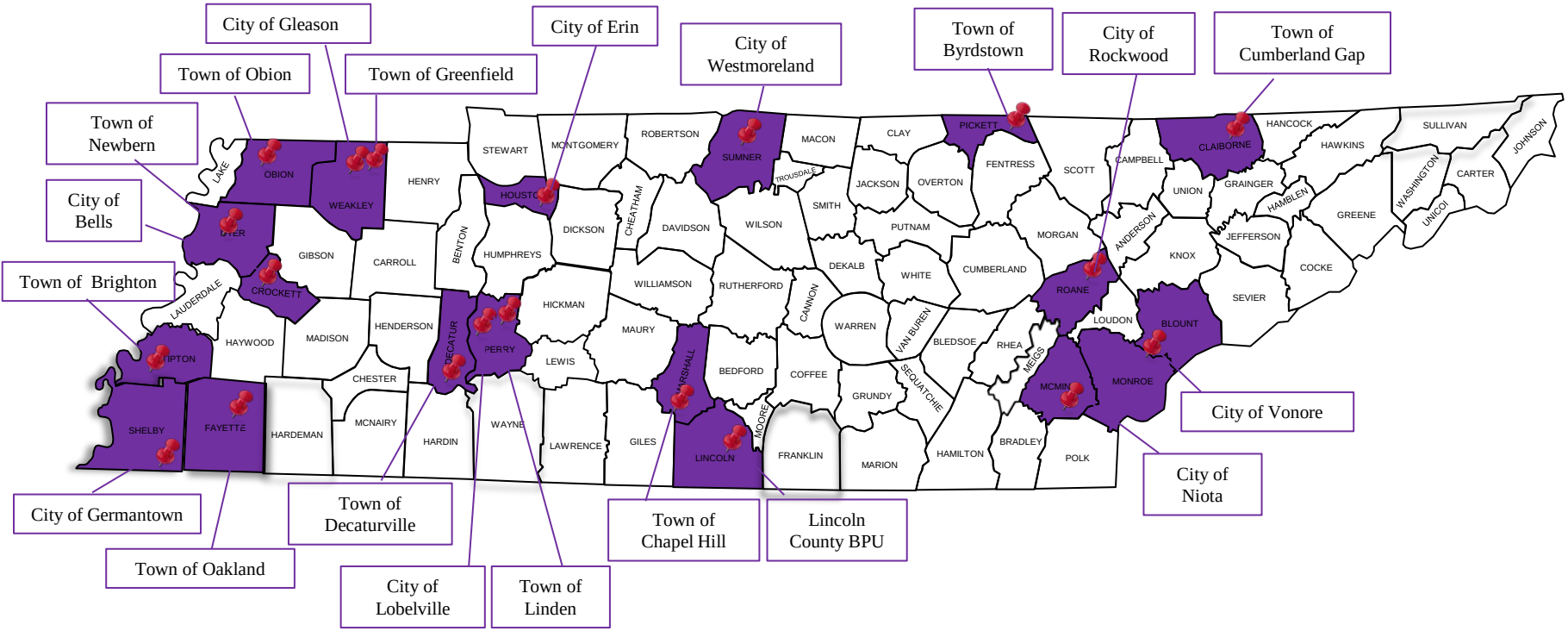
Open Discussion

Visitors to the Legislative Plaza 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 State and Local Finance 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 State and Local Finance (Ms. Joyce Welborn) for further information.

505 Deaderick Street, Suite 1500
James K. Polk State Office Building
Nashville, TN 37243-1402
Telephone (615) 401-7864
Fax (615) 741-6216
Joyce.Welborn@cot.tn.gov

WWFB

May 14, 2015



MINUTES
of the
WATER AND WASTEWATER FINANCING BOARD MEETING
November 13, 2014
10:00 a.m.

Chair Ann Butterworth opened the meeting of the Water and Wastewater Financing Board (WWFB) in Legislative Plaza, Room 31, in Nashville, Tennessee.

Board members present and constituting a quorum:
Ann Butterworth, Chair, Comptroller Designee
Tom Moss, Department of Environment and Conservation (TDEC), Commissioner Designee
Drexel Heidel, Active Employee of a Water Utility District
Ben Bolton, Representing Manufacturing Interests
Tamika Parker, Representing Environmental Interests
Mechele Williams, Representing Government Finance
Todd Spangler, Representing Municipalities

Members absent:
Randy Wilkins, Representing Utility Districts
Kenneth Wiggins, Active Employee of a Municipal Water System

Staff present:
Joyce Welborn, Comptroller's Office
John Greer, Comptroller's Office

Counsel present:
Betsy Knotts, Comptroller's Office

Ms. Butterworth requested those present to introduce themselves. Special notice was made for the newest members, Ms. Williams and Mr. Spangler.

Approval of Minutes:
Mr. Heidel moved approval of the minutes of July 10, 2014. Mr. Bolton seconded the motion, which was approved unanimously.

Ms. Butterworth suggested a change in the agenda since a municipal official was present.

Cases/Status – Water loss
Water loss cases are simply presented to the Board but no action is taken unless specifically requested by individual members. The cases will continue to be reviewed annually until they are in compliance. The following cases were presented:

City of Millington

Ms. Welborn provided background for the City of Millington's water loss issues, stating that Mr. Chris Dorsey, City Manager, was present. Ms. Butterworth asked Mr. Dorsey to address the Board. Following a few remarks from Mr. Dorsey, the Board thanked him for his appearance and observed that the material included in the packet was very informative. No action was taken.

Town of Oakland

The Town submitted responses to the initial water loss questionnaire. Several of the responses did not include a specific "yes" or "no" to the question regarding an established policy. Although no action was taken by the Board, staff is to ensure clarity of responses in the future. Mr. Moss mentioned the customer retail cost per thousand gallons seemed excessive.

Town of Monteagle

Information was submitted by the Town in response to questions from the Board at the previous meeting. The AWWA reporting worksheet for FY 14 reflected an improvement from FY 13. Customer retail cost per thousand gallons was also questioned.

Cases – Financial distress

Town of Stanton

Mr. Greer stated that the Town of Stanton had been referred to the Board for two consecutive years with a negative change in net position. The Mayor had worked extremely hard to develop a plan to resolve the financial distress of the Town and obtain the approval of Town Council. Approximately $100,000 has been spent on the system since 2012, with another $200,000 to be spent within the next year. Most of the expenses relate to compliance items required by TDEC. Rates had been increased by 60%. TAUD had assisted the Town in a more accurate completion of the AWWA Water Loss Reporting Worksheet. Mr. Bolton moved to endorse the action of the Town. Mr. Heidel seconded the motion, which carried unanimously.

City of Middleton

The City of Middleton had been referred to the Board for at least two consecutive years with a negative change in net position. Mr. Greer explained the many challenges the City had overcome in its efforts to become financially stable. All residential meters in the system had been replaced and equipped with radio read capability. The changes had led to increased revenue and decreased water loss. City staff can now locate water lines because of the tracer wire installed during the construction of the new natural gas distribution system. Since the water system had not been mapped correctly, the gas system construction resulted in a large number of water line breaks. Rates above the minimum bill were increased by 25% on July 1, 2014. Mr. Moss moved to endorse the action of the City. Mr. Bolton seconded the motion. Motion carried unanimously.

Town of Brighton

The Town of Brighton had been referred to the Board as having a negative change in net position for two consecutive fiscal years. Recently it was discovered that the three schools on the system had been billed in hundred gallon increments instead of thousand gallon increments, which resulted in unbilled, uncollected revenue of approximately $800 per month. Mr. Greer explained that the two parties are in negotiation to resolve the issue of all back payments due to the Town. Interfund loans in past years have resulted in the utility owing the general fund approximately $300,000. A repayment plan had been implemented. A rate increase of 25% has been proposed effective January 1, 2015, but the Town Council had not yet approved it. Mr. Moss moved to accept the action of the Town and to provide evidence the increase was effective no later than January 1, 2015. If the rate increase is not effective by that date, representatives of the Town will be required to attend the March meeting of this Board. Mr. Bolton seconded the motion which carried unanimously.

Status reports

Status reports are presented simply to update the Board on certain matters specific to the entities involved. No action is taken unless specified by members. The entities will continue to be monitored by the Board until compliance is reached.

City of Collinwood

Mr. Greer stated that the City of Collinwood had submitted untimely audits for several years because of some investigative issues. Previous audits reflected issues with water loss. Once the FY 14 audit is received, staff may pursue other areas to assist the City with compliance – especially in regard to the validity score.

City of Bluff City

Ms. Knotts spoke in response to a request from the Board to research the legal issues related to the Underwood Springs easements and the "free water" provided to certain residents under the terms of easements signed in 1925. The City estimated $20,000 of lost revenue annually due to the easements. Ms. Parker clarified her concerns, stating that she did not question the validity of the easements, but the services (benefits) being received by the "free water" customers. Her contention was the definition of water provided in 1925 is not the same currently because of the numerous EPA requirements now in place. She further stated that TCA § 68-221-1009 requires the Board to "determine the financial, technical, and managerial capacity of the systems to comply with the requirements of the federal and state acts…" Ms. Butterworth stated that it is not the intent of the Board to micromanage the systems, but to provide assistance. Based on the action of the Board from the July 2014 meeting, Ms. Knotts should share with the City the discussion of the Board and the results of her research without providing legal advice to the City. The Board took no further action.

Compliance reports

Included in the packet was a compliance report for the Town of Atwood.

Jurisdiction List

Ms. Welborn presented an updated schedule identifying all systems which were currently under the Board's jurisdiction. A separate sheet was included for those the systems dealing only with excessive water loss**.**

As noted on the last page of the packet, the next regular meeting was scheduled for January 8, 2015, at 10:00 a.m.in the Legislative Plaza. At this time, however, no cases are pending for that meeting.

Ms. Butterworth adjourned the meeting at 11:10 a. m.

Respectfully submitted,

Ann Butterworth
Chair

Joyce Welborn
Utilities Board Manager

WATER AND WASTEWATER FINANCING BOARD
Case Study

Case: **City of Germantown**
Mayor: **Sharon E. Goldsworthy**
Customers: **13,516**
Validity Score: **80**
Water Loss: **9.4%**

The City of Germantown has been reported to the Water and Wastewater Financing Board as being financially distressed based on a negative change in net position for two consecutive years in its water and sewer system as of June 30, 2014. The financial and rate history is attached.

The City believes that energy efficient appliances have led to declining water usage for several years. However, rates have not been increased in nine years.

Germantown contracts with Memphis to treat all sewage. Beginning in May 2015, a contract will begin to assist in the collection of bad debts.

Within the next year the City will begin serving a new jewelry store, 43 new homes, a new hotel and two new grocery stores. The system will be completely debt free in four years.

Three utility staff positions have been transferred to the general fund and one utility staff member will be retiring in the upcoming months. These adjustments will cut expenses by approximately $300,000. Based on an MTAS study, the City increased its rates 30% effective July 1, 2014, resulting in a projected positive change in net position for the 2015 fiscal year.

After our visit, the City re-evaluated the AWWA Water Loss Reporting Worksheet. The new sheet reflects compliance with water issues.

Staff recommends the Board endorse the actions of the City of Germantown. The City will continue to be under the jurisdiction of the Board until an audit is received which reflects compliance.

CITY OF GERMANTOWN					
HISTORY FILE					
	Audited	**Audited**	**Audited**	**Audited**	**Audited**
Fiscal Year 6/30	**2010**	**2011**	**2012**	**2013**	**2014**
Water revenues	$ 3,979,602	$ 4,964,607	$ 4,581,400	$ 4,130,051	$ 3,995,880
Sewer revenues	$ 2,444,113	$ 2,744,814	$ 2,664,844	$ 2,449,575	$ 2,441,350
Other revenues	$ 276,623	$ 214,960	$ 237,746	$ 233,434	$ 253,736
Capital contributions	$ 417,437	$ 171,857	$ 116,797	$ 86,243	$ 259,000
Transfers in/(out)		$ (366,159)	$ (376,323)	$ (386,609)	$ (502,201)
Total Revenue	**$ 7,117,775**	**$ 7,730,079**	**$ 7,224,464**	**$ 6,512,694**	**$ 6,447,765**
Total Expenses	**$ 6,705,453**	**$ 6,827,325**	**$ 6,714,684**	**$ 7,004,758**	**$ 7,150,900**
Operating Income	$ 412,322	$ 902,754	$ 509,780	$ (492,064)	$ (703,135)
Interest Expense	$ 318,623	$ 290,811	$ 261,698	$ 310,669	$ 182,608
Change Net Position	**$ 93,699**	**$ 611,943**	**$ 248,082**	**$ (802,733)**	**$ (885,743)**
Supplemental Information					
Principal payment	$ 775,000	$ 325,000	$ 855,000	$ 880,000	$ 920,000
Depreciation	$ 1,489,495	$ 1,650,288	$ 1,644,791	$ 1,677,787	$ 1,764,894
Water Rates					
Residential per 1,000					
Minimum - 5,000 gallons	$ 6.75	$ 6.75	$ 6.75	$ 6.75	$ 6.75
6,000-15,000	$ 1.65	$ 1.65	$ 1.65	$ 1.65	$ 1.65
16,000-50,000	$ 1.90	$ 1.90	$ 1.90	$ 1.90	$ 1.90
51,000-999,999	$ 2.40	$ 2.40	$ 2.40	$ 2.40	$ 2.40
Commercial per 1,000					
Minimum - 5,000 gallons	$ 10.13	$ 10.13	$ 10.13	$ 10.13	$ 10.13
6,000-15,000	$ 2.63	$ 2.63	$ 2.63	$ 2.63	$ 2.63
16,000-50,000	$ 3.00	$ 3.00	$ 3.00	$ 3.00	$ 3.00
51,000-999,999	$ 3.75	$ 3.75	$ 3.75	$ 3.75	$ 3.75
Sewer Rates					
Residential per 1,000					7/1/2015
Minimum - 2,000 gallons					$ 5.07
2,000-3,000					$ 0.90
3,001-20,000					$ 1.99
Maximum					$ 40.56
Commercial per 1,000					
Minimum - 2,000 gallons					$ 5.07
2,000-3,000					$ 0.90
All Over 3,000					$ 1.99
Customers	**13,246**	**13,246**	**13,820**	**13,985**	**13,516**
Water Loss	**25.495%**	**26.238%**	**22.565%**		
Validitiy Score				**80**	**80**
Non-revenue water				**3.60%**	**9.40%**

CITY OF
GERMANTOWN
TENNESSEE 1930 South Germantown Road • Germantown, Tennessee 38138-2815
Phone (901) 757-7200 Fax (901) 757-7292 www.germantown-tn.gov

April 13, 2015

Ms. Joyce Welborn
Utilities Board Manager
James K. Polk State Office Building
505 Deaderick Street, Suite 1500
Nashville, Tennessee 37243-1402

Dear M. Welborn,

On April 10th, I and City staff met with you and Mr. John Greer concerning the Utility Fund previous 2 years negative Change in Net Position. The City of Germantown has taken several actions to reverse the negative trend. City staff met with MTAS consultants during the development of the Fiscal Year 2015 budget. Several factors were discussed including increasing the water and sewer rate 30.0% due to the reduction in consumption. The City has the ability to produce 24 million gallons of water at its two plants. At the time the second plant was built consumption was higher than today. With environmentalist concerns and water saving technology, consumption has steadily decreased. After meeting with the MTAS the City staff met with its 22 citizen member Financial Advisory Commission to make recommendation to the Board of Mayor and Aldermen (BMA). The recommendation of City staff after consultation with MTAS was to increase the water & sewer 30.0% in order to cover increased cost and reduced consumption. This recommendation when approved by the BMA would be effective with the adoption of the FY15 budget. A review of the FY15 budget reflects a positive Net Position of $695,023, which includes depreciation. The recommendation was approved by the BMA.

The City took additional steps to ensure the Utility Fund would reverse the negative Change in Net Position. The City had positions in the Utility Fund which should have been charged to the General Fund due to a restructuring of the fund. Also, the City reviewed the allocation charged for services provided from General Fund staff to the Utility Fund. Due to the restructuring less staff services are being provided to the Utility Fund. The City looked at cost saving in the printing and mailing of utility bills. It was determined a cost saving would be achieved by outsourcing. In addition, e-bills are being offered to utility customers to eliminate the cost of printing and mailing.

There are staff personnel in the Utility Fund who will be retiring in the forthcoming year. These positions will not be filled with the consolidation of positions due to the restructuring of the Utility Fund. This savings will be recognized over several years in the future.

The City is experiencing business growth in its land usage. The redevelopment of the City's business district will help to alleviate consumption concerns. A 4 story hotel near City Hall, a high end apartment complex, and new housing developments will increase usage and consumption. In addition, new housing developments and the proposed retail developments on the Western Gateway of the City.

The City has a sewer agreement with the City of Memphis for the handling of the City's sewage. This agreement titled "Agreement #N16412 for Sewer Services between the City of Memphis and the City of Germantown" is renewed on January 1st every 2 years. As the City raised its sewage rate 30% the amount the City of Germantown was reduced by 10%. This is a saving to the Utility Fund in addition to raising revenues. The reduced payment to the City of Memphis for sewage treatment will be approximately $20,000 or greater per month or $240,000 or greater per year.

A review of the financial statements for 9 months with a rate increase of 30.0% effective July 1st, implementation of cost saving measures during the year and the reduction of sewage payments to the City of Memphis reveals the following financial information; total revenues of $6,399,405 and total expenses of $5,817,808 resulting in a positive change in Net Position of $581,597.

Sincerely,

Patrick J. Lawton
City Administrator

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0

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

Water Audit Report for: City of Germantown (0000262)
Reporting Year: 2014 | 7/2013 - 6/2014

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:	8	2,630.909	MG/Yr	6.00%		MG/Yr
Water imported:	9	13.867	MG/Yr	1.00%		MG/Yr
Water exported:	n/a		MG/Yr			MG/Yr

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

WATER SUPPLIED: 2,495.719 MG/Yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

				Pcnt:	Value:	
Billed metered:	7	1,920.876	MG/Yr			
Billed unmetered:	n/a		MG/Yr			
Unbilled metered:	n/a		MG/Yr			
Unbilled unmetered:	8	89.574	MG/Yr	1.25%	89.574	MG/Yr

Unbilled Unmetered volume entered is greater than the recommended default value

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

AUTHORIZED CONSUMPTION: ? 2,010.450 MG/Yr

WATER LOSSES (Water Supplied - Authorized Consumption) 485.269 MG/Yr

Apparent Losses

				Pcnt:	Value:	
Unauthorized consumption:	10	12.840	MG/Yr	0.25%	12.840	MG/Yr
Customer metering inaccuracies:	7	19.403	MG/Yr	1.00%		MG/Yr
Systematic data handling errors:		4.802	MG/Yr	0.25%		MG/Yr

Unauthorized consumption volume entered is greater than the recommended default value

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

Apparent Losses: ? 37.045 MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: ? 448.224 MG/Yr

WATER LOSSES: 485.269 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: ? 574.843 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	8	223.0	miles
Number of active AND inactive service connections:	8	14,018	
Service connection density:		63	conn./mile main
Are customer meters typically located at the curbstop or property line?		No	
Average length of customer service line:	8	15.0	ft
Average operating pressure:	8	60.0	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:	10	$4,769,566	$/Year
Customer retail unit cost (applied to Apparent Losses):	8	$3.15	$/1000 gallons (US)
Variable production cost (applied to Real Losses):	9	$619.94	$/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: Volume from own sources
2: Billed metered
3: Systematic data handling errors

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

WAS v5.0

American Water Works Association.
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Water Audit Report for: City of Germantown (0000262)
Reporting Year: 2014 | 7/2013 - 6/2014

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

System Attributes:

	Apparent Losses:	37.045	MG/Yr
+	Real Losses:	448.224	MG/Yr
=	**Water Losses:**	**485.269**	MG/Yr
?	Unavoidable Annual Real Losses (UARL):	79.01	MG/Yr
	Annual cost of Apparent Losses:	$116,692	
	Annual cost of Real Losses:	$277,872	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:	23.0%	
	Non-revenue water as percent by cost of operating system:	9.4%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	7.24	gallons/connection/day
	Real Losses per service connection per day:	87.60	gallons/connection/day
	Real Losses per length of main per day*:	N/A	
	Real Losses per service connection per day per psi pressure:	1.46	gallons/connection/day/psi
	From Above, Real Losses = Current Annual Real Losses (CARL):	448.22	million gallons/year
?	Infrastructure Leakage Index (ILI) [CARL/UARL]:	5.67	

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

REVENUE ANALYSIS AND PROJECTIONS RATIONALE

Metered Water Sales **$5,353,661**

Residential charges are $8.73 for the first 5,000 gallons, $2.15 for each additional 1,000 gallons up to 15,000 gallons, $2.47 for each additional 1,000 gallons up to 50,000 gallons and $3.12 per 1,000 gallons thereafter. Commercial charges are $13.17 for the first 5,000 gallons, $3.42 for each additional 1,000 gallons up to 15,000 gallons, $3.90 for each additional 1,000 gallons up to 50,000 gallons and $4.88 per 1,000 gallons thereafter. These are net charges collected monthly by the City. The current rates became effective in FY15 and represented an average increase of 30%.

Forfeited Discounts **$60,000**

By ordinance, when water and sewer bills are not paid within the ten-day discount period, the gross amount of the bill becomes due. On the average, this revenue is 3% of total water billings and is higher when water usage is greater.

Other Revenues **$26,000**

This category includes all revenues not otherwise classified: reimbursement for repair, supplies and labor, fire hydrant usage permits and vendor compensation for sales tax of approximately $1,200 per year. This revenue source is projected to increase at 25% per year.

Developer Installation **$5,000**

The City charges $300 per residential lot for water system expansion and for reimbursement of the City's cost when an existing line originally installed by the City will serve the development. The recoveries for existing lines are currently a smaller projection than in previous years.

Water Connection Fees **$60,000**

Charges in this category are $750 for residential (5/8-inch x ¾-inch meter) with higher scheduled charges for larger meters. Collected monthly, this revenue is also affected by lower growth rate.

Sewer Connection Fees **$30,000**

Residential fees are $600 per lot. The commercial charges are based on the development's frontage or acreage. This revenue is collected monthly and with the City installing the outfall lines, this revenue will accrue primarily to the City.

Sewer Service Fee **$3,184,448**

This revenue is based on metered water service. Residential charges are $5.07 for the first 2,000 gallons, $.90 for an additional 1,000 gallons, $1.99 for each additional 1,000 gallons up to 20,000 gallons and $.78 for per 1,000 gallon thereafter with a maximum charge of $40.56. There is a nominal surcharge for restaurants. Commercial charges are $5.07 for the first 2,000 gallons, $.90 for an additional 1,000 gallons, $1.99 for each additional 1,000 gallons thereafter. These are net charges collected monthly by the City. The current rates became effective in FY15 and represented an average increase of 30%.

Interest Income **$6,500**

Interest earned on investments and gains and losses on sales of securities are allocated to the Utility Fund based on the average daily balance of cash in the fund. These funds are invested in the LGIP at an average projected rate of 1.5%.

Contributions from Developers **$75,000**

Assets received from private developers when the installation of water and sewer mains within the newly completed project is completed.

WATER AND WASTEWATER FINANCING BOARD
Case Study

Case: **City of Gleason**
Mayor: **Diana Pool**
Customers: **687 water, 658 sewer**
Validity Score: **81**
Water Loss: **14.4%**

The City of Gleason has been reported to the Water and Wastewater Financing Board as being financially distressed based on a negative change in net position for two consecutive years in its water and sewer system as of June 30, 2014. The financial and rate history is attached.

Increasing costs and declining revenues have led to the financially distressed condition of the City. In 2014 lightning struck the lagoon testing equipment which led to an unexpected strike to the expenses.

Currently, the City is replacing five of the older meters each month. Meters are replaced once they reach 2,000,000 gallons or have a malfunction. Newly required lead free meters are costing the City twice as much as meters containing lead. This cost has drastically slowed the replacement process.

Because there are only a few (less than ten) businesses, the City must rely on the residential customers for the majority of the revenue in the system.

There is no official leak detection program at the City. The customers are asked to contact the utility department if they see standing or running water around town in normally dry locations. Meters were placed at the local athletic fields and fire stations at the end of 2014 in order to better account for usage.

Effective May 1, 2015, rates were increased. The increase is projected to provide $143,786 in new revenue annually.

Staff recommends the Board endorse the actions of the City of Gleason. The City will continue to be under the jurisdiction of the Board until an audit is received which reflects compliance.

CITY OF GLEASON						
HISTORY FILE						
	Audited	**Audited**	**Audited**	**Audited**	**Audited**	**Audited**
Fiscal Year ended 6/30	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Water revenues	$ 185,334	$ 196,701	$ 216,194	$ 181,807	$ 179,733	$ 171,741
Sewer revenues	$ 85,692	$ 85,940	$ 87,479	$ 85,936	$ 85,479	$ 86,833
Other revenues	$ 12,932	$ 14,223	$ 14,204	$ 25,933	$ 17,628	$ 22,746
Grant Proceeds	$ 235,239	$ 75,721	$ 2,619	$ 10,541		
Gain on Capital Asset				$ 129,548		
Total Revenues	**$ 519,197**	**$ 372,585**	**$ 320,496**	**$ 433,765**	**$ 282,840**	**$ 281,320**
Total Expenses	**$ 336,164**	**$ 335,233**	**$ 419,835**	**$ 319,767**	**$ 385,227**	**$ 346,130**
Revenue vs. Expenses	$ 183,033	$ 37,352	$ (99,339)	$ 113,998	$ (102,387)	$ (64,810)
Interest Expense	$ 15,812	$ 12,995	$ 11,951	$ 13,547	$ 12,758	$ 6,947
Change in Net Position	**$ 167,221**	**$ 24,357**	**$ (111,290)**	**$ 100,451**	**$ (115,145)**	**$ (71,757)**
Supplemental Information						
Principal payment	$60,509	$66,069	$35,530	$58,492	$15,803	$24,845
Depreciation	$ 101,001	$ 87,861	$ 94,719	$ 92,482	$ 101,094	$ 106,878
Water Rates						
First 2,000 gallons	$ 16.80	$ 16.80	$ 16.80	$ 16.80	$ 16.80	$ 16.80
Over 2,000 gallons(per 100)	$ 2.10	$ 2.10	$ 2.10	$ 2.10	$ 2.10	$ 2.10
Sewer Rates(50% of Water)						
0 to 2,000 Gallons	$ 8.40	$ 8.40	$ 8.40	$ 8.40	$ 8.40	$ 8.40
Over 2,000 gallons(per 100)	$ 1.05	$ 1.05	$ 1.05	$ 1.05	$ 1.05	$ 1.05
Water Loss	**24.000%**	**21.020%**	**21.082%**			
Validity Score				**71**	**68**	**81**
Non-revenue water				**8.6%**	**14.9%**	**14.4%**
Water Customers	682	682	682	682	687	687
Sewer Customers	651	655	655	655	658	658

ORDINANCE 2015-92

AN ORDINANCE OF THE GLEASON, TENNESSEE BOARD OF MAYOR AND ALDERMEN TO ESTABLISH A SCHEDULE OF USER FEES FOR CUSTOMERS OF THE MUNICIPAL WATER/SEWER UTILITY.

WHEREAS, The City of Gleason, Tennessee, Weakley County, owns, operates, and maintains a municipal water distribution and treatment system, and;

WHEREAS, The Board of Mayor and Aldermen accept the responsibility to provide for the residents and users of the system an efficient and financially sound operation, and therefore;

WHEREAS, pursuant to Tennessee Code Annotated, section 7-35-414 requires municipalities to establish by ordinance rates for water and sewer services;

NOW THEREFORE BE IT ORDAINED BY THE BOARD OF MAYOR AND ALDERMEN OF THE CITY OF GLEASON, TENNESSEE, THAT

SECTION 1. The City hereby establishes the following attached schedule (Schedule A) of rates for the water and sewer services;

SECTION 2. This ordinance will also include a Cost of Living increase each year on January 1, to be determined by the cost of living index;

SECTION 3. This ordinance shall take effect on the first day of the month following its second and final reading, the public health, safety, and welfare requiring it.

First Reading: April 9, 2015

Second Reading: April 22, 2015

Diana Poole

Diana Poole, Mayor

Angela Hunt

Angela Hunt, Recorder

USAGE	# OF CUSTOMERS	WATER $	+ OVERAGE (2.50 PER 1000 GAL)	Total charge for water + overage	Total water charge (x) avg. number of customers	SEWER $ (= to water charge total)	Total sewer charge (x) avg. number of customers	Avg. BILL TOTAL (based at 20.91 for gbg.)
0-1000	109	$10.00			$1090.00	$10.00	$1090.00	$41.89
1001-2000	118	$20.00			$2360.00	$20.00	$2360.00	$62.86
2001-3000	99	$20.00	$2.50	$22.50	$2227.50	$22.50	$2227.50	$68.10
3001-4000	113	$20.00	$5.00	$25.00	$2825.00	$25.00	$2825.00	$73.35
4001-5000	72	$20.00	$7.50	$27.50	$1980.00	$27.50	$1980.00	$78.59
5001-6000	56	$20.00	$10.00	$30.00	$1680.00	$30.00	$1680.00	$83.84
6001-7000	37	$20.00	$12.50	$32.50	$1202.50	$32.50	$1202.50	$89.08
7001-8000	17	$20.00	$15.00	$35.00	$595.00	$35.00	$595.00	$94.32
8001-9000	12	$20.00	$17.50	$37.50	$450.00	$37.50	$450.00	$99.57
9001-10000	10	$20.00	$20.00	$40.00	$400.00	$40.00	$400.00	$104.81
10001-11000	7	$20.00	$22.50	$42.50	$297.50	$42.50	$297.50	$110.05
11001-12000	5	$20.00	$25.00	$45.00	$225.00	$45.00	$225.00	$115.30
12001-13000	1	$20.00	$27.50	$47.50	$47.50	$47.50	$47.50	$120.52
13001-14000	5	$20.00	$30.00	$50.00	$250.00	$50.00	$250.00	$125.79
14001-15000	1	$20.00	$32.50	$52.50	$52.50	$52.50	$52.50	$131.03
15001-16000	2	$20.00	$35.00	$55.00	$110.00	$55.00	$110.00	$136.27
16001-17000	2	$20.00	$37.50	$57.50	$115.00	$57.50	$115.00	$141.52
17001-18000	2	$20.00	$40.00	$60.00	$120.00	$60.00	$120.00	$146.76
18001-19000	1	$20.00	$42.50	$62.50	$62.50	$62.50	$62.50	$152.00
19001-20000	2	$20.00	$45.00	$65.00	$130.00	$65.00	$130.00	$157.25
20001-21000								
21001-22000								
22001-23000								
23001-24000	1	$20.00	$53.00	$73.00	$73.00	$73.00	$73.00	$174.03
24001-25000	2	$20.00	$55.50	$75.50	$151.00	$75.50	$151.00	$179.27
25001-26000	1	$20.00	$58.00	$78.00	$78.00	$78.00	$78.00	$184.52
42001-43000	1	$20.00	$ 102.50	$122.50	$122.50	$122.50	$122.50	$277.85
OVER	2	$20.00						
					$16,641.50		$16,641.50	
					-14473.45 (current monthly total)		-6827.31 (current monthly total)	
					$2,168.05		$9,814.19	
						Total avg. gain of $11,982.24 per month (x 12 months = $143,786.88 per year gain.		

WATER AND WASTEWATER FINANCING BOARD
Case Study

Case: **City of Newbern**
Mayor: **Olen K. Parker**
Customers: **1,414 inside water, 2,034 rural water, 1,307 sewer**
Validity Score: **77**
Water Loss: **18.6**

The City of Newbern has been reported to the Water and Wastewater Financing Board as being financially distressed based on a negative change in net position for two consecutive years in its water and sewer system as of June 30, 2014. The financial and rate history is attached.

As major industrial sewer customers moved out, the City had to re-evaluate the way in which revenues would be collected. A consultant was hired to analyze the system and prepare a rate study. The entire sewer system was slip-lined to comply with a TDEC order and remove unnecessary I&I. A grant has been applied for to build a new water tank in the rural water area. Research is currently underway to determine if automatic read meters are the best choice for the system.

Effective July 1, 2014, the City lowered water rates and raised sewer rates to properly reflect costs for each system. The water fund has subsidized the sewer fund for many years according to the City Recorder. The City is projecting a positive change in net position for the 2015 fiscal year.

Staff recommends the Board endorse the actions of the City of Newbern. The City will continue to be under the jurisdiction of the Board until an audit is received which reflects compliance.

CITY OF NEWBERN					
HISTORY FILE WATER/SEWER					
	Audited	**Audited**	**Audited**	**Audited**	**Audited**
Fiscal Year 6/30	**2010**	**2011**	**2012**	**2013**	**2014**
Water/Sewer Revenue	$ 2,376,828	$ 2,378,414	$ 2,240,382	$ 1,932,957	$ 1,917,448
Other revenues	$ 43,730	$ 42,040	$ 26,211	$ 20,723	$ 28,374
Grant Proceeds	$ 536,803	$ 107,350	$ 520,374	$ 44,876	
Total Operating Revenues	**$ 2,957,361**	**$ 2,527,804**	**$ 2,786,967**	**$ 1,998,556**	**$ 1,945,822**
Total Operating Expenses	**$ 2,029,730**	**$ 2,104,288**	**$ 2,176,139**	**$ 2,161,376**	**$ 2,019,486**
Operating Income	$ 927,631	$ 423,516	$ 610,828	$ (162,820)	$ (73,664)
Interest Expense	$ 179,162	$ 180,508	$ 133,574	$ 165,475	$ 151,356
Change in Net Position	**$ 748,469**	**$ 243,008**	**$ 477,254**	**$ (328,295)**	**$ (225,020)**
Supplemental Information					
Principal payment	$ 610,878	$ 615,275	$ 218,484	$ 217,401	$ 235,544
Depreciation	$ 303,674	$ 315,558	$ 319,587	$ 353,331	$ 363,613
City Water Rates					
Base Charge 3/4" meter	$ 6.60	$ 6.60	$ 6.60	$ 6.60	$ 6.60
Per 1,000	$ 3.05	$ 3.05	$ 3.05	$ 3.05	$ 3.05
Base Charge 1" meter	$ 9.80	$ 9.80	$ 9.80	$ 9.80	$ 9.80
Per 1,000	$ 3.05	$ 3.05	$ 3.05	$ 3.05	$ 3.05
Base Charge 2" meter	$ 12.10	$ 12.10	$ 12.10	$ 12.10	$ 12.10
Per 1,000	$ 3.05	$ 3.05	$ 3.05	$ 3.05	$ 3.05
Base Charge 4" meter	$ 16.50	$ 16.50	$ 16.50	$ 16.50	$ 16.50
Per 1,000	$ 3.05	$ 3.05	$ 3.05	$ 3.05	$ 3.05
Base Charge 5" meter	$ 30.80	$ 30.80	$ 30.80	$ 30.80	$ 30.80
Per 1,000	$ 3.05	$ 3.05	$ 3.05	$ 3.05	$ 3.05
Sewer Rates					
Per 1,000 gallons of water used	$ 5.53	$ 5.53	$ 5.53	$ 5.53	$ 5.53
or actual sewer meter reading					
Water Loss	**27.853%**	**26.599%**	**30.235%**		
Non-Revenue Water				**4.3%**	**18.6%**
Validity Score				**70**	**77**
City Water Customers	1,390	1,390	1,404	1,398	1,414
Sewer Customer	1,290	1,290	1,306	1,299	1,307

ORDINANCE 15-02

AN ORDINANCE TO ESTABLISH RATES FOR SEWER SERVICES PROVIDED BY THE CITY OF NEWBERN FOR FISCAL YEAR BEGINNING JULY 1, 2014; AND TO AMEND SEWER SERVICES AGREEMENT WITH HILLSHIRE FOODS.

WHEREAS, the Board of Mayor and Alderman of the City of Newbern desire and intend to set and establish rates for sewer services to be provided by the City of Newbern for Fiscal Year beginning July 1, 2013.

WHEREAS, the Board of Mayor and Alderman of City of Newbern desire and intend to amend that certain Agreement for Sewer Services dated April 25, 1988, entered into between the City of Newbern and Rowe Manufacturing, Inc., a wholly owned subsidiary of Sara Lee Corporation, and its successor, Jimmy Dean Foods, Inc. and Hillshire Foods Inc., as hereinafter provided;

NOW, THEREFORE, BE IT ORDAINED by the Board of Mayor and Alderman of the City of Newbern, Tennessee, that the rates charged for sewer services be provided by the City of Newbern, for Fiscal Year beginning July 1, 2014, shall be set and established as follows:

For all customers of the City's Wastewater Department with the exception of Hillshire Foods the sewer rate shall be $ 6.97 per 1000 gallons with a base charge of $12.37.

For Sara Lee Foods the sewer rate shall be $ 48,617.60 for each month beginning July 01, 2014, and continuing through June 30, 2015 based upon maximum daily flows of one million gallons. Sara Lee Foods rate shall be amended each year based on revenues and expenditures projected during annual budget hearings of the City of Newbern Water & Sewer Department.

NOW, THEREFORE, BE IT ORDAINED by the Board of Mayor and Alderman of the City of Newbern, Tennessee, that the Agreement for Sewer Services dates April 25, 1988, entered into between the City of Newbern, Tennessee and Rowe Manufacturing, Inc., a wholly owned subsidiary of Sara Lee Corporation, and its successor, Jimmy Dean Foods, Inc. and Hillshire Foods, shall be and is hereby amended as set forth in the form of Amendment attached hereto as Exhibit A and made a part hereof.

BE IT FURTHER RESOLVED AND ORDAINED, that the Mayor and Recorder of the City shall be and are hereby authorized and directed to execute the Amendment to the Sewer Agreement on behalf of the City of Newbern, Tennessee.

This Ordinance shall take effect from and after its passage or otherwise, as provided by Statute, the public welfare requiring it.

1ST READING 6/17/14

2ND READING 6/26/14

Mayor, Olen K. Parker

Recorder, Jason Roberts

CITY OF NEWBERN, TENNESSEE
SCHEDULE OF DEBT SERVICE REQUIREMENTS - ALL FUNDS
BY INDIVIDUAL ISSUE
June 30, 2014

Year Ending June 30,	Water and Sewer Revenue and Tax Bonds-Series 2007		First Citizens Bank Loan No. 95701		Security Bank Loan No. 120887		Water and Sewer Revenue SFR 92-038		Total Business Type Long-term Debt	
	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest
2015	$ 13,078	$ 39,194	$ 27,123	$ 2,958	$ 48,425	$ 1,899	$ 48,773	$ 360	$ 208,574	$ 163,194
2016	13,679	38,593	28,426	1,656	21,770	206			138,564	155,724
2017	14,307	37,965	16,489	349					109,173	149,894
2018	14,965	37,307							97,212	145,017
2019	15,652	36,620							101,962	140,267
2020	16,371	35,901							103,878	135,570
2021	17,123	35,149							89,626	130,073
2022	17,910	34,362							93,983	125,716
2023	18,733	33,539							98,554	121,146
2024	19,593	32,679							103,346	116,352
2025	20,493	31,779							108,374	111,324
2026	21,435	30,837							113,649	106,050
2027	22,420	29,852							119,182	100,517
2028	23,449	28,823							124,982	94,716
2029	24,527	27,745							131,071	88,628
2030	25,653	26,619							137,455	82,243
2031	26,832	25,440							144,153	75,546
2032	28,065	24,207							113,889	69,048
2033	29,354	22,918							115,134	63,800
2034	30,702	21,570							120,530	58,404
2035	32,113	20,159							126,181	52,754
2036	33,588	18,684							132,095	46,840
2037	35,131	17,141							138,289	40,646
2038	36,745	15,527							144,773	34,162
2039	38,433	13,839							151,561	27,373
2040	40,199	12,073							147,713	20,279
2041	42,046	10,226							71,192	15,403
2042	43,977	8,295							74,375	12,220
2043	45,997	6,275							77,701	8,895
2044	48,111	4,161							81,175	5,419
2045	50,321	1,951							61,740	2,075
2046	15,854	142							15,854	142
	$ 876,856	$ 759,572	$ 72,038	$ 4,963	$ 70,195	$ 2,105	$ 48,773	$ 360	$ 3,595,940	$ 2,499,437

will be paid off 12-15

Pd 12-14

See independent auditor's report.

WATER RATES

Effective 7-1-2014

CITYRATES

¾" Meter	Base Charge $7.35 Water Charge - $2.36 per 1000 gallons
1" Meter	Base Charge $13.06 Water Charge - $2.36 per 1000 gallons
2" Meter	Base Charge $52.24 Water Charge - $2.36 per 1000 gallons
3" Meter	Base Charge $117.54 Water Charge - $2.36 per 1000 gallons
4" Meter	Base Charge $208.96 Water Charge - $2.36 per 1000 gallons

RURAL WATER

Effective 7-1-2014

¾" Meter	Base Charge $14.57 Water Charge $3.78 per 1000 gallons
1" Meter	Base Charge $25.91 Water Charge $3.78 per 1000 gallons
2" Meter	Base Charge $103.63 Water Charge $3.78 per 1000 gallons

Fire Protection $6.25 as of 7-1-2013

SEWER RATES **EFFECTIVE 7-1-2014**

City Rates

¾", 1", 2", 3", 4" Meters	Base charge $12.37
	Usage charge $6.97 per 1000 gallons

SERVICE TAP FEES

CITY WATER TAP FEES	
3/4" LINE-SIDE TAP:	$350.00
3/4" ROAD BORE TAP:	$500.00
1" LINE-SIDE TAP:	$600.00
1" ROAD BORE TAP:	$750.00
2" TAP:	(MATERIALS)

CITY SEWER TAP	
4"-6" TAP:	$400.00

RURAL WATER TAP FEES	
3/4" LINE-SIDE TAP:	$450.00
3/4" ROAD BORE:	$600.00
1" LINE-SIDE TAP:	$700.00
1" ROAD BORE:	$850.00
2" TAP:	(MATERIALS)

GAS DEPT. TAP	
LINE-SIDE TAP:	$50.00
ROAD BORE TAP:	$150.00
STEEL TAP:	$350.00

METER DEPOSITS

CITY RESIDENTIAL	
OWNER:	$18.00
RENTER:	$100.00

CITY COMMERCIAL	
OWNER:	$36.00
RENTER:	$200.00

RURAL RESIDENTIAL	
OWNER-WATER ONLY:	$10.00
OWNER-WATER & GAS:	$18.00
RENTER-WATER ONLY:	$25.00
RENTER-WATER & GAS:	$75.00

GAS TURN ON FEES	
CITY:	$5.00
RURAL:	$10.00

Termination

$35 /135
$45 /145

WATER AND WASTEWATER FINANCING BOARD
Case Study

Case: **City of Niota**
Mayor: **Lois Preece**
Customers: **1,282 water; 255 sewer**
Water loss: **24.60 %**
Validity Score: **74**

The City of Niota has been experiencing a negative change in net position in its water and sewer systems for two consecutive fiscal years as of June 30, 2014. The financial and rate history is attached.

The City purchases all water from Athens Utility Board for $2.00 per 1,000 gallons. The sewer system has been placed under a consent order by the Tennessee Department of Environment and Conservation (TDEC) because of excessive overflows. Although the order was a result of five overflows within twelve months, no overflows have occurred within the past two and one-half years. There have been numerous costs related to repairing the problem. TDEC reviewed the system the middle of April and the new report may modify or eliminate the consent order.

The new Mayor and Council have worked vigorously to address the financial and structural issues in the water and sewer system. They are currently working on adopting policies and procedures.

A federal grant has been approved and is expected to be received during FY 2016 which will help fund some of the issues with the system.

The City implemented a 25% rate increase in 2013. Based on a rate study by an engineering firm, a 50% rate increase was implemented in February 2015. A positive change in net position is projected by the end of FY 2016.

Staff recommends the board endorse the actions of the City of Niota. The City will remain under the jurisdiction of the Board until an audit is received that reflects financial compliance.

CITY OF NIOTA						
HISTORY FILE						
	Audited	**Audited**	**Audited**	**Audited**	**Audited**	**Audited**
Fiscal Year 6/30	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Water/sewer revenues	$ 622,032	$ 627,210	$ 607,506	$ 548,189	$ 606,343	$ 738,860
Other revenues	$ 12,449	$ 9,229	$ 16,446	$ 52,625	$ 19,946	$ 29,297
Transfer (To)/From GF			$ (3,120)			
Federal Grants			$ 439,985	$ 406,917	$ 26,770	$ 84,762
Local Government			$ 77,165	$ 17,835		
Local Business			$ 250,000			
Total Operating Revenues	**$ 634,481**	**$ 636,439**	**$ 1,387,982**	**$ 1,025,566**	**$ 653,059**	**$ 852,919**
Total Operating Expenses	**$ 665,707**	**$ 648,035**	**$ 789,778**	**$ 838,045**	**$ 886,852**	**$ 1,051,332**
Operating Income	$ (31,226)	$ (11,596)	$ 598,204	$ 187,521	$ (233,793)	$ (198,413)
Interest Expense	$ 7,836	$ 5,532	$ 4,093	$ 5,327	$ 7,993	$ 11,675
Change in Net Position	**$ (39,062)**	**$ (17,128)**	**$ 594,111**	**$ 182,194**	**$ (241,786)**	**$ (210,088)**
Supplemental Information						
Principal payment	$ 27,854	$ 29,032	$ 29,740	$ 34,631	$ 37,316	$ 3,401
Depreciation	$ 123,292	$ 155,139	$ 145,373	$ 146,055	$ 157,417	$ 174,118
Water/Sewer rates						
Residential						
First 2,000 gallons	$ 7.05	$ 7.05	$ 7.45	$ 7.45	$ 7.45	$ 7.45
Next 2,000 gallons	$ 5.20	$ 5.20	$ 5.40	$ 5.40	$ 5.40	$ 5.40
Over 4,000 gallons	$ 4.00	$ 4.00	$ 4.20	$ 4.20	$ 4.20	$ 4.20
Outside City						
First 2,000 gallons	$ 10.48	$ 10.48	$ 10.88	$ 10.88	$ 10.88	$ 10.88
Next 2,000 gallons	$ 8.00	$ 8.00	$ 8.20	$ 8.20	$ 8.20	$ 8.20
Over 4,000 gallons	$ 6.00	$ 6.00	$ 6.20	$ 6.20	$ 6.20	$ 6.20
Mulitple units						
First 2,000 gallons	$ 14.18	$ 14.18	$ 14.58	$ 14.58	$ 14.58	$ 14.58
Next 2,000 gallons	$ 5.20	$ 5.20	$ 5.40	$ 5.40	$ 5.40	$ 5.40
Over 4,000 gallons	$ 4.00	$ 4.00	$ 4.20	$ 4.20	$ 4.20	$ 4.20
Water Customers	1,512	1,512	1,116	1,246	1,274	1,282
Sewer Customers	426	426	212	244	255	255
Water loss	**62.09%**	**55.03%**				
Validity Score			**77**	**77**	**77**	**74**
Non-Revenue Water			**15.90%**	**18.60%**	**20.00%**	**24.60%**

Water and Sewer Rates

The City of Niota increased its water and sewer rates by 25% in 2013 and by 50% beginning February 2015. The sewer rates are the same as the water rates, currently set at $13.98 for the first 2,000 gallons, $10.13 per 1,000 gallons for the next 2,000 gallons and $7.88 for usage over 4,000 gallons. For an assumed average usage of 5,000 gallons per month the combined water and sewer bill is $84.24, which is less than the cost for the same amount of usage in Spring City or Calhoun/Charleston.

It is anticipated that the current rates will be sufficient through the fiscal year 2018 based on the assumptions and projections of this report.

Water and Sewer Net Position

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Operating Revenues										
Charges for Water	497,626	501,768	486,005	438,551	485,074	591,088	721,374	895,498	904,453	913,498
Charges for Sewer	124,406	125,442	121,501	109,638	121,269	147,772	178,558	223,875	226,113	228,374
Total Charges for Services	622,032	627,210	607,506	548,189	606,343	738,860	899,931	1,119,373	1,130,567	1,141,872
Pretreatment Income								5,000	5,000	5,000
Other Operating Revenue	0	0	13,154	52,304	16,475	26,419	20,000	20,000	20,000	20,000
Total Operating Revenue	622,032	627,210	620,660	600,493	622,818	765,279	919,931	1,144,373	1,155,567	1,166,872
Operating Expenses										
Water Purchased	161,101	146,394	247,347	217,014	265,936	365,820	369,478	380,636	384,443	396,053
Other Water Expenses	195,971	178,080	342,379	352,156	323,496	336,651	266,395	258,600	266,133	273,374
Sewer Treatment Plant	117,411	106,692	24,925	57,775	88,689	112,032	122,102	125,160	129,499	133,868
Pretreatment Expense								5,000	5,000	5,000
Other Sewer Expenses	67,932	61,730	29,755	65,045	51,314	62,712	68,624	75,491	79,556	83,628
Depreciation	123,292	184,969	145,373	146,055	157,417	174,118	172,755	204,530	209,597	211,580
Total Operating Expenses	665,707	677,865	789,779	838,044	886,852	1,051,332	999,354	1,049,418	1,074,228	1,103,503
Net Operating Income (Loss)										
Net Operating Income (Loss)	(43,675)	(50,655)	(169,119)	(237,551)	(264,034)	(286,053)	(79,422)	94,955	81,339	63,370
Non-Operating Revenues (Expenses)										
Interest Income	12,449	9,229	3,292	321	3,471	2,321	1,676	1,762	2,773	3,490
Loss On Sale of Fixed Assets						(682)				
Insurance Recoveries						1,239				
Amort. Of Debt Issuance Costs				(128)	(128)					
TDEC							(13,777)			
Interest Expense	(7,836)	(5,532)	(4,093)	(5,199)	(7,865)	(11,675)	(6,821)	(16,309)	(15,755)	(15,210)
	4,613	3,697	(801)	(5,006)	(4,522)	(8,797)	(18,922)	(14,547)	(12,981)	(11,720)
Income (loss) before Cont.	(39,062)	(46,958)	(169,920)	(242,557)	(268,556)	(294,850)	(98,344)	80,408	68,358	51,650
Other Financing										
Transfer to General Fund			(3,120)							
Capital Contributions										
Federal Grants		29,830	439,985	406,917	26,770	84,762	0	82,000	0	0
Local Government			77,165	17,835						
Local Business			250,000							
Total Capital Contributions		29,830	767,150	424,752	26,770	84,762	0	82,000	0	0
Change in Net Position	(39,062)	(17,128)	594,110	182,194	(241,786)	(210,088)	(98,344)	162,408	68,358	51,650

2014 Rates			2015 Rates			
Gallons		Minimum	Gallons		Minimum	% Inc.
First	2,000	$9.32	First	2,000	$13.98	50%
		Per 1,000 gal.			Per 1,000 gal.	
Next	2,000	$6.75	Next	2,000	$10.13	50%
Over	4,000	$5.25	Over	4,000	$7.88	50%

Water Sold (Gallons)	Monthly Charge	Monthly Charge	Difference	Percent Increase
2,000	$18.64	$27.96	$9.32	50%
3,000	$32.14	$48.21	$16.07	50%
4,000	$45.64	$68.46	$22.82	50%
5,000	$56.14	$84.21	$28.07	50%
7,000	$77.14	$115.71	$38.57	50%
10,000	$108.64	$162.96	$54.32	50%
15,000	$161.14	$241.71	$80.57	50%
20,000	$213.64	$320.46	$106.82	50%
50,000	$528.64	$792.96	$264.32	50%

Avg. Residential Usage

Sewer Net Position										
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Operating Revenues										
Charges for Services	124,406	125,442	121,501	109,638	121,269	147,772	178,558	223,875	226,113	228,374
Pretreatment Income								5,000	5,000	5,000
Other Operating Revenue	0	0	2,631	10,461	3,295	5,284	5,000	5,000	5,000	5,000
Total Operating Revenue	124,406	125,442	124,132	120,099	124,564	153,056	183,558	233,875	236,113	238,374
Operating Expenses										
Sewer Treatment Plant	117,411	106,692	24,925	57,775	88,689	112,032	122,102	125,160	129,499	133,868
Pretreatment Expense								5,000	5,000	5,000
Other Sewer Expenses	67,932	61,730	29,755	65,045	51,314	62,712	68,624	75,491	79,556	83,628
Transfer to General Fund			1,560							
Depreciation	61,646	92,485	72,687	73,028	78,708	88,529	85,695	120,333	122,866	123,858
Total Operating Expenses	246,989	260,907	128,926	195,847	218,712	263,272	276,421	325,984	336,921	346,353
Net Operating Income (Loss)										
Net Operating Income (Loss)	(122,583)	(135,465)	(4,794)	(75,748)	(94,148)	(110,217)	(92,863)	(92,110)	(100,808)	(107,979)
Non-Operating Revenues (Expenses)										
Interest Income	2,490	1,846	658	64	694	464	335	365	513	372
Amort. Of Debt Issuance Costs				(128)	(128)					
TDEC							(13,777)			
Interest Expense	(7,836)	(5,532)	(4,093)	(5,199)	(7,865)	(11,675)	(6,821)	(16,309)	(15,755)	(15,210)
	(5,346)	(3,686)	(3,435)	(5,263)	(7,299)	(11,211)	(20,263)	(15,944)	(15,241)	(14,838)
Income (loss) before Cont.	(127,929)	(139,151)	(8,229)	(81,011)	(101,447)	(121,427)	(113,126)	(108,054)	(116,049)	(122,817)
Other Finacing										
Transfer to General Fund			(1,560)							
Capital Contributions										
Federal Grants				406,917	26,770	111,532	0	82,000	0	0
Local Government				17,835		0	0	0	0	0
Local Business			250,000			0	0	0	0	0
Total Capital Contributions			250,000	424,752	26,770	111,532	0	82,000	0	0
Change in Net Position	(127,929)	(139,151)	240,211	343,740	(74,677)	(9,895)	(113,126)	(26,054)	(116,049)	(122,817)

Water Net Position										
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Operating Revenues										
Charges for Services	497,626	501,768	486,005	438,551	485,074	591,088	721,374	895,498	904,453	913,498
Other Operating Revenue	0	0	10,523	41,843	13,180	21,135	15,000	15,000	15,000	15,000
Total Operating Revenue	497,626	501,768	496,528	480,394	498,254	612,223	736,374	910,498	919,453	928,498
Operating Expenses										
Water Purchased	161,101	146,394	247,347	217,014	265,936	365,820	369,478	380,636	384,443	396,053
Other Expenses	195,971	178,080	342,379	352,156	323,496	336,651	266,395	258,600	266,133	273,374
Transfer to General Fund			1,560							
Depreciation	61,646	92,485	72,687	73,028	78,708	86,164	87,060	84,197	86,731	87,722
Total Operating Expenses	418,718	416,958	663,973	642,197	668,140	788,635	722,933	723,434	737,307	757,149
Net Operating Income (Loss)										
Net Operating Income (Loss)	78,908	84,810	(167,445)	(161,803)	(169,886)	(176,411)	13,441	187,064	182,147	171,349
Non-Operating Revenues (Expenses)										
Interest Income	9,959	7,383	2,634	257	2,777	1,857	1,341	1,397	2,260	3,118
Amort. Of Debt Issuance Costs										
Interest Expense										
	9,959	7,383	2,634	257	2,777	1,857	1,341	1,397	2,260	3,118
Income (loss) before Cont.	88,867	92,193	(164,811)	(161,546)	(167,109)	(174,555)	14,781	188,461	184,407	174,467
Other Finacing										
Transfer to General Fund			(1,560)							
Capital Contributions										
Federal Grants		29,830	439,985							
Local Government			77,165							
Local Business										
Total Capital Contributions		29,830	439,985							
Change in Net Position	88,867	122,023	273,614	(161,547)	(167,109)	(174,555)	14,781	188,461	184,407	174,467

WATER AND WASTEWATER FINANCING BOARD
Case Study

Case: **Town of Vonore, Blount and Monroe Counties**
Mayor: **Dr. Bob Lovingood**
Customers: **325 sewer**

The Town of Vonore has been experiencing a negative change in net position for the last nine fiscal years in its sewer collection system as of June 30, 2014. The financial and rate history is attached.

The water in Town is provided by TASS (Tellico Area Service System). TASS also owns and operates the sewage treatment plant, and handles all billing and collections for the Town's sewer collection system. The charge for treatment is $4.64 per 1,000 gallons.

The Town has major infiltration and inflow (I & I) problems, which must be addressed. Several applications for grant funding have been made, or will be made in the near future. MTAS has referred an engineering firm that has consulted with the Town. The engineering firm has recommended a complete rehabilitation program for the sewer collection system at an approximate cost of $660,000. The Town is exploring how to finance the project – possibly through the State Revolving Fund or the USDA.

Effective May 1, 2015, the Town increased sewer rates 33%. Some policies and procedures have been approved and others are being reviewed. The newly elected Mayor and Board, along with the new Town Recorder, have taken drastic steps to ensure financial viability moving forward and should be commended.

Staff recommends that Board endorse the actions of the Town. The Town will remain under the jurisdiction of the Board until an audit is received that reflects compliance.

TOWN OF VONORE									
HISTORY FILE									
	Audited	**Audited**	**Audited**	**Audited**	**Audited**	**Audited**	**Audited**	**Audited**	**Audited**
FYE June 30	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Sewer revenues	$ 91,753	$ 116,448	$ 119,688	$ 116,375	$ 122,502	$ 168,159	$ 196,524	$ 183,483	$ 211,907
Other revenues	$ 36,120	$ 16,237	$ 9,110	$ 3,781	$ 10,542	$ 1,688	$ 1,903	$ 8,791	$ 4,562
Gen Fund Transfer				$ 41,414	$ 48,700	$ 70,000	$ 34,093	$ 30,000	$ 46,946
Total Revenues	**$ 127,873**	**$ 132,685**	**$ 128,798**	**$ 161,570**	**$ 181,744**	**$ 239,847**	**$ 232,520**	**$ 222,274**	**$ 263,415**
Total Expenses	**$ 200,633**	**$ 194,864**	**$ 196,270**	**$ 214,559**	**$ 213,900**	**$ 258,880**	**$ 259,353**	**$ 282,596**	**$ 282,413**
Operating Income	$ (72,760)	$ (62,179)	$ (67,472)	$ (52,989)	$ (32,156)	$ (19,033)	$ (26,833)	$ (60,322)	$ (18,998)
Interest Expense	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Net position	**$ (72,760)**	**$ (62,179)**	**$ (67,472)**	**$ (52,989)**	**$ (32,156)**	**$ (19,033)**	**$ (26,833)**	**$ (60,322)**	**$ (18,998)**
Additional info									
Depreciation	$ 69,038	$ 69,459	$ 54,983	$ 45,711	$ 45,711	$ 45,711	$ 45,711	$ 45,711	$ 45,711
Sewer rates									
0 - 2,000 gallons	$ 8.60	$ 8.60	$ 10.75	$ 10.75	$ 10.75	$ 10.75	$ 19.45	$ 19.45	$ 21.00
All over	$ 4.30	$ 4.30	$ 5.40	$ 4.30	$ 4.30	$ 4.30	$ 6.50	$ 6.50	$ 7.80
Well water flat rate	$ 8.50	$ 8.50	$ 10.60	$ 10.60	$ 10.60	$ 10.60	$ 19.45	$ 19.45	$ 21.00
customers	327	330	350	327	327	327	325	325	325

TOWN OF VONORE

Dr. Bob Lovingood
Mayor

Courtney Dalton-Viar
City Recorder

John Hammontree
Vice Mayor
Police Commissioner

Mike Garren
Alderman
Public Works Commissioner

James Brown
Alderman
Fire Commissioner

Betty Sparks
Alderwoman
Parks & Recreation Commissioner

April 23, 2015

State of Tennessee
Comptroller of the Treasury
Office of State and Local Finance
James K. Polk Building, Suite 1600
505 Deaderick Street
Nashville, TN 37243-0273

RE: Town of Vonore Sewer System

The Town of Vonore would like to thank your office for the numerous communications, including emails, phone calls, and meetings regarding our sewer system. We are aware of the immediate need for increased revenues, due to several years of negative changes in net position. The current administration is dedicated to correcting this problem.

Since the election in November 2014, several changes have taken place in an effort to address the financial distress of the town's sewer system. Rates have been increased by 33%, with an effective date of May 1, 2015, to produce a stronger stream of revenue. Due to the billing cycle, we will not see increases in revenue until July 10, 2015. Public communications during several city council meetings have been made to make our citizens and sewer customers aware of the issues we are facing. With each rate increase, we have notified sewer customers in writing, explaining the reasons why rates must increase. We have also established a sewer refund / bill adjustment policy for customers that may experience leaks or excessive water usage. This will limit the amount of refunds given to customers, which has been a significant expense to the sewer fund in the past.

Since sewer is an essential service, we must continue operations. However, due to our cash flow problems and rates not being high enough in the past, we were left with no option but to transfer $50,000 from the General Fund to the Sewer Fund, which we have discussed with Mr. Ron Queen. We understand that state law requires our rates to be high enough to sustain the sewer system. Since no significant increases have been made in the last few years, we feel confident that our 33% rate increase will bring in the revenue needed to finance daily operations going forward. We will inform the Board of Aldermen at each monthly meeting on our sewer fund including a monthly expense spreadsheet that will include depreciation. If revenue does not come in as projected with the new rates, we will consider an additional increase.

I have attached the two most recent sewer rate increases, our sewer refund policy, and a copy of the letter we sent to our citizens. Please be assured that we are determined to make a positive impact on this system. We hope to see increased cash flows due to higher rates. We have also attended several meetings with a sewer engineering firm on a phased project that would consist of a complete sewer rehabilitation program. We are aware that the system has significant I&I problems, which we are consulting with the engineering firm to address. We are currently looking at the State

P.O. Box 218 · 613 Church Street · Vonore, TN 37885 · Phone: 423-884-6211 · Fax: 423-884-6839
www.townofvonoretn.com Email: townofvonore@tds.net

Revolving Loan Fund or the USDA to finance future phases of the sewer rehabilitation, as well as possible grant opportunities for funding as well.

Should you have questions please do not hesitate to call me. Thank you for the guidance your office has provided to the Town of Vonore over the past several weeks. We look forward to achieving significant financial and operational improvements with the town's sewer system.

Sincerely,

Courtney Dalton Viar
City Recorder

Resolution No. 15-04

WHEREAS, Resolution No. 12-04, of the Town of Vonore, established the sewer rate structure, and

WHEREAS, it is in the best interest of the Town of Vonore, to revise the sewer rates set in that resolution;

NOW THEREFORE, be it resolved that Resolution No. 15-02 be amended to establish as follows:

SECTION 1: The following monthly sewer use charges are levied against sewer users:

Effective May 1, 2015

Sewer Use	Charge Per Month
0-2,000 gallons	$ 28.00
Over 2,000 Gallons	$ 10.50 per 1000 gallons*
Well Water Customers	$ 28.00

The amount of sewer usage shall be determined from the metered water usage, except in the case of well water users.

*Gallons over increments of 1000 gallons shall be counted as 1000 gallons

SECTION 2: The following sewer connection charges are levied for connections to the public sewer system:

Connection Fee Classification	Connection Fee
Existing Residential dwellings (no road cut)	$375.00
Existing Residential dwellings (road cut)	$625.00
Residential dwellings	$1875.00
Residential dwellings (new development)*	$1875.00
Existing Commercial Buildings	$1875.00
Commercial Buildings	$3750.00

*New developments include those installed by the developers and transferred to the town. The connection fee will be paid by the developer for each new tap before the building permit is issued from the Town of Vonore.

Section 3: The following non- refundable charge is levied on all applications for sewer service where such service is to be provided to property not owned by the applicant: $50.00

Section 4: These rates will automatically increase when/if the TASS board increases water treatment rates to the Town of Vonore.

This Resolution adopted this 14th day of April, 2015.

Mayor

City Recorder

Resolution No. 15-02

WHEREAS, Resolution No. 12-04, of the Town of Vonore, established the sewer rate structure, and

WHEREAS, it is in the best interest of the Town of Vonore, to revise the sewer rates set in that resolution;

NOW THEREFORE, be it resolved that Resolution No. 12-04 be amended to establish as follows:

SECTION 1: The following monthly sewer use charges are levied against sewer users:

Effective February 1, 2015

Sewer Use	Charge Per Month
0-2,000 gallons	$21.00
Over 2,000 Gallons	$9.00 per 1000 gallons*
Well Water Customers	$21.00

The amount of sewer usage shall be determined from the metered water usage, except in the case of well water users.

*Gallons over increments of 1000 gallons shall be counted as 1000 gallons

SECTION 2: The following sewer connection charges are levied for connections to the public sewer system:

Connection Fee Classification	Connection Fee
Existing Residential dwellings (no road cut)	$375.00
Existing Residential dwellings (road cut)	$625.00
Residential dwellings	$1875.00
Residential dwellings (new development)*	$1875.00
Existing Commercial Buildings	$1875.00
Commercial Buildings	$3750.00

*New developments include those installed by the developers and transferred to the town. The connection fee will be paid by the developer for each new tap before the building permit is issued from the Town of Vonore.

Section 3: The following non- refundable charge is levied on all applications for sewer service where such service is to be provided to property not owned by the applicant: $50.00

This Resolution adopted this 13th day of January, 2015.

Mayor

City Recorder

RESOLUTION NO. 15-01

SEWER REFUND/BILL ADJUSTMENT POLICY

WHEREAS, the governing body of the Town of Vonore is adopting a sewer refund/bill adjustment policy for the Town's sewer customers,

NOW THEREFORE BE IT RESOLVED BY THE MAYOR AND BOARD OF ALDERMEN OF THE TOWN OF VONORE, TENNESSEE AS FOLLOWS:

SEWER REFUND POLICY **Effective: February 1, 2015**

a. When a Vonore Sewer customer has knowledge of a possible leak on their side of the meter, the customer will notify TASS as soon as possible. The customer must provide information on approximately when the leak occurred and when the leak was fixed. Based on the customer's usage, Vonore may adjust the sewer bill based on the dates provided.

b. The adjustment will be made by first calculating the customer's average usage for the past 6 months and subtracting that amount from the leak usage amount. Vonore may then take the highest month leak usage and refund 50%. (In some cases, depending on the bill cycle, a leak may cover two bill cycles. If this happens, Vonore will adjust the two consecutive months' bills.) This adjustment amount will be mailed to the sewer customer in the form of a refund check. Adjustments to a customer's bill will only be allowed one time in any twelve month period.

c. Adjustments will be processed for the following reasons: leaks and excess water usage, including items such as filling swimming pools and operating irrigation systems.

Example: A customer had a leak and the sewer portion of the bill is $250.00. The 6 month average sewer bill is $100.00. Vonore will refund 50% of the amount above average. (250 – 100 = 150). In this case, Vonore will refund $75.00.

Duly passed and approved this 13th day of January, 2015.

Bob Lovingood, Mayor

ATTEST:

Courtney Dalton Viar, City Recorder

SEWER REFUND POLICY Effective: February 1, 2015

a. When a Vonore Sewer customer has knowledge of a possible leak on their side of the meter, the customer will notify TASS as soon as possible. The customer must provide information on approximately when the leak occurred and when the leak was fixed. Based on the customer's usage, Vonore may adjust the sewer bill based on the dates provided.

b. The adjustment will be made by first calculating the customer's average usage for the past 6 months and subtracting that amount from the leak usage amount. Vonore may then take the highest month leak usage and refund 50%. (In some cases, depending on the bill cycle, a leak may cover two bill cycles. If this happens, Vonore will adjust the two consecutive months' bills.) This adjustment amount will be mailed to the sewer customer in the form of a refund check. Adjustments to a customer's bill will only be allowed one time in any twelve month period.

c. Adjustments will be processed for the following reasons: leaks and excess water usage, including items such as filling swimming pools and operating irrigation systems.

Example: A customer had a leak and the sewer portion of the bill is $250.00. The 6 month average sewer bill is $100.00. Vonore will refund 50% of the amount above average. (250 – 100 = 150). In this case, Vonore will refund $75.00.

TOWN OF VONORE

Dr. Bob Lovingood
Mayor

Courtney Dalton-Viar
City Recorder

John Hammontree
Vice Mayor
Police Commissioner

Mike Garren
Alderman
Public Works Commissioner

James Brown
Alderman
Fire Commissioner

Betty Sparks
Alderwoman
Parks & Recreation Commissioner

April 22, 2015

Dear Vonore Sewer Customers,

I am writing to give you information about our current sewer system, which has been discussed in the past several city council meetings. As you all know, the same issues that the sewer system was facing several years ago are the same issues the system is facing today. The system is aging and is in need of intensive repair and maintenance work. The State of TN regulates sewer operations and requires that systems operate in an efficient and effective manner, while being funded solely through sewer rate revenues. As the letters from the State Comptroller's office have informed us, it is a state law that a sewer system must support itself, and funds from the general fund can no longer be used to subsidize the sewer account. Our current rates are insufficient to pay our sewer treatment bill to TASS each month, therefore we are forced by state law to increase rates.

The new sewer rate increase was passed at the April 14, 2015, City Council Meeting, with an effective date of May 1, 2015. The increase will show up on the TASS bill that is due July 10, 2015. The new rates are as follows:

- 0-2,000 gallons: $28.00
- Per 1,000 gallons over 2,000: $10.50
- Well Water Customers: $28.00

We have attended several meetings with various sewer and finance experts. A sewer rehabilitation program will be a future need for Vonore. We are currently waiting on proposals from a sewer engineering firm on the initial costs of the preliminary sewer work. We are also actively working on possible grant opportunities that could help fund the sewer rehabilitation.

We hope that with time our rates will be able to sustain our sewer operations. However, the State Comptroller's office along with the State of TN Water and Wastewater Financing Board will closely monitor our town's cash flows, which will determine if further increases will be needed. We appreciate your understanding during this difficult time as we work to make Vonore a better place to live and work.

Sincerely,

Vonore Mayor and Board of Aldermen

WATER AND WASTEWATER FINANCING BOARD
Case Study

Case:	**City of Westmoreland**
Mayor:	**Jerry Kirkman**
Customers:	**1530 water, 888 Sewer**
Validity Score:	**71**
Non-revenue water:	**26.8%**

The City of Westmoreland has been reported to the Board as having two consecutive years with a negative change in net position as of June 30, 2014. The financial and rate history is attached.

The City of Gallatin provides all water to the City at a cost of $3.97 per 1,000 gallons. Gallatin has increased the purchase price 5% per year on average. This increase has been passed along to the customers of the City.

Previously depreciation has not been included in the City's budget resulting in the current financial condition.

The City has decreased its water loss in the past year from 54% to 27%. This is in part because of a meter change out policy established by the new public works director.

The attached plan proposed by the Mayor has not been approved by Council. It basically proposes a 10% rate increase each year plus the percentage of increase from the City of Gallatin. The plan also includes an increase in the water and sewer tap fees, as well as a review of the other fees charged by the City.

Staff recommends the Board endorse the actions of the City of Westmoreland pending passage by the entire City Council. Staff also recommends that if the plan not adopted by Council, the Mayor and Council be required to attend the next Board meeting.

The City will continue to be under the jurisdiction of the Board until an audit is received which reflects compliance.

CITY OF WESTMORELAND					
HISTORY FILE					
	Audited	**Audited**	**Audited**	**Audited**	**Audited**
FYE 6/30	**2010**	**2011**	**2012**	**2013**	**2014**
W/S Revenues	$ 1,086,367	$ 1,138,046	$ 1,160,707	$ 1,223,422	$ 1,312,559
Other revenues	$ 100,757	$ 54,181	$ 36,039	$ 99,940	$ 30,835
Capital Contribution	$ 234,597		$ 781,172	$ 155,784	$ 91,400
Total Revenues	**$ 1,421,721**	**$ 1,192,227**	**$ 1,977,918**	**$ 1,479,146**	**$ 1,434,794**
Total Expenses	**$ 1,234,579**	**$ 1,337,679**	**$ 1,405,072**	**$ 1,477,965**	**$ 1,478,018**
Revenue vs. Expenses	$ 187,142	$ (145,452)	$ 572,846	$ 1,181	$ (43,224)
Interest Expense	$ 49,480	$ 46,099	$ 54,191	$ 48,356	$ 48,504
Change in Net Position	**$ 137,662**	**$ (191,551)**	**$ 518,655**	**$ (47,175)**	**$ (91,728)**
Supplemental Information					
Principal payment	$ 31,859	$ 34,077	$ 263,081	$ 23,129	$ 28,989
Depreciation	$ 210,951	$ 203,906	$ 217,984	$ 247,864	$ 260,691
Water and Sewer Rates					
Residential Inside					
2,000 gallon minimum	$ 20.61	$ 21.43	$ 21.43	$ 21.43	$ 21.43
2,001-5,000 gallons	$ 5.25	$ 5.39	$ 5.39	$ 5.39	$ 5.39
5,001-10,000 gallons	$ 4.44	$ 4.54	$ 4.54	$ 4.54	$ 4.54
10,000+ gallons	$ 3.84	$ 3.92	$ 3.92	$ 3.92	$ 3.92
Commercial Inside -30% higher than residential					
Outside Town - 50% higher than residential					
Unaccounted for Water	**42.00%**	**46.00%**	**40.00%**		
Validity score				**61**	**71**
Non-revenue Water				**30.7%**	**26.8%**
Water Customers	1289	1290		1295	1305
Sewer Customers	835	840		845	855

Jerry Kirkman, Mayor

615-644-2414 Office
615-388-8715 Cell

City of Westmoreland
1001 Park Street
Westmoreland, TN 37186

Joyce Welborn
Utilities Board Manager
State of Tennessee
Water and Wastewater Financing Board
James K. Polk State Office Building
505 Deaderick St., Suite 1500
Nashville, TN 37243-1402

Dear Ms. Welborn:

This letter is sent in response to your letter of January 6, 2015, addressed to Mayor Michael Carter. As the present Mayor, I was distraught to learn the financially distressed condition of the City of Westmoreland.

Discussing the financial situation with Fredia Carter, CFO and recorder, it was her opinion that the City did not have any financial problems with respect to expenditures. However, now after receiving a copy and reviewing Mr. John Poole's audit of 2013-2014 finances, I am inclined to agree with your results regarding depreciation. Mr. Poole is scheduled to appear before the Westmoreland City Council on Thursday, May 7, 2015, for a discussion of his audit and its findings.

Taking into consideration the need for us to raise approximately 28% of our enterprise fund concerning water and sewer, our shortfall for depreciation is approximately $367,000. We have already implemented several of the recommendations which you suggested to us such as purchasing meters in bulk and beginning a change-out program. Our public works director, Adam Herald, is setting forth the program to change meters out on a predetermined number of gallons or a set time in number of years of service. We are beginning with 20 per month as a start and will also work to maintain an accurate and complete record of this operation. As you stated during our meeting with the council, the meter is the "cash register" for water sales for our city. Also as part of a current grant, several new lines have been installed that should cut down significantly on leaks and we will be adding a new telemetry reporting system to report abnormal flows on lines much sooner than leaks would have been detected in the past. At present personnel has to walk the lines to search for a leak in order to narrow it down. The city purchased two additional isolation meters in April to be installed on troubled lines which will also have telemetry added to those for a quick response. A significant amount of revenue should be recovered from this upgrade. At present I do not know how to estimate a cost savings to report to you. This will have to be monitored to know the cost saving effect it will have. As you suggested, I have attended a TAUD training workshop to gain more knowledge of our utility systems. I plan to attend further training and gain as much knowledge as possible to promote a more efficient water and wastewater system.

Per our phone conversation on Tuesday, April 28, 2015, the Westmoreland City Council currently has two members that have resigned and hopefully the current members will appoint replacements on Thursday, May 21, 2015. Therefore, the plan I am presenting has not been voted on by a full council. However, I feel this is what is necessary for our city to meet the requirements of this response. I must admit though that it is a concern since many of our citizens are elderly on fixed income, that they will be able to pay rate increases of this magnitude.

My Proposed Plan

$1,312,559	Total Sales Revenue for 2014
131,200	10% proposed increase for 2015
52,500	4% Purchase Price increase from Gallatin
$1,496,259	Total Estimated Revenue for 2015

$1,496,259	Total Revenue for 2015
149,600	10% proposed increase 2016
29,925	Estimated 2% Purchase Price increase from Gallatin
$1,675,784	Total Estimated Revenue for 2016

$1,675,784	Total Revenue for 2016
167,578	10% Proposed increased 2017
33,515	Estimated 2% Purchase Price Increase from Gallatin
$1,876,877	Total Estimated Revenue for 2017

My plan also includes increasing current residential tap fees from $800 to $1,500, commercial tap fees from $1,000 to $2,000, and industrial tap fees from $1,500 to $2,000 inside the city limits. The fees outside the city will also be increased from current residential tap fees of $2,000 to $2,500, commercial $2,500 to $3,000. Current residential sewer tap fees will increase from $600 to $1,200, commercial $800 to $1,500, and industrial $1,000 to $1,500.

In addition, the council will examine the current non-refundable connection fees, re-connection fees, and bad check fees to capture additional revenue.

Thank you very much for your assistance. I look forward to hearing from you regarding a decision on this matter. Please let me know if we need to attend the Board meeting on May 14, 2015.

Sincerely,

Mayor Jerry Kirkman
City of Westmoreland

STATE OF TENNESSEE
WATER AND WASTEWATER FINANCING BOARD
505 Deaderick Street, Suite 1500
James K. Polk State Office Building
Nashville, Tennessee 37243-1402
Phone (615) 401-7841 Fax (615) 741-6216

November 17, 2014

Mayor Jeff A. Scott
Town of Brighton
P. O. Box 277
Brighton, TN 38011

Dear Mayor Scott:

On November 13, 2014, the Water and Wastewater Financing Board met to discuss a plan to eliminate the financially distressed condition of the water and sewer systems in the Town of Brighton.

The Board voted:

- If a minimum of a 25% rate increase is made effective by January 1, 2015, the Town shall send an adopted ordinance that shows the 25% rate increase going into effect
- If a minimum of a 25% rate increase is not made effective by January 1, 2015, the Town must have representation present at the March 12, 2015 Board meeting to explain the inaction of the Town

If the Board can be of further assistance to you, please feel free to contact me at (615) 401-7864 or Joyce.Welborn@cot.tn.gov.

Sincerely,

Joyce Welborn
Utilities Board Manager

ORDINANCE NUMBER 2014-12-09

AN ORDINANCE TO SET THE RATES, FOR WATER AND SEWER SERVICE OF THE TOWN OF BRIGHTON, TENNESSEE.

WHEREAS, To have a financially viable water and sewer system; and

WHEREAS, To comply with Tennessee Code Annotated; and

WHEREAS, The Board of Mayor and Aldermen of the Town of Brighton finds it necessary to increase the rates for the water and sewer service of the Town of Brighton;

NOW, THEREFORE: BE IT ORDAINED BY THE BOARD OF MAYOR AND ALDERMEN OF THE TOWN OF BRIGHTON, TENNESSEE, THAT:

Section 1. This ordinance will replace in entirety the current water and sewer rates for the Town of Brighton.

Section 2. The rates for water and sewer service will be as shown in the rate schedule attachment.

Section 3. The above rates shall go into effect January 1, 2015.

Section 4. This ordinance shall become effective upon final passage, the public welfare requiring it.

Passed First Reading November 18, 2014

Passed Second Reading December 9, 2014

Jeff A Scott, Mayor

Tammy McKinney, Town Recorder

Water Rates for City Water
As of January 2015

- 1 Unit = 100 Gallons

Gallons/Units	($)Water Rate	($)Sewer
0-999	10.00	10.00
1000/10	14.38	14.38
1100/11	14.81	14.81
1200/12	15.25	15.25
1300/13	15.69	15.69
1400/14	16.13	16.13
1500/15	16.56	16.56
1600/16	17.00	17.00
1700/17	17.44	17.44
1800/18	17.88	17.88
1900/19	18.31	18.31
2000/20	18.75	18.75
2100/21	19.19	19.19
2200/22	19.63	19.63
2300/23	20.06	20.06
2400/24	20.50	20.50
2500/25	20.94	20.94
2600/26	21.38	21.38
2700/27	21.81	21.81
2800/28	22.25	22.25
2900/29	22.69	22.69
3000/30	23.13	23.13
3100/31	23.56	23.56
3200/32	24.00	24.00
3300/33	24.44	24.44
3400/34	24.88	24.88
3500/35	25.31	25.31
3600/36	25.75	25.75
3700/37	26.19	26.19
3800/38	26.63	26.63
3900/39	27.06	27.06
4000/40	27.50	27.50

4100/41	27.94	27.94
4200/42	28.38	28.38
4300/43	28.81	28.81
4400/44	29.25	29.25
4500/45	29.69	29.69
4600/46	30.13	30.13
4700/47	30.56	30.56
4800/48	31.00	31.00
4900/49	31.44	31.44
5000/50	31.88	31.88
5100/51	32.31	32.31
5200/52	32.75	32.75
5300/53	33.19	33.19
5400/54	33.63	33.63
5500/55	34.06	34.06
5600/56	34.50	34.50
5700/57	34.94	34.94
5800/58	35.38	35.38
5900/59	35.81	35.81
6000/60	36.25	36.25
6100/61	36.69	36.69
6200/62	37.13	37.13
6300/63	37.56	37.56
6400/64	38.00	38.00
6500/65	38.44	38.44
6600/66	38.88	38.88
6700/67	39.31	39.31
6800/68	39.75	39.75
6900/69	40.19	40.19
7000/70	40.63	40.63
7100/71	41.06	41.06
7200/72	41.50	41.50
7300/73	41.94	41.94
7400/74	42.38	42.38
7500/75	42.81	42.81
7600/76	43.25	43.25
7700/77	43.69	43.69
7800/78	44.13	44.13
7900/79	44.56	44.56
8000/80	45.00	45.00
8100/81	45.44	45.44

8200/82	45.88	45.88
8300/83	46.31	46.31
8400/84	46.75	46.75
8500/85	47.19	47.19
8600/86	47.63	47.63
8700/87	48.06	48.06
8800/88	48.50	48.50
8900/89	48.94	48.94
9000/90	49.38	49.38
9100/91	49.81	49.81
9200/92	50.25	50.25
9300/93	50.69	50.69
9400/94	51.13	51.13
9500/95	51.56	51.56
9600/96	52.00	52.00
9700/97	52.44	52.44
9800/98	52.88	52.88
9900/99	53.31	53.31
10000/100	53.75	53.75
15000/150	75.63	75.63
20000/200	97.50	97.50
25000/250	119.38	119.38
30000/300	141.25	141.25
35000/350	163.13	163.13
40000/400	185.00	185.00
45000/450	206.88	206.88
50000/500	228.75	228.75
55000/550	250.63	250.63
60000/600	272.50	272.50
65000/650	294.38	294.38
70000/700	316.25	316.25
75000/750	338.13	338.13
80000/800	360.00	360.00
85000/850	381.88	381.88
90000/900	403.75	403.75
95000/950	425.63	425.63
100000/1000	447.50	447.50

Water Rates for County Water
(Same Rates Apply to County Yard Meters)
As of January 2015

- 1 Unit = 100 Gallons

Gallons/Units	($)Water Rate
100/1	16.25
200/2	16.51
300/3	16.78
400/4	17.04
500/5	17.30
600/6	17.56
700/7	17.83
800/8	18.09
900/9	18.35
1000/10	18.61
1500/15	19.93
2000/20	21.24
2500/25	22.55
3000/30	23.86
3500/35	25.18
4000/40	26.49
4500/45	27.80
5000/50	29.11
5500/55	30.43
6000/60	31.74
6500/65	33.05
7000/70	34.36
7500/75	35.68
8000/80	36.99
8500/85	38.30
9000/90	39.61
9500/95	40.93
10000/100	42.24
15000/500	55.36
20000/200	68.49
25000/250	81.61
30000/300	94.74
35000/350	107.86

40000/400	120.99
45000/450	134.11
50000/500	147.24
55000/550	160.36
60000/600	173.49
65000/650	186.61
70000/700	199.74
75000/750	212.86
80000/800	225.99
85000/850	239.11
90000/900	252.24
95000/950	265.36
100000/1000	278.49

Water Rates for Non-Sewered City Water
(Same Rates Apply to City Yard Meters)
As of January 2015

- 1 Unit = 100 Gallons

Gallons/Units	($)Water Rate
100/1	10.00
500/5	11.00
1000/10	12.25
1500/15	13.50
2000/20	14.75
2500/25	16.00
3000/30	17.25
3500/35	18.50
4000/40	19.75
4500/45	21.00
5000/50	22.25
5500/55	23.50
6000/60	24.75
6500/65	26.00
7000/70	27.25
7500/75	28.50
8000/80	29.75
8500/85	31.00
9000/90	32.25
9500/95	33.50
10000/100	34.75
15000/150	47.25
20000/200	59.75
25000/250	72.75
30000/300	84.75
35000/350	97.25
40000/400	109.75
45000/450	122.25
50000/500	134.75
55000/550	147.25
60000/600	159.75
65000/650	172.25
70000/700	184.75

75000/750	197.25
80000/800	209.75
85000/850	222.25
90000/900	234.75
95000/950	247.25
100000/1000	259.75

Joyce Welborn

From: Tammy McKinney <tmckinney@townofbrighton.com>
Sent: Friday, April 10, 2015 10:16 AM
To: Joyce Welborn; John Greer
Subject: Town of Brighton

Good Morning!

I just wanted to follow up with you concerning the interfund loan. According to our June 2013 audit, the water fund owed the general fund a total of $308,991.00. I started moving $50,000.00 each month beginning in November of 2014. The last payment was made this month. The entire balance of $308,991.00 has been paid in full. Please let me know if you need any additional information.

Thanks!

Tammy McKinney
Town of Brighton
Town Recorder
Phone (901)476-8661
Fax (901)475-9983

WATER AND WASTEWATER FINANCING BOARD
Status Update

Status Update:	**Town of Obion, Obion County**
Mayor:	**Rodney Underwood**
Customers:	**667 water, 424 sewer**
Validity Score:	**74**
Non-revenue water:	**19.10%**

The Town of Obion has been experiencing a negative change in net position in its water and sewer system for three consecutive fiscal years as of fiscal year 2013.

Great improvements have been made during the tenure of the current mayor and public works director. Leaks have decreased by 78% in the past two years. The Town would have reached compliance for FYE 2013 had it not been for the payment in lieu of taxes made to the general fund.

Obion has applied for $526,000 in Community Development Block Grants for the water department. The grants will be used to put automatic read meters in the system.

Effective February 4, 2014, the Town implemented a 3.5% rate increase for all overages. In September 2014, the Town implemented a one dollar increase on all minimum bills. These rate increases are projected to bring an additional $10,368 in revenue to the system. Obion is projecting a positive change in net position for the current fiscal year.

The town will continue to be monitored until an audit is received that reflects compliance.

TOWN OF OBION				
HISTORY FILE				
	Audited	**Audited**	**Audited**	**Audited**
Fiscal Year ended 6/30	**2010**	**2011**	**2012**	**2013**
W/S Revenues	$ 350,736	$ 334,956	$ 362,865	$ 389,448
Other revenues	$ 27,024	$ 18,327	$ 23,397	$ 27,644
Grant revenue	$ 279,889	$ 81,749	$ 304	
GF Transfer in/(out)	$ 29,995	$ 27,972		$ (6,741)
Total Revenues	**$ 687,644**	**$ 463,004**	**$ 386,566**	**$ 410,351**
Total Expenses	**$ 367,474**	**$ 481,244**	**$ 396,491**	**$ 409,385**
Revenue vs. Expenses	$ 320,170	$ (18,240)	$ (9,925)	$ 966
Interest Expense	$ 3,831	$ 10,148	$ 2,506	$ 1,839
Change in Net Position	**$ 316,339**	**$ (28,388)**	**$ (12,431)**	**$ (873)**
Supplemental Information				
Principal payment	$13,667	$6,666	$14,667	$14,666
Depreciation	$ 86,900	$ 86,645	$ 83,649	$ 83,199
Water Rates - All Customers				
First 1,500 gallons	$ 10.20	$ 10.20	$ 10.50	$ 10.50
All over	$ 3.66	$ 3.66	$ 4.00	$ 4.00
Sewer rates are 100% of water				
Water customers	532	444		667
Sewer customers	262	241		424
Customers			669	
Water Loss	**14.252%**	**16.840%**		
Validity score			**74**	**74**
Non-revenue Water			**10.60%**	**19.10%**

ORDINANCE NO 2014- 08
TOWN OF OBION
OBION, TN 38240

WHEREAS, the Town of Obion, Tennessee desires to adopt rates for its water and sewer service, and:

WHEREAS, pursuant to Tennessee Code Annotated Section 7-35-414 requires municipalities to establish by ordinance rates for water and sewer services:

NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF MAYOR AND COUNCILMEN OF THE TOWN OF OBION, TENNESSEE, THAT:

Section 1- The Town hereby establishes the following schedule of rates for water and/or sewer service:

Inside municipal limits the rates shall be:
WATER/ SEWER- First 1,500 gallons $12.00 (minimum bill)
WATER- over 1,500 gallons $5.58 per thousand gallons
SEWER- over 1,500 gallons $5.58 per thousand gallons

For customers outside municipal limits the rates shall be:
First 1,500 gallons $17.79 (minimum bill)
Over 1,500 gallons $9.54 per thousand gallons

Section 2- This ordinance shall take effect on its second and final reading, the public health, safety, and welfare requiring it. Read and adopted this 4th th day of September, 2014.

BOARD OF COUNCILMEN:

Brad Ashby
Parker T. Anderson
James R. DeBriant
W. Jack Jones
Patsy Barker

PASSED 9-4-2014
1ST READING Aug 21, 2014
2ND READING Sept 4, 2014

ATTEST: Dana Flatt
SIGNATURE
City recorder
TITLE

ORDINANCE NO. 2014- 02
TOWN OF OBION
OBION, TN 38240

WHEREAS, the Town of Obion desires to adopt rates for its water and sewer service, and;

WHEREAS, pursuant to TCA Section 7-35-414 requires municipalities to establish by ordinance rates for water and sewer services:

NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF MAYOR AND COUNCILMEMBERS OF THE TOWN OF OBION, TENNESSEE, THAT:

Section 1: The Town hereby establishes the following schedule of rates for water and/or sewer service:

Inside municipal limits the rates shall be:

WATER & SEWER- First 1,500 gallons $11.00 (minimum bill)

WATER- over 1,500 gallons $5.78 per thousand gallons

SEWER- over 1,500 gallons $5.78 per thousand gallons

Outside municipal limits rates shall be:

WATER- First 1,500 gallons $17.79 (minimum bill)

WATER- over 1,500 gallons $9.54 per thousand gallons

Section 2: This ordinance shall take effect on its second and final reading, the public health, safety, and welfare requiring it.

Read and adopted this 3rd day of February, 2014.

BOARD OF COUNCILMEMBERS:

Horace Ashley

Robert Crossno

James DeFriest

Polly Kelley

Patsy Barker

1ST READING: 1-6-2014

2ND READING: 2-3-2014

ATTEST: Jana Flutz

CITY RECORDER

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0
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? Click to access definition
+ Click to add a comment

Water Audit Report for: Bells Water System (0000045)
Reporting Year: 2014 7/2013 - 6/2014

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' ———>

Volume from own sources:	+ ?	5	104.584	MG/Yr	+ ?	7		0.523	MG/Yr
Water imported:	+ ?	n/a	0.000	MG/Yr	+ ?				MG/Yr
Water exported:	+ ?	n/a	0.000	MG/Yr	+ ?				MG/Yr

Pcnt: Value:

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

WATER SUPPLIED: 104.061 MG/Yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

					Pcnt:	Value:	
Billed metered:	+ ?	9	65.803	MG/Yr			
Billed unmetered:	+ ?	n/a	0.000	MG/Yr			
Unbilled metered:	+ ?	n/a	0.000	MG/Yr			
Unbilled unmetered:	+ ?		1.301	MG/Yr	1.25%		MG/Yr

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

AUTHORIZED CONSUMPTION: ? 67.104 MG/Yr

Use buttons to select percentage of water supplied OR value

WATER LOSSES (Water Supplied - Authorized Consumption) 36.957 MG/Yr

Apparent Losses

					Pcnt:	Value:	
Unauthorized consumption:	+ ?		0.260	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	4.200	MG/Yr	6.00%		MG/Yr
Systematic data handling errors:	+ ?		0.165	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: ? 4.625 MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: ? 32.332 MG/Yr

WATER LOSSES: 36.957 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: ? 38.258 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	+ ?	7	100.0	miles
Number of active AND inactive service connections:	+ ?	7	1,101	
Service connection density:	?		11	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 55.0 psi

COST DATA

Total annual cost of operating water system:	+ ?	9	$551,932	$/Year
Customer retail unit cost (applied to Apparent Losses):	+ ?	9	$18.16	$/1000 gallons (US)
Variable production cost (applied to Real Losses):	+ ?	9	$385.32	$/Million gallons

☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 68 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

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

WAS v5.0

American Water Works Association.
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Water Audit Report for: **Bells Water System (0000045)**
Reporting Year: **2014** | **7/2013 - 6/2014**

***** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 68 out of 100 *****

System Attributes:

	Apparent Losses:	4.625	MG/Yr
+	Real Losses:	32.332	MG/Yr
=	**Water Losses:**	**36.957**	MG/Yr
?	Unavoidable Annual Real Losses (UARL):	14.18	MG/Yr
	Annual cost of Apparent Losses:	$83,987	
	Annual cost of Real Losses:	$12,458	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:	36.8%	
	Non-revenue water as percent by cost of operating system:	17.6%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	11.51	gallons/connection/day
	Real Losses per service connection per day:	N/A	gallons/connection/day
	Real Losses per length of main per day*:	885.82	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):	32.33	million gallons/year
?	Infrastructure Leakage Index (ILI) [CARL/UARL]:	2.28	

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

62a

60

Bells

Initial Check list for Addressing Water Loss

1. Are you billing for all general government water use? Examples: City Hall, Parks, Community Centers, etc.
2. Are you accounting for the water used by the water and/or sewer department?
3. Do you periodically check or inspect all 2" and larger meters?
4. Do you have a recalibration policy and procedure in place?
5. Do you have a meter replacement policy? Is the trigger based on age (length of time in service) or on gallons?
6. Do you have a process to inspect for unauthorized consumption? What are the consequences if unauthorized consumption is discovered?
7. Do you have a leak detection program currently in place?
8. Do you have written policies, including a policy for billing adjustments? Are the written policies followed correctly by all levels of staff?
9. Do you have authorized non-customer users (volunteer fire departments, etc)? Do you account for the use? Do you have a method for the user to report water usage?
10. Is your system "zoned" to isolate water loss?
11. Do you search for leaks at night when there is little traffic or small household usage?
12. Do you or can you control pressure surges?
13. Do you have or have access to leak detection equipment?
14. What is your policy for notifying customers they have a leak?
15. Do you have a public relations program to encourage citizens to report leaks?
16. Do you have a policy to prosecute water theft or meter tampering/damage?
17. What is the monetary value of the lost water?
18. Is the cost to repair the leak justified based on the amount of water being lost?

Suggestion: The Division of Water Supply requires a specific person(s) be assigned to the cross connection program. It may be beneficial to assign the same person to account for water loss.

Initial Check list for Addressing Water Loss

1. The city hall and fire department are presently metered and we meter the fire hydrant where water is sold in bulk. The only other government facilities are utility buildings.
2. Presently the utility shop and lab are not metered but will be metered in the future.
3. The larger meters are changed out if there is any indication of a problem but are not routinely tested for accuracy.
4. Yes, our master meters at both treatment plants are now scheduled for annual testing.
5. Our presently policy is to replace meters when they stop or we feel accuracy is falling off.
6. Utility workers are constantly on the lookout for theft. Meter readers check services that are currently inactive and meters that have service discontinued are checked. We charge anyone stealing water with theft of service and prosecute.
7. We have leak detection equipment which is used to pinpoint leaks. Our personnel are always looking for leakage and we respond quickly to calls for low pressure. Due to the size of our system most substantial leaks will be noticed on our daily usage.
8. We have written policies in place for bill adjustments and they are followed. City hall personnel are the ones to calculate adjustments based on these policies.
9. The volunteer fire department reports usage to the utility.
10. No, due to the size of the system any substantial leak will show up in our daily usage.
11. Typically leaks will surface quickly in this area and can be pinpointed using leak detection equipment at any time. If necessary, we have searched for leaks at night.
12. We have not had an issue with surges in the past.
13. We own a Heath Aqua Scope leak detector.
14. Customers are notified as soon as we discover they have a leak. If the customer is not home, we leave door hangers and follow up with a call.
15. We do not have a program in place, however our customers have always been good to report leaks they see in the system.
16. We have a policy to prosecute for water theft and tampering. We have prosecuted people for this in the past.
17. According to the AWWA water audit software, the annual cost of our real losses is $12,458.
18. We do not try to justify the cost of leak repairs. All leaks are repaired in a timely manner.

In the past, we have not been getting our master meters tested for accuracy. We have now had our master meter tested and have scheduled annual testing. This should raise our validity score to 82. We are also looking into acquiring funding for AMR meters.

Thanks

Junior Jordan

Junior Jordan

Superintendent

AWWA WLCC Free Water Audit Software: Reporting Worksheet

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Back to Instructions

Click to access definition

Water Audit Report for: BIRMINGHAM WATER DEPT

Reporting Year: 2014 1/2013 - 1/2014

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

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

WATER SUPPLIED

<< Enter grading in column 'E'

Volume from own sources:	10	273.639	Million gallons (US)/yr (MG/yr)	
Master meter error adjustment (enter positive value):				MG/yr
Water imported:	10	0.000	MG/yr	
Water exported:	10	27.681	MG/yr	
WATER SUPPLIED:		245.958	MG/yr	

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

				Pcnt:	Value:
Billed metered:	8	119.500	MG/yr		
Billed unmetered:			MG/yr		
Unbilled metered:	10	8.769	MG/yr		
Unbilled unmetered:	7	23.500	MG/yr		23.500
AUTHORIZED CONSUMPTION:		151.769	MG/yr		

Use buttons to select percentage of water supplied OR volume

WATER LOSSES (Water Supplied - Authorized Consumption) 94.189 MG/yr

Apparent Losses

				Pcnt:	Value:
Unauthorized consumption:		0.616	MG/yr		
Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed					
Customer metering inaccuracies:	4	2.618	MG/yr	2.00%	
Systematic data handling errors:	5	0.025	MG/yr		
Apparent losses:		3.258			

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

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses:		90.931	MG/yr
WATER LOSSES:		94.189	MG/yr

NON-REVENUE WATER

NON-REVENUE WATER:		126.458	MG/yr

= Total 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	
Connection density:		15	conn./mile main
Average length of customer service line:	8	15.0	ft (pipe length between customer's and customer meter or property boundary)
Average operating pressure:	5	100.0	psi

COST DATA

Total annual cost of operating water system:	8	$1,106,649	$/Year
Customer retail unit cost (applied to apparent losses):	8	$4.38	$/1000 gallons (US)
Variable production cost (applied to real losses):	8	$4,300.00	$/Million gallons

PERFORMANCE INDICATORS

Financial Indicators

Non-revenue water as percent by volume of Water Supplied:	51.4%
Non-revenue water as percent by cost of operating system:	49.2%
Annual cost of Apparent Losses:	$14,268
Annual cost of Real Losses:	$391,005

Operational Efficiency Indicators

Apparent Losses per service connection per day:	2.98	gallons/connection/day
Real Losses per service connection per day:	N/A	gallons/connection/day
Real Losses per length of main per day*:	11,245.64	gallons/mile/day
Real Losses per service connection per day per psi pressure:		gallons/connection/day/psi
Unavoidable Annual Real Losses (UARL):	58.25	million gallons/year
Ratio Above: Real Losses = Current Annual Real Losses (CARL):	90.93	million gallons/year
Infrastructure Leakage Index (ILI): CARL/UARL:	1.56	

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

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 82 out of 100 ***

A weighted score 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

For more information, click here to see the Grading Matrix worksheet

JAMES C. HAILEY & COMPANY
Consulting Engineers

7518 Highway 70 South
Suite 100
Nashville, Tennessee 37221
Telephone: 615-883-4933
Fax: 615-883-4937

JAMES C. HAILEY, P.E.
NEAL WESTERMAN, P.E.

ROBERT RAMSEY, P.E.
ANTHONY L. PELHAM, P.E.
MATTHEW R. TUCKER, P.E.
MICHAEL N.GREEN, P.E.

February 17, 2015

Joyce Welborn, Utilities Board Manager
State of Tennessee
Water and Wastewater Financing Board
Suite 1500 James K. Polk State Office Building
505 Deaderick Street
Nashville, TN 37243

Re: **Response to Non-Revenue Water Letter**

Dear Ms. Welborn:

I am writing to you on behalf of the Town of Byrdstown. Recently, the Town received a letter from your office citing their excessive water loss (49.2%). It is important to note that Byrdstown is being proactive in its management of this loss. In fact, our office is currently working with the Town on a $625,000.00 project aimed at mitigating water loss. A portion of those funds were used last year (2014) to complete a leak detection survey that future construction projects will be based on. The remaining funds associated with this project will be used to install zone flow meters (allowing operators to track leaks within the distribution system), replace defective transmission mains, connect dead end lines (reducing the need for flushing), and replace aging service lines and meters. Similarly, the Town of Byrdstown is in the process of applying for an additional Community Development Block Grant (CDBG) to further reduce their loss. If awarded, the project will consist of another $575,000 aimed at water loss reduction.

Please find attached to this letter, responses to the questionnaire received with your correspondence.

If you have any questions or if we can be of assistance please let us know.

Sincerely,

JAMES C. HAILEY & COMPANY
Consulting Engineers

Michael N. Green, P.E.

Cc: Sam Gibson, Mayor – Town of Byrdstown
Buster Harmon, Water Plant Superintendent – Town of Byrdstown

Initial Checklist for Addressing Water Loss

1. Are you billing for all general government water use? Examples: City Hall, Parks, Community Centers, etc…

   Yes, all governmental entities pay a monthly bill for water consumption.

2. Are you accounting for the water used by the water and/or sewer department?

   Yes, water consumption at both the Water Treatment Plant and Sewer Treatment Plant are metered and billed. Water used to blow-off (flush) dead end lines is estimated as closely as possible, and when available, also metered. None of the water being used to flush lines is currently billed to the Town.

3. Do you periodically check or inspect all 2" and larger meters?

   Byrdstown has only a small number of 2" and larger meters. At this time, they do not have an official policy for checking and inspecting these meters, but at the time of this letter, they are working on one.

4. Do you have a recalibration policy and procedure in place?

   Byrdstown follows the standard yearly protocol for recalibrating its finished water meter at the plant. This meter is critical in telling Byrdstown how much water they are producing. After talking with department staff, they have indicated that they will adopt an official policy and procedure to perform this undertaking.

5. Do you have a meter replacement policy? Is the trigger based on age (length of time in service) or on gallons?

   Byrdstown does have a meter replacement in which the trigger is based on age (or length of time in service). They are constantly working to remove the oldest meters in the system from service.

6. Do you have a process to inspect for unauthorized consumption? What are the consequences if unauthorized consumption is discovered?

   At the time of this letter, Byrdstown does not have a process to inspect for unauthorized consumption; however, the addition of zone flow meters within the distribution system (part of the current $625,000 water loss project) will allow for this in the very near future.

7. Do you have a leak detection program currently in place?

   The Town of Byrdstown just contracted with Matchpoint Leak Asset Management to perform a system wide leak detection survey that was completed in July 2014. The report provided by Matchpoint is the basis for the water loss project.

8. Do you have written policies, including a policy for billing adjustments? Are the written policies followed correctly by all levels of staff?

Yes, there are written policies for billing adjustments based on customer consumption history. These policies are followed by all levels of staff and can only be deviated from by an act of the Town's Council.

9. Do you have authorized non-customer users (volunteer fire departments, etc?) Do you account for the use? Do you have a method for the user to report water usage?

Yes, there are volunteer fire departments who use water from hydrants. These users are expected to estimate their consumption and provide that information to the Town each month.

10. Is your system "zoned" to isolate water loss?

The system is not currently zoned to isolate water loss; however, after the completion of the current water loss project, the distribution system will be isolated into approximately 5 zones. The Town will be able to monitor these zones for suspect leaks.

11. Do you search for leaks at night when there is little traffic or small household usage?

At this time, the Town of Byrdstown only checks for leaks at night if customers report pressure or service loss.

12. Do you or can you control pressure surges?

The Town of Byrdstown has, within their system, water tanks which provide additional storage, but also act to control pressure surges for certain areas. Recently a larger transmission main was installed that reduced pressure spikes associated with high service pumping.

13. Do you have or have access to leak detection equipment?

The Town of Byrdstown does not currently have access to leak detection equipment, but after the current water loss project, they will have their own ground microphone kit to aid in audibly finding leaks.

14. What is your policy for notifying customers they have a leak?

If a customer experiences unusually high usage, the meter reader places a tag on the customer's door.

15. Do you have a public relations program to encourage citizens to report leaks?

Customers are urged to contact the Town when leaks are apparent. The Town is appreciative to any customer calling to report a leak.

16. Do you have a policy to prosecute water theft or meter tampering/damage?

Yes, there is a policy to prosecute water theft or meter tampering/damage.

17. What is the monetary value of the lost water?

According to Byrdstown's 2014 Audit (AWWA reporting worksheet), Byrdstown's Current Annual Real Losses (CARL) were approximately 90,931,000 gallons. At the same time, the "Variable production cost" was calculated to be $4,300.00 per million gallons. This means the loss would equate to approximately $391,000 per year. Of course, there are costs associated with production that cannot be decreased by finding lost water, and it is impossible to achieve a loss of 0%. With that said, it is very possible for the Town to reduce their loss to approximately 25%, but it would be likely that the savings would only equate to approximately $1,000 per million gallons (approximately $45,500 per year).

18. Is the cost to repair the leak justified based on the amount of water being lost?

Byrdstown's water loss problem is not being caused by a single leak, but a combination of service line leaks, transmission main leaks, and flushing. A system wide project that reduces the Town's water loss is important and justified, considering that an average of nearly half of the water produced is unaccounted for. Byrdstown will continue to find and fix leaks, repair aging infrastructure, and become more efficient at flushing dead end water lines.

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0
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? Click to access definition
+ Click to add a comment

Water Audit Report for: Cumberland Gap Water Service (0000161)
Reporting Year: 2014 7/2013 - 6/2014

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:	n/a	0.000	MG/Yr			MG/Yr
Water imported:	9	7.352	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: 7.352 MG/Yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

			Pcnt:	Value:	
Billed metered:	6	5.057	MG/Yr		
Billed unmetered:	n/a	0.000	MG/Yr		
Unbilled metered:	n/a	0.000	MG/Yr		
Unbilled unmetered:	10	0.018	MG/Yr		0.018 MG/Yr

Use buttons to select percentage of water supplied OR value

AUTHORIZED CONSUMPTION: 5.075 MG/Yr

WATER LOSSES (Water Supplied - Authorized Consumption) 2.277 MG/Yr

Apparent Losses

			Pcnt:	Value:	
Unauthorized consumption:		0.018	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	0.561	MG/Yr	9.99%	MG/Yr
Systematic data handling errors:	10	0.096	MG/Yr	0.096	MG/Yr

Apparent Losses: 0.676 MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 1.601 MG/Yr

WATER LOSSES: 2.277 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 2.295 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	5	3.5	miles
Number of active AND inactive service connections:	8	154	
Service connection density:		44	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	80.0	psi

COST DATA

Total annual cost of operating water system:	10	$60,471	$/Year
Customer retail unit cost (applied to Apparent Losses):	8	$18.07	$/1000 gallons (US)
Variable production cost (applied to Real Losses):	9	$3,796.00	$/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: Customer metering inaccuracies
3: Water imported

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

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Water Audit Report for: Cumberland Gap Water Service (0000161)
Reporting Year: 2014 | 7/2013 - 6/2014

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

System Attributes:

Apparent Losses:	0.676	MG/Yr
+ Real Losses:	1.601	MG/Yr
= **Water Losses:**	2.277	MG/Yr
? Unavoidable Annual Real Losses (UARL):	See limits in definition	MG/Yr
Annual cost of Apparent Losses:	$12,209	
Annual cost of Real Losses:	$6,079	Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumption

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	31.2%	
	Non-revenue water as percent by cost of operating system:	30.4%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	12.02	gallons/connection/day
	Real Losses per service connection per day:	26.49	gallons/connection/day
	Real Losses per length of main per day*:	N/A	
	Real Losses per service connection per day per psi pressure:	0.36	gallons/connection/day/psi
	From Above, Real Losses = Current Annual Real Losses (CARL):	1.60	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

See the accompanying independent accountants' audit report.

Historic Town of Cumberland Gap

330 Colwyn Street
P.O Box 78
Cumberland Gap, TN 37724

Phone: 423-869-3860
Fax: 423-869-8534
Email: cumberlandgap1@bellsouth.net

February 26, 2015

Joyce Welborn,
State of Tennessee
Water and Wastewater Financing Board
James K. Polk State Office Building, Suite 1500
505 Deaderick Street
Nashville, Tennessee 37243-1402

MAR 03 2015

Dear Ms. Welborn,

In your letter dated February 17, 2015, you indicated that the town's water system was under review by the Water and Wastewater Financing Board as having excessive non-revenue water as a percentage of operating cost over the maximum as set by the Board.

The plan for decreasing the excessive water loss and loss of revenue by the Town of Cumberland Gap is to replace the existing service connections for each of the Town's water service connections. Due to funding restrictions and the need for the most competitive/ cost efficient project, it was recommended that the project be broken into three phases, the first of which has already been completed.

Phase I included 61 new service connections, a new master meter, and master meter vault. Although we did see a water loss decrease after the completion of Phase I, we are now seeing an increase in the areas outlined in Phase II. Phase II will include approximately 50 new service connections. Assuming that 50 % of the town's water loss is within the service connections this phase could correct 15% of the town's water loss.

The town submitted an application for the 2014 Community Development Block Grant, for Phase II, but did not score high enough to be awarded a grant. The town is in the process of submitting an application for the 2015 Community Development Block Grant.

In the meantime, the town will continue to closely monitor the water loss and repair leaks as soon as they are found. If the grant is not awarded, the town plans to replace the service connections as funds allow.

Enclosed is the questionnaire you requested.

If you need further assistance or have any questions, please feel free to contact Linda Moyers at 423-869-3860 or cumberlandgap1@bellsouth.net.

Sincerely,

Bill McGaffee

Bill McGaffee, Mayor

Town of Cumberland Gap, Tennessee

Initial Check list for Addressing Water Loss

1. Are you billing for all general government water use? Examples: City Hall, Parks, Community Centers, etc.
   Yes- The following general government buildings are billed monthly: Fire Hall, Town Hall, Berkau Park, and the Wastewater Treatment Plant.

2. Are you accounting for the water used by the water and/or sewer department?
   Yes- The sewer department is billed for water used at the Wastewater Treatment Plant. The town does not own or maintain a Water Plant.

3. Do you periodically check or inspect all 2" and larger meters?
   Yes- They are checked every 6 months.

4. Do you have a recalibration policy and procedure in place?
   Not at this time.

5. Do you have a meter replacement policy? Is the trigger based on age (length of time in service) or on gallons?
   Upon completion of all three phase of the Waterline System Improvement Project all the meters in town will be replaced. The first phase, which has been completed, replaced 61 meters. The second phase, which is in the process of being submitted, will replace 50 meters, while the third phase will replace the remaining meters in town. In the meantime, if a meter is not working properly it is replaced immediately.

6. Do you have a process to inspect for unauthorized consumption? What are the consequences if unauthorized consumption is discovered?
   Meters are inspected monthly and if unauthorized consumption is discovered consumers are notified prior to disconnecting service.

7. Do you have a leak detection program currently in place?
   Yes- The town owns leak detection equipment and frequently uses the device at all meters and fire hydrants to detect the possibility of any leaks. When the water purchased (the town purchases water from Lincoln Memorial University) extremely exceeds the water sold, town personnel immediately inspects all areas for possible leaks.

8. Do you have written policies, including a policy for billing adjustments? Are the written policies followed correctly by all levels of staff?
   *Yes- **Leak adjustments**. 1. The city billing clerk is authorized to make adjustments for water and wastewater service affected by water leaks.*

2. *The adjustment shall be made as follows: Add the gallons used for the previous six (6) months and divide by six (6) to obtain the monthly average. Add this average to the current bill amount (bill to be adjusted) and divide by two (2). The calculated amount is the amount of gallons to adjust for.*

3. *The billing clerk will report all monthly adjustments made for leaks on a monthly basis to the board of mayor and aldermen.*

4. *Once the city suspects that there is a leak and notifies the customer, or if the city can determine when the customer discovered the leak, the city shall notify the customer of the suspected leak, and no adjustment shall be made for any period of time after a fifteen (15) day period for minor repairs or thirty (30) days for service line repairs. The customer shall repair leaks in a timely manner.*

The customer shall not be entitled to more than one adjustment per year.

9. Do you have authorized non-customer users (volunteer fire departments, etc)? Do you account for the use? Do you have a method for the user to report water usage?
   Yes- The Fire Hall is metered. If any unmetered water is used the fire chief reports the amount used.

10. Is your system "zoned" to isolate water loss?
    The town has a valve system by which to control all sections of town.

11. Do you search for leaks at night when there is little traffic or small household usage?
    The staff checks for leaks during times of small household usage.

12. Do you or can you control pressure surges?
    No

13. Do you have or have access to leak detection equipment?
    Yes- The town owns leak detection equipment.

14. What is your policy for notifying customers they have a leak?
    The staff notifies the customer personally, usually by phone.

15. Do you have a public relations program to encourage citizens to report leaks?
    Citizens of the town are encouraged to report leaks. The editor of the town newsletter has written articles about the water loss and asked the citizens to contact Town Hall if they feel they have discovered a leak.

16. Do you have a policy to prosecute water theft or meter tampering/damage?
    Local authorities are notified.

17. What is the monetary value of the lost water?
    $13,667

18. Is the cost to repair the leak justified based on the amount of water being lost?
    Yes

AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0

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Click to access definition

Click to add a comment

Water Audit Report for: Town of Chapel Hill Utility

Reporting Year: 2014 | 7/2013 - 6/2014

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:	8	63.848	MG/Yr			MG/Yr
Water imported:		0.000	MG/Yr			MG/Yr
Water exported:			MG/Yr			MG/Yr

Enter negative % or value for under-registration

Enter positive % or value for over-registration

WATER SUPPLIED: 63.848 MG/Yr

AUTHORIZED CONSUMPTION

Click here: for help using option buttons below

				Pcnt:	Value:	
Billed metered:	7	40.352	MG/Yr			
Billed unmetered:		0.000	MG/Yr			
Unbilled metered:	3	0.269	MG/Yr			
Unbilled unmetered:	3	0.331	MG/Yr		0.331	MG/Yr

Use buttons to select percentage of water supplied OR value

AUTHORIZED CONSUMPTION: 40.952 MG/Yr

WATER LOSSES (Water Supplied - Authorized Consumption) 22.896 MG/Yr

Apparent Losses

				Pcnt:	Value:	
Unauthorized consumption:		0.160	MG/Yr	0.25%		MG/Yr

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

Customer metering inaccuracies:	3	3.532	MG/Yr	8.00%		MG/Yr
Systematic data handling errors:	6	0.010	MG/Yr		0.010	MG/Yr

Apparent Losses: 3.702 MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 19.194 MG/Yr

WATER LOSSES: 22.896 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 23.496 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	7	14.9	miles
Number of active AND inactive service connections:	7	619	
Service connection density:		42	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	60.0	psi

COST DATA

Total annual cost of operating water system:	8	$345,463	$/Year	
Customer retail unit cost (applied to Apparent Losses):	8	$12.60	$/1000 gallons (US)	
Variable production cost (applied to Real Losses):	8	$1,051.03	$/Million gallons	☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 68 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: Unbilled metered

3: Customer metering inaccuracies

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

WAS v5.0

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Water Audit Report for: Town of Chapel Hill Utility
Reporting Year: 2014 | 7/2013 - 6/2014

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 68 out of 100 ***

System Attributes:

	Apparent Losses:	3.702	MG/Yr
+	Real Losses:	19.194	MG/Yr
=	**Water Losses:**	**22.896**	MG/Yr
?	Unavoidable Annual Real Losses (UARL):	See limits in definition	MG/Yr
	Annual cost of Apparent Losses:	$46,643	
	Annual cost of Real Losses:	$20,174	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:	36.8%	
	Non-revenue water as percent by cost of operating system:	19.5%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	16.38	gallons/connection/day
	Real Losses per service connection per day:	84.95	gallons/connection/day
	Real Losses per length of main per day*:	N/A	
	Real Losses per service connection per day per psi pressure:	1.42	gallons/connection/day/psi
	From Above, Real Losses = Current Annual Real Losses (CARL):	19.19	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

Chapel Hill Initial Check list for Addressing Water Loss

1. Are you billing for all general government water use? Examples: City Hall, Parks, Community Centers, etc.

   Yes. All Town owned facilities are accounted for. This has been done for the last six months after a change in administration.

2. Are you accounting for the water used by the water and/or sewer department?

   Yes. All Town owned facilities are accounted for. This has been done for the last six months after a change in administration.

3. Do you periodically check or inspect all 2" and larger meters?

   No.

4. Do you have a recalibration policy and procedure in place?

   No.

5. Do you have a meter replacement policy? Is the trigger based on age (length of time in service) or on gallons?

   No. I will propose that all meters are replaced in the next fiscal year with an auto-read system. Most meters currently in the system are approximately 20 years old.

6. Do you have a process to inspect for unauthorized consumption?

   Yes. Billing statements are reviewed monthly for discrepancies.

   What are the consequences if unauthorized consumption is discovered?

   The local police department will investigate to determine if theft of services has occurred and the proper civil process follows.

7. Do you have a leak detection program currently in place?

   No.

8. Do you have written policies, including a policy for billing adjustments?

No. Are the written policies followed correctly by all levels of staff? This is one of the many policies that reside on my list of things to implement. I would welcome suggestions and sample policies that have worked in other places.

9. Do you have authorized non-customer users (volunteer fire departments, etc.)?

Yes.

Do you account for the use?

Yes.

Do you have a method for the user to report water usage?

Yes. The Fire Chief tracks and reports usage to the clerk.

10. Is your system "zoned" to isolate water loss?

No.

11. Do you search for leaks at night when there is little traffic or small household usage?

No.

12. Do you or can you control pressure surges?

There are no pressure surges. It is a gravity system.

13. Do you have or have access to leak detection equipment?

Yes, although it is old and outdated.

14. What is your policy for notifying customers they have a leak?

We call them.

15. Do you have a public relations program to encourage citizens to report leaks?

No.

16. Do you have a policy to prosecute water theft or meter tampering/damage?

No.

17. What is the monetary value of the lost water?

I do not feel comfortable answering that question at this point. I am still trying to make sure that all costs associated with water loss have been accounted for correctly.

18. Is the cost to repair the leak justified based on the amount of water being lost?

This type of in depth cost analysis has not been performed at this point.

TOWN OF DECATURVILLE, TENNESSEE
SCHEDULE OF UNACCOUNTED FOR WATER (UNAUDITED)
June 30, 2014

AWWA WLCC Free Water Audit Software: Reporting Worksheet

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Water Audit Report for: TOWN OF DECATURVILLE
Reporting Year: 2014 | 7/2013 - 6/2014

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

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

WATER SUPPLIED

<< Enter grading in column 'E'

Volume from own sources:	?		0.000	Million gallons (US)/yr (MG/Yr)
Master meter error adjustment (enter positive value):	?		0.000	MG/Yr
Water imported:	?	7	75.630	MG/Yr
Water exported:	?		0.000	MG/Yr
WATER SUPPLIED:			75.630	MG/Yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

					Pcnt:	Value:
Billed metered:	?	6	54.990	MG/Yr		
Billed unmetered:	?		0.000	MG/Yr		
Unbilled metered:	?	5	0.140	MG/Yr		
Unbilled unmetered:	?		0.945	MG/Yr	1.25%	

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

AUTHORIZED CONSUMPTION:	?	56.075	MG/Yr

Use buttons to select percentage of water supplied OR value

WATER LOSSES (Water Supplied - Authorized Consumption) 19.555 MG/Yr

Apparent Losses

					Pcnt:	Value:
Unauthorized consumption:	?		0.189	MG/Yr	0.25%	

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

Customer metering inaccuracies:	?	4	2.902	MG/Yr	5.00%	
Systematic data handling errors:	?	6	2.650	MG/Yr		
Apparent Losses:	?		5.741			

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

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses:	?		13.814	MG/Yr
WATER LOSSES:			19.555	MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER:	?		20.640	MG/Yr

= Total Water Loss + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	?	4	70.0	miles	
Number of active AND inactive service connections:	?	2	1,020		
Connection density:			15	conn./mile main	
Average length of customer service line:	?	2	25.0	ft	(pipe length between curbstop and customer meter or property boundary)
Average operating pressure:	?	2	65.0	psi	

COST DATA

Total annual cost of operating water system:	?	10	$530,172	$/Year
Customer retail unit cost (applied to Apparent Losses):	?	7	$7.34	$/1000 gallons (US)
Variable production cost (applied to Real Losses):	?	10	$2,050.00	$/Million gallons

The accompanying notes are an integral part of these financial statements.

TOWN OF DECATURVILLE, TENNESSEE
SCHEDULE OF UNACCOUNTED FOR WATER (UNAUDITED) (continued)
June 30, 2014

PERFORMANCE INDICATORS

Financial Indicators

Non-revenue water as percent by volume of Water Supplied:	27.3%	
Non-revenue water as percent by cost of operating system:	13.7%	
Annual cost of Apparent Losses:	$42,136	
Annual cost of Real Losses:	$28,319	

Operational Efficiency Indicators

Apparent Losses per service connection per day:	15.42	gallons/connection/day
Real Losses per service connection per day*:	N/A	gallons/connection/day
Real Losses per length of main per day*:	540.66	gallons/mile/day
Real Losses per service connection per day per psi pressure:		gallons/connection/day/psi
? Unavoidable Annual Real Losses (UARL):	13.47	million gallons/year
From Above, Real Losses = Current Annual Real Losses (CARL):	13.81	million gallons/year
? Infrastructure Leakage Index (ILI) [CARL/UARL]:	1.03	

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

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 65 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: Water imported
2: Customer metering inaccuracies
3: Billed metered

For more information, click here to see the Grading Matrix worksheet

The accompanying notes are an integral part of these financial statements.

TOWN OF DECATURVILLE

P.O. BOX 159
29 EAST MAIN STREET
DECATURVILLE, TN 38329
731-852-2034 PHONE
731-852-4271 FAX

January 27, 2015

State of Tennessee
Joyce Welborn, Board Coordinator
Water and Wastewater Financing Board
Suite 1500 James K. Polk State Office Building
505 Deaderick Street
Nashville, TN 37243

Dear Joyce Welborn:

The Town of Decaturville has received notice of having a low validity score of 65. The Town has been directed to submit responses to questionnaire and plan to increase the low validity score. After a meeting on January 26, 2015 with Tony Wyatt from TAUD, the Town has a better understanding on how to complete the AWWA report and therefore, feels like we have underscored the AWWA report for FY2013/2014.

Please see attached answers for the questionnaire and plan to increase the low validity score.

Sincerely,

Mayor Gerald Buchanan

TOWN OF DECATURVILLE

P.O. BOX 159
29 EAST MAIN STREET
DECATURVILLE, TN 38329
731-852-2034 PHONE
731-852-4271 FAX

1. Yes, all but the waste water plant, same account.
2. Yes, all metered.
3. Yes, we only have 4 2" meters.
4. We are in the process of starting one. We have no meters that can be recalibrated, we do check flow rate, if not accurate we replace the meter.
5. Yes, please see attached the revised copy. We are presently changing out all meters over one million usage.
6. We are continuously checking all meters that are not in use. If we find any unauthorized consumption we turn over to local Law Enforcement.
7. Take daily reading from master meter and continuously looking for leaks. We can borrow from other neighboring utilities.
8. Yes, please see attached for policy.
9. Yes, Fire Dept has a hydrant meter so they can keep up with their usage.
10. No, we do not have zoned flow meters.
11. Yes, when we suspect higher usage.
12. We purchase our water and have no pumps.
13. No, we do not own but we can borrow from other neighboring utilities.
14. We will call customer or if we are reading the meter we will leave a note on door.
15. Yes, there is a message put on monthly bills.
16. We do not have a written policy; if we suspect theft we call local Law Enforcement.
17. $2.05 per gallon based on 2014 audit.
18. We repair all leaks as soon as possible.

TOWN OF DECATURVILLE
WATER AND SEWER POLICY

1. ALL 2" OR LARGER METERS WILL BE CHECKED OR INSPECTED ONCE EVERY MONTH BY CITY STAFF.
2. CONTRACT WITH A 3RD PARTY TO CHECK CALIBRATIONS AND/OR CHECK FLOW RATE OF LARGE METERS ONCE EVERY TWO YEARS.
3. DECATURVILLE'S WATER METER CHANGE OUT PROGRAM IS TRIGGERED THAT A METER WILL BE CHANGED OUT WHEN IT REACHES ONE MILLION GALLONS OF USE.
4. WHEN METER IS TURNED OFF FOR NON-PAYMENT, THE CITY STAFF WILL CHECK THAT METER WITHIN A WEEK TO SEE IF NOT TURNED BACK ON BY THE CUSTOMER.
   (NOTE: THE CITY IS CURRENTLY WORKING ON A PROCEDURE TO CHECK ALL NON ACTIVE METERS ON A REGULAR BASIS).
5. ALL ADJUSTMENTS ARE BASED ON A FORMULA THAT THE TOWN BOARD HAS PUT IN PLACE. SEE ATTACHED FOR WRITTEN FORMULA.
6. IF WE SUSPECT A LEAK ON THE CUSTOMER THE CITY WILL CALL THE CUSTOMER TO INFORM THEM WE SUSPECT A LEAK.
7. THE CITY OF DECATURVILLE, ONCE REALIZES THAT POSSIBLE WATER THEFT OR METER TAMPERING HAS OCCURRED WILL NOTIFY THE APPROPRATE LAW ENFORCEMENT AGENCY TO INVESTIGATE, IF THEFT OR TAMPERING HAS OCCURED THE TOWN WILL TAKE LEGAL STEPS TO RECOOP ALL REVENUE OR DAMAGES INCURRED.

MAYOR

CITY RECORDER

TOWN OF DECATURVILLE
WATER ADJUSTMENT POLICY

1. CHECK TO SEE IF CUSTOMER HAS HAD A WATER ADJUSTMENT IN THE LAST 12 MONTHS.
2. GO TO UTILITY BILLING
3. CLICK ON OTHER FROM THE MENU BAR
4. CLICK ON PERIOD END
5. CLICK ON REPORTS
6. UNDER REPORTS CLICK ON ADJUSTMENT TRANSACATIONS
7. ENTER THE CUSTOMER'S ACCOUNT NUMBER
8. ENTER THROUGH THE REST OF SCREEN
9. CLICK ON UPDATE OR CLICK ON F4

TO FIGURE WATER ADJUSTMENT

1. GO TO UTILITY BILLING
2. CLICK ON OTHER FROM THE MENU BAR
3. CLICK ON REPORTS
4. CLICK ON MISC FROM THE MENU BAR
5. CLICK ON CONSUMPTION TRANSACTIONS
6. ENTER CUSTOMER NUMBER
7. CLICK NEXT UNTIL YOU GET TO BOTTOM OF PAGE
8. TAKE THE LAST SIX MONTHS CONSUMPTION (DO NOT USE CURRENT MONTH THAT IS TO BE ADJUSTED)
9. DIVIDE TOTAL OF LAST SIX MONTHS CONSUMPTION BY SIX TO GET SIX MONTHS AVERAGE
10. SUBSTRACT THE SIX MONTH AVERAGE FROM THE MONTH THAT IS TO BE ADJUSTED.
11. TAKE SIX MONTH AVERAGE MULTIPY BY $2.28 FOR IN TOWN CUSTOMERS AND $3.98 FOR OUT OF TOWN CUSTOMERS.
12. MULTIPY BY 9.50% FOR TAX RATE
13. MULTIPY BY $4.43 IF CUSTOMER HAS SEWER SERVICE
14. SUBSTRACT TOTAL FROM AMOUNT ON WATER BILL THAT IS DUE

AWWA Free Water Audit Software:
Reporting Worksheet

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American Water Works Association
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Water Audit Report for: Town of Decaturville
Reporting Year: 2014

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

PLEASE CHOOSE REPORTING UNITS FROM THE INSTRUCTIONS SHEET BEFORE ENTERING DATA

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

		Grade	Volume	Pcnt	Value
Volume from own sources:	+ ?	n/a			
Water imported:	+ ?	9	75,630.000		
Water exported:	+ ?				

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

WATER SUPPLIED: 75,630.000

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

		Grade	Volume	Pcnt	Value
Billed metered:	+ ?	6	54,990.000		
Billed unmetered:	+ ?				
Unbilled metered:	+ ?	5	0.140		
Unbilled unmetered:	+ ?		945.375	1.25%	

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: ? 55,935.515

WATER LOSSES (Water Supplied - Authorized Consumption) 19,694.485

Apparent Losses

		Grade	Volume	Pcnt	Value
Unauthorized consumption:	+ ?		189.075	0.25%	

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

		Grade	Volume	Pcnt	Value
Customer metering inaccuracies:	+ ?	4	2,894.218	5.00%	
Systematic data handling errors:	+ ?		137.475	0.25%	

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

Apparent Losses: ? 3,220.768

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: ? 16,473.717

WATER LOSSES: 19,694.485

NON-REVENUE WATER

NON-REVENUE WATER: ? 20,640.000

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

		Grade	Volume
Length of mains:	+ ?	4	70.0
Number of active AND inactive service connections:	+ ?	2	1,020
Service connection density:	?		15
Are customer meters typically located at the curbstop or property line?			Select...
Average length of customer service line:	+ ?	10	25.0
Average operating pressure:	+ ?	2	65.0

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

COST DATA

		Grade	Volume	
Total annual cost of operating water system:	+ ?	10	$530,172	$/Year
Customer retail unit cost (applied to Apparent Losses):	+ ?	7	$7.34	$/1000 gallons (US)
Variable production cost (applied to Real Losses):	+ ?	10	$2,020.00	$/

☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 73 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: Billed metered
3: Unbilled metered

CITY OF GREENFIELD, TENNESSEE
WATER LOSS SCHEDULE - UNAUDITED
For the Year Ended June 30, 2014

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0
American Water Works Association.
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Water Audit Report for: Greenfield Water System (0000276)
Reporting Year: 2014 | 7/2013 - 6/2014

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:	+ ?	5	87.133	MG/Yr	+ ?	5	-1.00%			MG/Yr
Water imported:	+ ?	n/a	0.000	MG/Yr	+ ?					MG/Yr
Water exported:	+ ?	n/a	0.000	MG/Yr	+ ?					MG/Yr
WATER SUPPLIED:			88.013	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:	+ ?	9	49.969	MG/Yr				
Billed unmetered:	+ ?	n/a	0.000	MG/Yr				
Unbilled metered:	+ ?	7	4.258	MG/Yr				
Unbilled unmetered:	+ ?	5	1.100	MG/Yr	1.25%			MG/Yr

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

AUTHORIZED CONSUMPTION: ? 55.327 MG/Yr

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

WATER LOSSES (Water Supplied - Authorized Consumption) 32.686 MG/Yr

Apparent Losses

					Pcnt:		Value:	
Unauthorized consumption:	+ ?	10	0.220	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	2.854	MG/Yr	5.00%			MG/Yr
Systematic data handling errors:	+ ?	5	0.125	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: ? 3.199 MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: ? 29.487 MG/Yr

WATER LOSSES: 32.686 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: ? 38.044 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	+ ?	7	27.0	miles
Number of active AND inactive service connections:	+ ?	7	1,025	
Service connection density:	?		38	conn./mile main

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

Average length of customer service line: + ? ft (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 68.0 psi

COST DATA

Total annual cost of operating water system:	+ ?	9	$453,540	$/Year
Customer retail unit cost (applied to Apparent Losses):	+ ?	9	$8.55	$/1000 gallons (US)
Variable production cost (applied to Real Losses):	+ ?	9	$469.92	$/Million gallons

Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 68 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

See independent auditor's report

CITY OF GREENFIELD, TENNESSEE
WATER LOSS SCHEDULE - UNAUDITED
For the Year Ended June 30, 2014

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

WAS v5.0

American Water Works Association.
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Water Audit Report for: Greenfield Water System (0000276)
Reporting Year: 2014 | 7/2013 - 6/2014

***** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 68 out of 100 *****

System Attributes:

	Apparent Losses:	3.199	MG/Yr
+	Real Losses:	29.487	MG/Yr
=	**Water Losses:**	**32.686**	MG/Yr
?	Unavoidable Annual Real Losses (UARL):	See limits in definition	MG/Yr
	Annual cost of Apparent Losses:	$27,352	
	Annual cost of Real Losses:	$13,857	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:	43.2%	
	Non-revenue water as percent by cost of operating system:	9.6%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	8.55	gallons/connection/day
	Real Losses per service connection per day:	78.82	gallons/connection/day
	Real Losses per length of main per day*:	N/A	
	Real Losses per service connection per day per psi pressure:	1.16	gallons/connection/day/psi
	From Above, Real Losses = Current Annual Real Losses (CARL):	29.49	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

See independent auditor's report

CINDY McADAMS
MAYOR

ALDERMEN
FRANK GIBSON
PAUL GROOMS
DONALD HIGH
JAN JOHNSON

CITY OF GREENFIELD

222 NORTH FRONT STREET
GREENFIELD, TENNESSEE 38230
PHONE: 731-235-2330
FAX: 731-235-3814
recorder@cityofgreenfield.net

Greenfield
"...where you don't get lost in the shuffle..."

Rec'd 4/8/15

RANDY POTTS
CITY RECORDER

ALDERMEN
TROY JONES
BOBBY MORRIS
JAMES POPE
PAUL RICHMOND

Note: As of October 29, 2014, the City conducted the AWWA water audit. At that time, our validity score was above the minimum of 65. However, our auditors delayed in submitting our audit which allowed our validity score to be below the new minimum of 70 as of January 1, 2015.

1. Are you billing for all general government water use? Examples: City Hall, Parks, Community Centers, etc.

   No, not at this time.

2. Are you accounting for the water used by the water and/or sewer department?

   Yes, we meter fire plugs when flushing or washing out sewer mains.

3. Do you periodically check or inspect all 2" and larger meters?

   Due to cost, we do not at this time.

4. Do you have a recalibration policy and procedure in place?

   No. We ordered a new master meter on March 24, 2015. This meter will have to be meter calibrated each year.

5. Do you have a meter replacement policy? Is the trigger based on age (length of time in service) or on gallons?

   Yes, it is based on gallons.

6. Do you have a process to inspect for unauthorized consumption? What are the consequences if unauthorized consumption is discovered?

   Yes. We lock each meter when inactive. We check the locked meters monthly to verify there has been no unauthorized consumption. If unauthorized consumption arises, they pay for the water they consume and are cited into court.

7. Do you have a leak detection program currently in place?

   Yes. We repair leaks as soon as it is found or reported by a customer.

8. Do you have written policies, including a policy for billing adjustments? Are the written policies followed correctly by all levels of staff?

   Yes. City Hall makes proper adjustments according to the customer's average usage with a maximum credit of $50.00.

9. Do you have authorized non-customer users (volunteer fire departments, etc)? Do you account for the use? Do you have a method for the user to report water usage?

   Yes to all questions. Meter or know the size of the tank being filled.

10. Is you system "zoned" to isolate water loss?

    Yes. We have valves to isolate water loss.

11. Do you search for leaks at night when there is little traffic or small household usage?

    Yes. We have borrowed leak detection equipment from Dresden, TN. We use this detector to look for leaks at night.

12. Do you or can you control pressure surges?

    Yes. We have to start and stop starters on the high service pumps.

13. Do you have or have access to leak detection equipment?

    Yes. We have used from the equipment from a town 15 miles away.

14. What is your policy for notifying customers they have a leak?

    Yes. We talk to the customer or leave a note for them when reading meters if high usage alert is given and the meter is turning.

15. Do you have a public relations program to encourage citizens to report leaks?

    Yes. Customers notify City Hall or call the Public Works Department.

16. Do you have a policy to prosecute water theft or meter tampering/damage?

    Yes, we do.

17. What is the monetary value of the lost water?

    According to the water report cost in 2014 was $13,857.00.

18. Is the cost to repair the leak justified based on the amount of water being lost?
    Yes. We fix all leaks the City has and we fix the largest first.

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0
American Water Works Association
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Water Audit Report for: Lincoln County Board of Public Utilities (TN0000884 & TN0000764)
Reporting Year: 2014 | 7/2013 - 6/2014

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:	5	764.084	MG/Yr	8	0.00%	◉ ○		MG/Yr
Water imported:	9	118.440	MG/Yr	5	0.00%	◉ ○		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: 882.524 MG/Yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

			Pcnt:		Value:	
Billed metered:	7	478.989	MG/Yr			
Billed unmetered:	n/a	0.000	MG/Yr			
Unbilled metered:	10	2.945	MG/Yr			
Unbilled unmetered:	6	2.796	MG/Yr		○ ○	2.796 MG/Yr

Use buttons to select percentage of water supplied OR value

AUTHORIZED CONSUMPTION: 484.730 MG/Yr

WATER LOSSES (Water Supplied - Authorized Consumption) 397.794 MG/Yr

Apparent Losses

			Pcnt:		Value:	
Unauthorized consumption:		2.206 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	47.664 MG/Yr	9.00%	○ ○		MG/Yr
Systematic data handling errors:		1.197 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: 51.068 MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 346.726 MG/Yr

WATER LOSSES: 397.794 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 403.535 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	7	735.0	miles
Number of active AND inactive service connections:	8	8,814	
Service connection density:		12	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:	9	$4,252,035	$/Year
Customer retail unit cost (applied to Apparent Losses):	9	$8.31	$/1000 gallons (US)
Variable production cost (applied to Real Losses):	9	$2,812.86	$/Million gallons ☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 70 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: Billed metered
3: Unauthorized consumption

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

WAS v5.0

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Water Audit Report for: Lincoln County Board of Public Utilities (TN0000884 & TN0000764)
Reporting Year: 2014 | 7/2013 - 6/2014

***** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 70 out of 100 *****

System Attributes:

	Apparent Losses:	51.068	MG/Yr
+	Real Losses:	346.726	MG/Yr
=	**Water Losses:**	**397.794**	MG/Yr
?	Unavoidable Annual Real Losses (UARL):	145.05	MG/Yr
	Annual cost of Apparent Losses:	$424,372	
	Annual cost of Real Losses:	$975,293	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:	45.7%	
	Non-revenue water as percent by cost of operating system:	33.3%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	15.87	gallons/connection/day
	Real Losses per service connection per day:	N/A	gallons/connection/day
	Real Losses per length of main per day*:	1,292.43	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):	346.73	million gallons/year
?	Infrastructure Leakage Index (ILI) [CARL/UARL]:	2.39	

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

Lincoln County Board of Public Utilities
2863 Huntsville Highway
Fayetteville, TN 37334
(931) 433-2259

Water and Waste Water Board

January 27, 2015

Attn: Joyce Welborn, Utilities Board Manager

Answers to questions included in letter dated 12-22-14:

1. LCBPU bills everyone with the exception of the Fire Department. The firemen use this water for training and fighting fires. They report some of their usage, but they don't report a lot of it. They also flow test these hydrants occasionally.
2. We don't currently have a sewer department, but we do read and account for water used by our water department facilities.
3. The 2" meters are read manually by our meter readers and up till now we have replaced them when the there is an obvious problem. However, we are planning to convert our meters to radio read and all the meters will be replaced. After that we will replace meters based on age and gallons registered. We will also do periodic testing of all meters.
4. We currently do not have any meters larger than 2" that are customer meters. We do have zone meters and plant meters that have not been calibrated in the past. The plant meters will be calibrated at least annually. The zone meters will be reviewed and will likely be replaced with mag meters as part of the conversion to radio read. Some of the plant and zone meters are mag meters and they only have to be checked to make sure that they zero at no flow. This will be checked at least annually.
5. As indicated above, we are planning to replace all the meters with radio read meters. This will likely be done over a four to five year period. After that the meters will be monitored for accuracy by testing and will be replaced when they either have battery failure or they fall below accuracy standards. The batteries will likely last only about 15 years, which is an appropriate service life in that most of them will have registered about 1,000,000 gallons.
6. The meter readers periodically check for usage on inactive meters. In a worst case situation, the meter service line is dug up at the main and the corporation stop is turned off. Normally, this happens on rental property. A $50 cut lock fee is assessed if the service was turned on by cutting the lock or the ear of the curb stop. If this is found to be repeated we would file legal charges against the offender.
7. The utility has hired leak hunters a few times in the past with limited results. Over the past year we have searched for leaks with our maintenance crews when there is an obvious large loss of water occurring.
8. We do have a written policy for leak adjustments and it is followed. Only management can give a leak adjustment. A monthly and year to date leak adjustment summary is reviewed by the Board at every monthly Board Meeting. Our accountant assures us that the adjusted water counts in our usage amounts.

9. Firemen submit reports of their usage, but we cannot confirm the accuracy. Contractors get water from our fire hydrants, when approved, and they have to use a hydrant meter.
10. Our system is zoned to an extent as there are plant meters for what is pumped to the distribution system. There are some zone meters and the pump stations have meters. These are read daily to help us know when we might have a bad leak.
11. When there is high usage in an area or customer complaints over lower pressure than normal, our folks will go out at night as needed and squeeze valves to help isolate leaks.
12. We have a total of 23 pressure regulator vaults in the system.
13. We own three LD12 acoustical leak detectors. One of them is loaned out to customers so they can check their service lines. Two are assigned to our crew leaders and used to help locate where leaks are, especially under roads or concrete driveways.
14. If the meter reader detects a leak, then he will call the office and ask the billing clerk to call the customer. If there is a suspected leak, then the meter reader makes a notation on their handheld. The billing clerk reviews the meter readers' reports and any customers with suspected leaks are called.
15. We have had paid advertisements on both of the local radio stations in the past. However this practice was stopped and we are transitioning from post card billing to full page envelope billing this week. The new format will allow us to include conservation messages and will help to put a direct emphasis on leak reporting.
16. We don't have a lot of water theft. When we do, we bill customers for $50 for a cut lock fee. If they repeat their infraction, we can file legal charges and refer the case to the County Attorney. As a last resort, we will dig up the service connection at the main and turn the corporation stop off. For water service to be restored they would have to pay for damages replacement of the service and for an estimate of the water that they have stolen.
17. The value of the lost water according to the AWWA report is $975,293.
18. Yes.

Lincoln County Board of Public Utilities
2863 Huntsville Highway
Fayetteville, TN 37334
(931) 433-2259

WATER LOSS REDUCTION PLAN

January 27, 2015

Hire additional employees to support the organization of a leak detection team and provide top quality acoustical leak detection equipment & professional training.

Secure funding for meter replacements and organize a change out program that would install new radio read meters throughout the distribution system, including replacement of some zone meters. Change out meters over 4 year period.

Establish annual calibration of plant, zone and pump station distribution meters.

Replace or test & repair meters in order to maintain an acceptable level of accuracy.

Add additional zone meters to reduce areas to a manageable size that can be read in a short enough time frame to allow comparison of customer meters to distribution meters.

Identify non-revenue water by zone and determine percentage data on a monthly basis.

Prioritize the hunt for leaking mains and service lines in areas with highest loss rates.

Sweep entire system for leaks on service lines and replace as identified with PEX tubing.

Chris Merz

Chris Merz

Superintendent

AWWA WLCC Free Water Audit Software: Reporting Worksheet

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Back to Instructions

? Click to access definition

Water Audit Report for: City of Lobelville
Reporting Year: 2014 7/2013 - 6/2014

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

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

WATER SUPPLIED << Enter grading in column 'E'

Volume from own sources:	?	9	125.150	Million gallons (US)/yr (MG/Yr)
Master meter error adjustment (enter positive value):	?	9		MG/Yr
Water Imported:	?			MG/Yr
Water exported:	?			MG/Yr
WATER SUPPLIED:			125.150	MG/Yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

					Pcnt:	Value:
Billed metered:	?	9	60.663	MG/Yr		
Billed unmetered:	?			MG/Yr		
Unbilled metered:	?	9	13.228	MG/Yr		
Unbilled unmetered:	?		1.564	MG/Yr	1.25%	
AUTHORIZED CONSUMPTION:	?		75.455	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) 49.695 MG/Yr

Apparent Losses

					Pcnt:	Value:
Unauthorized consumption:	?		0.313	MG/Yr	0.25%	
Customer metering inaccuracies:	?	9	1.508	MG/Yr	2.00%	
Systematic data handling errors:	?	6	0.100	MG/Yr		
Apparent Losses:	?		1.921			

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

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

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses:	?	47.774	MG/Yr
WATER LOSSES:		49.695	MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER:	?	64.487	MG/Yr

= Total Water Loss + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	?	9	50.0	miles
Number of active AND inactive service connections:	?	9	790	
Connection density:			16	conn./mile main
Average length of customer service line:	?	9	50.0	ft (pipe length between curbstop and customer meter or property boundary)
Average operating pressure:	?	9	75.0	psi

COST DATA

Total annual cost of operating water system:	?	9	$545,899	$/Year
Customer retail unit cost (applied to Apparent Losses):	?	9	$5.46	$/1000 gallons (US)
Variable production cost (applied to Real Losses):	?	9	$4,367.00	$/Million gallons

PERFORMANCE INDICATORS

Financial Indicators

Non-revenue water as percent by volume of Water Supplied:	51.5%
Non-revenue water as percent by cost of operating system:	52.0%
Annual cost of Apparent Losses:	$10,488
Annual cost of Real Losses:	$208,628

Operational Efficiency Indicators

Apparent Losses per service connection per day:	6.66	gallons/connection/day
Real Losses per service connection per day*:	N/A	gallons/connection/day
Real Losses per length of main per day*:	2,617.74	gallons/mile/day
Real Losses per service connection per day per psi pressure:		gallons/connection/day/psi
? Unavoidable Annual Real Losses (UARL):	Not Valid	

*** UARL cannot be calculated as either average pressure, number of connections or length of mains is too small: SEE UARL DEFINITION ***

From Above, Real Losses = Current Annual Real Losses (CARL):	47.77	
? Infrastructure Leakage Index (ILI) [CARL/UARL]:		

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

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 85 out of 100 ***

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

PRIORITY AREAS FOR ATTENTION:

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

1: Volume from own sources
2: Unauthorized consumption
3: Systematic data handling errors

For more information, click here to see the Grading Matrix worksheet

CITY OF LOBELVILLE

P.O. BOX 369
LOBELVILLE, TN 37097

Robby J. Moore, Mayor
Cristal Odom, City Recorder
Brenda Pace, Clerk

Phone: (931) 593-2285
Fax: (931) 593-2279

January 27, 2015

State of Tennessee
Comptroller Of The Treasury
Division of County Audit
Water and Wastewater Financing Board
Attn: Joyce Welborn
James K. Polk State Office Building
505 Deaderick Street, Suite 1600
Nashville, Tn 37243-1402

RE: City of Lobelville Water Loss

Dear Ms. Welborn,

I am contacting you to address the letter we received along with some questions concerning our water loss. I have listed the following responses for the 18 questions below:

1. We bill for all water used by the city.
2. Yes
3. We have 11 2" meters. They are not inspected unless we see a need such as water usage being up or down. The clerk has a check list of the 2" meter customers that she checks monthly to see if there is a change.
4. We do have a recalibration policy that was implemented in 2012.
5. We do have a meter replacement policy that was implemented in 2012. Most meters will start being replaced around 2017.
6. No we do not. We depend on our city men to notice these things when out in the field and report back to us. If it is found that someone is using without authorization we collect the reading and bill this person. If not paid we take it to court.
7. We do have a leak detection program in place that will be performed by Rye Engineering that just started January 2015. We just finished having a leak detection done by Rye over our entire system. They found approximately 20 leaks that are in the process of being fixed.

8. We do have a written policy and our policy is to allow one adjustment for a leak yearly or every twelve months per household with proof that the leak has been fixed.
9. We do have a volunteer fire department. They report their usage to the City Recorder at the end of the fiscal year. We do not have a method for this.
10. We do have two zone meters that we didn't have in 2012. They are placed in our system to where we can benefit the most from the information.
11. No
12. No. About 50-60% of our meters have pressure reducing valve.
13. Yes. The neighboring city in the same county has some equipment that we have used before. We have discussed purchasing equipment but at this time it is not feasible. Also, we have Rye on standby if we ever need them for emergencies.
14. We get a report monthly that shows potential leaks and we use this and stamp every customers bill that is on that report that says Potential Leak in red letters.
15. We put a message on our bills to encourage our customers to report possible leaks twice a year.
16. We do have a written policy on this.
17. $208,468
18. Yes. We fix any and all leaks when found.

Sincerely,

Robby J. Moore, Mayor

ROCKWOOD WATER, WASTEWATER AND NATRUAL GAS
ROCKWOOD, TENNESSEE
AWWA WATER LOSS REPORTING WORKSHEET
JUNE 30, 2014

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0
American Water Works Association.

? Click to access definition
+ Click to add a comment

Water Audit Report for: Rockwood Water Sewer and Gas (0000590)
Reporting Year: 2014 7/2013 - 6/2014

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

Volume from own sources:	10	1,036.000	MG/Yr	8	-2.00%			MG/Yr
Water imported:	n/a	0.000	MG/Yr					MG/Yr
Water exported:	5	190.542	MG/Yr	8	1.00%			MG/Yr

Pcnt: Value:

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

WATER SUPPLIED: 868.487 MG/Yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

Billed metered:	7	681.000	MG/Yr		
Billed unmetered:	n/a	0.000	MG/Yr		
Unbilled metered:	7	15.100	MG/Yr		
Unbilled unmetered:	5	10.856	MG/Yr	1.25%	MG/Yr

Pcnt: Value:

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

AUTHORIZED CONSUMPTION: 706.956 MG/Yr

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

WATER LOSSES (Water Supplied - Authorized Consumption) 161.531 MG/Yr

Apparent Losses

Pcnt: Value:

Unauthorized consumption:		2.171	MG/Yr	0.25%	MG/Yr
Customer metering inaccuracies:	7	36.637	MG/Yr	5.00%	MG/Yr
Systematic data handling errors:		1.703	MG/Yr	0.25%	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

Apparent Losses: 40.511 MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 121.021 MG/Yr

WATER LOSSES: 161.531 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 187.487 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	9	177.0	miles
Number of active AND inactive service connections:	8	4,280	
Service connection density:		24	conn./mile main
Are customer meters typically located at the curbstop or property line?		Yes	(length of service line, beyond the property boundary, that is the responsibility of the utility)
Average length of customer service line:			
Average operating pressure:	4	100.0	psi

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

COST DATA

Total annual cost of operating water system:	10	$1,978,501	$/Year	
Customer retail unit cost (applied to Apparent Losses):	9	$6.99	$/100 cubic feet (ccf)	
Variable production cost (applied to Real Losses):	9	$378.40	$/Million gallons	Use Customer Retail Unit Cost to value real

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: Water exported
3: Unauthorized consumption

ROCKWOOD WATER, WASTEWATER AND NATURAL GAS
ROCKWOOD, TENNESSEE
AWWA WATER LOSS REPORTING WORKSHEET
JUNE 30, 2014

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

WAS v5.0
American Water Works Association

Water Audit Report for: Rockwood Water Sewer and Gas (0000590)
Reporting Year: 2014 | 7/2013 - 6/2014

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

System Attributes:

Apparent Losses:	40.511	MG/Yr
+ Real Losses:	121.021	MG/Yr
= **Water Losses:**	161.531	MG/Yr
? Unavoidable Annual Real Losses (UARL):	58.38	MG/Yr
Annual cost of Apparent Losses:	$378,542	
Annual cost of Real Losses:	$45,794	Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumption

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	21.6%	
	Non-revenue water as percent by cost of operating system:	21.9%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	25.93	gallons/connection/day
	Real Losses per service connection per day:	N/A	gallons/connection/day
	Real Losses per length of main per day*:	1,873.24	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):	121.02	million gallons/year
? Infrastructure Leakage Index (ILI) [CARL/UARL]:	2.07	

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

See independent auditor's report.

Rockwood Water, Sewer & Gas
110 N. Chamberlain Avenue – Rockwood, TN 37854
Ph: (865) 354-0163 – Fax: (865) 354-0348
www.rwsg.org

Chairman: Darryl Meadows
Commissioner: Loren Bone
Commissioner: Tim Couch
Commissioner Dudley Evans
Commissioner: Joe Moore
General Manager: Kim Ramsey

April 29, 2015

Ms. Joyce Welborn
State of Tennessee Water and Wastewater Financing Board
505 Deaderick Street, Suite 1500
James K. Polk State Office Building
Nashville, TN 37243-1402

Dear Ms. Welborn,

I have received your letter to the Mayor dated March 19, 2015 concerning our reported water loss percentage.

I would like to resubmit an updated water loss calculation sheet for the FY 2014. I have reviewed our spreadsheet with Steve Roberts of the TAUD staff and I have the following corrections made:

1) The previous submittal for 2014 had a blank left for the water exported supply error adjustments. I have included 1% in the resubmittal.
2) Customer metering inaccuracies were shown at 7% previously and I changed that to 5% based on the meter replacement program and other monitoring that has been implemented.
3) The annual cost of the operating system did not include depreciation and therefore, the number has been adjusted based on the final audit numbers. I split the audit numbers based on 68% water vs. 32% sewer and only included the water expenses and depreciation. This changed our number from $1,601,300 to $1,978,501 which is more in line with the prior year report

These corrections changed our non-revenue water as percent by cost of operating system to 21.9% which is more in line with our monthly observations of our system. We are continually working to decrease our water loss and our management and Board are committed to that goal. I apologize for the inaccuracies in our report and we will monitor this report more closely in the future.

Sincerely,

Kim Ramsey
General Manager

Enclosures

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: Rockwood Water Sewer and Gas (0000590)
Reporting Year: 2014 | 7/2013 - 6/2014

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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

	Grade	Volume		Grade	Pcnt:	Value:	
Volume from own sources:	10	1,036.000	MG/Yr	8	-2.00%		MG/Yr
Water imported:	n/a	0.000	MG/Yr				MG/Yr
Water exported:	5	190.542	MG/Yr	8	1.00%		MG/Yr

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

WATER SUPPLIED: 868.487 MG/Yr

AUTHORIZED CONSUMPTION

Click here: for help using option buttons below

	Grade	Volume		Pcnt:	Value:	
Billed metered:	7	681.000	MG/Yr			
Billed unmetered:	n/a	0.000	MG/Yr			
Unbilled metered:	7	15.100	MG/Yr			
Unbilled unmetered:	5	10.856	MG/Yr	1.25%		MG/Yr

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

AUTHORIZED CONSUMPTION: 706.956 MG/Yr

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

WATER LOSSES (Water Supplied - Authorized Consumption) 161.531 MG/Yr

Apparent Losses

	Grade	Volume		Pcnt:	Value:	
Unauthorized consumption:		2.171	MG/Yr	0.25%		MG/Yr
Customer metering inaccuracies:	7	36.637	MG/Yr	5.00%		MG/Yr
Systematic data handling errors:		1.703	MG/Yr	0.25%		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

Apparent Losses: 40.511 MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 121.021 MG/Yr

WATER LOSSES: 161.531 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 187.487 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

	Grade	Volume	
Length of mains:	9	177.0	miles
Number of active AND inactive service connections:	8	4,280	
Service connection density:		24	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

	Grade	Volume	
Average operating pressure:	4	100.0	psi

COST DATA

	Grade	Volume		
Total annual cost of operating water system:	10	$1,978,501	$/Year	
Customer retail unit cost (applied to Apparent Losses):	9	$6.99	$/100 cubic feet (ccf)	
Variable production cost (applied to Real Losses):	9	$378.40	$/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: Water exported
3: Unauthorized consumption

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System Attributes and Performance Indicators

WAS v5.0

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Water Audit Report for: Rockwood Water Sewer and Gas (0000590)
Reporting Year: 2014 | 7/2013 - 6/2014

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

System Attributes:

	Apparent Losses:	40.511	MG/Yr
+	Real Losses:	121.021	MG/Yr
=	**Water Losses:**	**161.531**	MG/Yr
?	Unavoidable Annual Real Losses (UARL):	58.38	MG/Yr
	Annual cost of Apparent Losses:	$378,542	
	Annual cost of Real Losses:	$45,794	Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumption

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	21.6%	
	Non-revenue water as percent by cost of operating system:	21.9%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	25.93	gallons/connection/day
	Real Losses per service connection per day:	N/A	gallons/connection/day
	Real Losses per length of main per day*:	1,873.24	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):	121.02	million gallons/year
?	Infrastructure Leakage Index (ILI) [CARL/UARL]:	2.07	

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

102

Initial Check list for Addressing Water Loss

1. Are you billing for all general government water use? Examples: City Hall, Parks, Community Centers, etc.
   We are metering all public facilities.
2. Are you accounting for the water used by the water and/or sewer department?
   We have added a meter to our shop facility and we are monitoring the meters at both plants monthly with the meter reading.
3. Do you periodically check or inspect all 2" and larger meters?
   We are initiating a program to routinely check our larger meters every six months and we are monitoring those meters now through billing. We have installed a new BEACON monitoring system on all our larger meters which allows us to monitor the water usage daily and be notified of leaks or unexplained usage.
4. Do you have a recalibration policy and procedure in place?
   We have a schedule to calibrate our largest meters.
5. Do you have a meter replacement policy? Is the trigger based on age (length of time in service) or on gallons?

   We have recently completed an overall meter replacement for all the smaller meters. We are currently evaluating and replacing some of our larger meters as we can afford or based on inaccuracies observed.

6. Do you have a process to inspect for unauthorized consumption? What are the consequences if unauthorized consumption is discovered?
   We do have a specific process. Our meter readers are trained to watch for it and our billing clerk prepares a list twice monthly to check for unauthorized use. We have a tampering policy for meter damage and will prosecute for water theft. We continue to prosecute for theft. We have a procedure to check methodically for unauthorized consumption.
7. Do you have a leak detection program currently in place?
   We have leak detection equipment that we use when responding to leaks. We have plans to contract leak detection services, concentrating in our oldest areas within the next year. We plan to install flow monitors in various segments to assist in isolating leaks, etc.
8. Do you have written policies, including a policy for billing adjustments? Are the written policies followed correctly by all levels of staff?

We have a policy that is followed by all staff. Any variance from the policy must be approved by the General Manager. We do not have any current problems following policy at this time.

9. Do you have authorized non-customer users (volunteer fire departments, etc)? Do you account for the use? Do you have a method for the user to report water usage?

We have reports submitted by the Fire Department concerning their use of water in the system. They submit this to us monthly and it is included in our water loss report. If contractors are allowed to use water from our system our water superintendent oversees the use and we bill them accordingly.

10. Is your system "zoned" to isolate water loss?

We are in the process of implementing a program to do this for the utility.

11. Do you search for leaks at night when there is little traffic or small household usage?

When we observe problems (increased pumping at water plant, etc.) we will search for leaks in this manner.

12. Do you or can you control pressure surges? No
13. Do you have or have access to leak detection equipment? Yes
14. What is your policy for notifying customers they have a leak?
    We check for leaks and leave them a notice at their residence.
15. Do you have a public relations program to encourage citizens to report leaks? We notify customers through newsletters, notices at billing areas, etc.
16. Do you have a policy to prosecute water theft or meter tampering/damage? Yes
17. What is the monetary value of the lost water? Greater than $300,000
18. Is the cost to repair the leak justified based on the amount of water being lost? Yes

Suggestion: The Division of Water Supply requires a specific person(s) be assigned to the cross connection program. It may be beneficial to assign the same person to account for water loss.

February 18, 2015

State of Tennessee
Water and Wastewater Financing Board
James K. Polk State Office Building, Suite 1500
505 Deaderick Street
Nashville, Tennessee 37243-1402

RE: Erin Initial check list for addressing water loss

Dear Ms. Welborn:

In response to your letter dated January 13, 2015, I have submitted an updated check list for addressing water loss. Also enclosed you should find copies of policies and procedures implemented after your 2012 visit.

As you can see in our annual audit we have increased revenue as a result of rate increases, service charges, changes in adjustment policies etc. We have decreased our water loss from 49% to 35%, with that said; we have recently discovered a discrepancy in the master meters at the Water treatment plant, the intake meter registers lower than the meter leaving the plant. After calibrating both master meters we have come to the conclusion the discrepancy is due to turbidity coming through the line from the plant to the meter. It is our feeling this discrepancy is the cause of at least 3% of our apparent water loss. We have made arrangements to lay a portion of straight line in front of the finished water meter to remedy this problem.

We have discovered discrepancies in our billing process that are being rectified, we have been diligent with leak detection, we have implemented rate increases each year over the past 3 years and will continue to do so until such a time we have our rates at a place that we are able to fund 100% of our depreciation.

Most importantly, we have secured funding through USDA to replace our outdated water meters with digital read meters, 4 master meters to isolate the system making leak detection more efficient and SCADA systems on our remaining water tanks. This funding has taken longer than anticipated but I feel very strongly we are in the home stretch and will be able to bid the project out this spring.

I believe the steps we have already taken along with the anticipated improvements this Water Meter project will bring that our system will be well within the 25% level this board has established.

If there are questions I have left unanswered or further information I can provide you with Please do not hesitate to contact me at lperin@peoplestel.net or at the above referenced number.

Sincerely,

Paul Bailey
Mayor

Initial Check list for Addressing Water Loss

1. Are you billing for all general government water use? *City and County operated centers are billed for water use, we do however have public restrooms that are not metered, we are nearing the bidding phase of an enhancement grant that will require us to expose water line at the most frequently used restroom, we will install a meter at that site at that time.*

2. Are you accounting for the water used by the water and/or sewer departments? *Water used at our Water & Wastewater treatment centers are metered and billed with the exception of the filter backwashing process where water is periodically calculated to determine total gallons premeasured in a clear well and recorded appropriately.*

3. Do you periodically check or inspect all 2" and larger meters? *2" and larger meters are calibrated and replaced when necessary according to our meter change out policy (see attachment)*

4. Do you have a recalibration policy and procedure in place? *The City of Erin adopted a recalibration policy in 2012 (see attached)*

5. Do you have a meter replacement policy? *The City recently adopted a meter replacement policy triggered by the age of a meter and gallons of water that has run through the meter, however a large portion of our meters have been in use more than 10 years, we have secured funding to replace residential meters with radio read meters.*

6. Do you have a process to inspect for unauthorized consumption? *Our meter readers periodically inspect residences with closed accounts for unauthorized water use. In the event they discover unauthorized meter usage they will notify the main office at which time the resident is notified they must open an account and pay the appropriate fees, if the resident does not comply the water meter is turned off and locked. If the unauthorized consumption is caused by intentional theft, charges will be filed against the perpetrator.*

7. Do you have a leak detection program currently in place? *The City has a leak detection program in place; we have also been doing after hour's leak detection training.*

8. Do you have written policies, including a policy for billing adjustments? *The city has changed their billing adjustment policy to adjusting for one leak per calendar year and nothing less than 20,000 gallons over the average. (see attached)*

9. Do you have authorized non-customer users? *The City occasionally grants contractors permission to use our hydrants. When permission is granted water is metered and billed at a wholesale rate.*

10. Is your system "zoned" to isolate water loss? *The City's system is not "zoned" at this time. We have secured funding to set master meters to provide 4 separate zones to enable us to isolate leaks.*

11. Do you search for leaks at night when there is little traffic or small household usage? *Our Director of Operations has been training our maintenance workers on leak detection during low usage periods.*

12. Do you or can you control pressure surges? *At this time we are controlling pressure surges at our newest pumping station and have a surge controlling device at the water plant which provides a degree of buffering from the water tanks, we will however be able to control pressure surges with SCADA systems currently being installed on the water tanks. The SCADA system will be able to "ramp" pumps rather than full speed at start up as we do now.*

13. Do you have or have access to leak detection equipment? *The City has leak detection equipment and have trained*

14. What is your policy to prosecute water theft or meter tampering/damage? *Customers are required to sign a contract prior to turning their water on prohibiting water meter tampering, we have a policy in place that allows us to implement fines and prosecute for theft of water along with destruction of property.*

15. Do you have a public relations program to encourage citizens to report leaks? *The City does not have a department solely for public relations. We do however periodically print notices on billing encouraging residents to report leaks.*

16. Do you have a policy to prosecute water theft or meter tampering/damage? *The City has recently adopted a policy to prosecute water theft and meter tampering/damage. (see attached)*

17. What is the monetary value of the lost water? *Annual cost of apparent losses to our system is 35,736.00*

18. Is the cost to repair the leak justified based on the amount of water being lost? *It is our goal to repair leaks as they are reported. However, if the leak is minimal and not causing damage to property or livelihood we try to hold off on repairs until such a time there is other work needed in the area.*

ORDINANCE 587

AN ORDIANCE OF THE CITY OF ERIN TENNESSEE ESTABLISHING STANDARDS AND LIMITS REGARDING THE ADJUSTMENT OF UTILITY BILLS DUE TO LEAKS.

WHEREAS, the Board of Mayor and Aldermen have determined that there is a need for updated policies governing the water system; and

WHEREAS, the Board of Mayor and Aldermen have determined that it is in the best interest of the City of Erin to adopt the Adjustments to Bills/Leak Adjustments policy referenced below;

NOW THEREFORE, BE IT ORDAINED by the board of Mayor and Aldermen of the City of Erin, Tennessee that the following is hereby approved:

Section 1. Purpose:

Generally, the customer must pay for all water flows which pass through the customer's water meter provided by the water utility. Because an unknown leak may cause an undue burden on individual customers, this policy balances this interest by allowing the customer a leak adjustment under certain circumstances.

Section 2. The City water system is run for the benefit of all present and future customers. While no customer shall be treated unfairly intentionally, no customer shall be treated in any way that compromises the interest of others.

Section 3. Limitations

The city water system is subject to various city, state and federal governmental agencies requirements and has no discretion to adjust bills in a manner which would violate these regulations.

Section 4. Record Keeping Duration

All records of billing adjustments shall be kept for a minimum of seven (7) years.

Section 5. Omissions

In special circumstances not covered by this policy, the disposition of billing adjustments shall be made by the governing body in accordance with its usual and customary practices.

Section 6. Policy

1. The need to adjust a utility bill may be evident by a customer complaint of excessive billing or evidence of leakage on the customer side of the meter.
2. It is the customer's responsibility to keep his/her plumbing system in good working order. If the city notifies a customer of a potential leak and the repair is not made within 15 days, there shall be no adjustment for leakage.
3. No customer shall receive more than one adjustment during any one calendar year.
4. No customer shall receive more than one adjustment per leak.
5. The water utility will investigate the accuracy of the metered water. If an investigation of the meter and meter records establishes that the meter was misread or that there was a failure of the utility equipment, a new bill will be issued using an estimated reading based on an average of the past 12 months billing for this period. There will be no penalty assessed in the event the adjustment procedure delays payment past the penalty date.
6. If an investigation of the meter and metered record establishes that the meter was properly read and that there was no failure of utility equipment, the bill will remain valid and payable.
7. If the customer questions the accuracy of the meter he/she shall request the water utility test the meter or replace it. If the meter proves to be accurate within the guidelines established by the water utility, it is deemed to be accurate.
8. If an adjustment of the customer's bill is warranted, the amount of the bill will be determined based on the average for the billing period for the last 12 months billing. Customers with less than 12 months of service shall average the bill for the number of month's prior to service.
9. The city will not adjust a water bill for a leak on the "customers' side" of the meter unless; the leak is greater than 20,000 gallons over an average month's usage.

10. Adjustment on WATER bills will NOT be made on the following:
    - Routine dripping faucets, leaking commodes, or any type of faulty customer plumbing.
    - Premises left or abandoned without reasonable care for the plumbing system;
    - More than one occurrence per calendar year;
    - Filling of swimming pools; and
    - Watering of lawns or gardens.

11. The city shall not be obligated to make adjustments of any bills not contested within thirty (30) days from the billing date.
12. The city shall be under no obligation to extend the discount or due date or the time for paying any bills because the customer disputes the amount of the bill.
13. All requests for billing adjustments must be received by phone, in writing or in person at the business office of the city during regular business hours.
14. When the city suspects leakage on the customer's side of the meter, the city shall attempt to notify the customer by leaving a "door hanger" on the premises or by telephone. The city's attempt to notify the customer of a suspected leak is an accommodation to the customer, not a duty to the customer.
15. The bookkeeper shall file a written report of the customer billing adjustment and the action of the staff regarding the adjustment.
16. Documentation of the leak repair may be required prior to any adjustment to the bill.

Section 7. Severability: If any section, clause, provision, or other portion of this Ordinance shall be held to be invalid or unconstitutional by any Court of competent jurisdiction, such holding shall not affect any other section, clause, provision, or portion of this Ordinance.

Section 8. Conflicts with other ordinances and regulations: All other ordinances and regulations and parts of other ordinances and regulations in consistent or conflicting with any part of this Ordinance are hereby repealed to the extent of such inconsistency or conflicts. This ordinance shall not affect any litigation or other proceedings pending at the time of adoption.

Section 9. Adoption and Effective Date: This ordinance shall become effective from and after its passage, the public welfare requiring it.

First reading July 3, 2012
Public Hearing
Second Reading August7, 2012

Approve:

_____
Tommy Parchman – Mayor

Attest:

_____
Lori Pendergrass - Recorder

ORDINANCE 588

AN ORDINANCE OF THE CITY OF ERIN TENNESSEE ESTABLISHING STANDARDS AND LIMITS REGARDING THE REPLACEMENT OF WATER METERS AND LEAK DETECTION

WHEREAS, the Board of Mayor and Aldermen have determined that there is a need for updated policies governing the water system; and

WHEREAS, the Board of Mayor and Aldermen have determined that it is in the best interest of the City of Erin to adopt the Water Meter Replacement Policy referenced below;

NOW THEREFORE, BE IT ORDAINED by the board of Mayor and Aldermen of the City of Erin, Tennessee that the following is hereby approved:

Section 1. The City of Erin reserves the right to restrict, limit or shut off water in all cases when it becomes necessary to do so for repairs, not-payment of water bills, and violation of the regulations or whenever they deem expedient.

Section 2. The City of Erin shall not be held liable to any person or persons for any damage caused by contaminated water resulting from the opening or closing of valves, hydrants, the breaking of any pipe or fixture, heavy demand or any other cause whatsoever. Backflow prevention shall be utilized that satisfies the City of Erin requirements.

Section 3. The City of Erin shall not be held responsible or liable to any person for any loss or damage from water service interruptions, or from any excess or deficiency in the pressure, volume or supply of water due to any cause.

Section 4. The property owner is responsible for prevention and correction of any leakage from the meter onward within the property. Failure to correct leakage within thirty (30) days of notification by the City of Erin will result in the water service being terminated. Service will not be restored until the leakage has been repaired to the satisfaction of the City of Erin DPW

Section 5. Water bill adjustment for leaks will be made according to the Adjustment policy

Section 6. No person shall operate any fire hydrant belonging to the water system without permission from the City of Erin, with the exception of the Fire Department.

Section 7. All fire hydrant use will be metered or calculated for water usage.

Section 8. **Water meter change out schedule**

- ¾" Meter – 8 to 10 years or 500,000 gallons
- 2" Meter – 5 years or 2,000,000 gallons
- 4" AND GREATER – Test and calibrate annually and replace when 2% plus or minus accuracy is unattainable.

Section 9. It is of the utmost importance to account for water produced by the Erin water system; in an attempt to reduce unaccounted water loss the City of Erin will do leak detection no less than eight hours per month.

Section 10. At times it will be deemed necessary to do leak detection after working hours when traffic and water use is at a minimum. In such cases, the public will be notified by way of the message section on the water bills.

Section 11. **Severability:** If any section, clause, provision, or other portion of this ordinance shall be held to be invalid or unconstitutional by any court of competent jurisdiction, such holding shall not affect any other section, clause, provision, or portion of this Ordinance.

Section 12. **Conflicts with other ordinances and regulations:** All other ordinances and regulations and parts of other ordinances and regulations in consistent or conflicting with any part of this ordinance are hereby repealed to the extent of such inconsistency or conflicts. This ordinance shall not affect any litigation or other proceedings pending at the time of adoption.

Section 13. Adoption and Effective Date: This ordinance shall become effective from and after its passage, the public welfare requiring it.

First Reading – July 3, 2012
Public Hearing – August 7, 2012
Second Reading – August 7, 2012

Approved: _____
Tommy Parchman – Mayor

Attest: _____
Lori Pendergrass-Recorder

Ordinance 589

AN ORDINANCE OF THE CITY OF ERIN TENNESSEE ESTABLISHING A WATER METER POLICY STATEMENT.

WHEREAS, the Board of Mayor and Aldermen has determined that there is a need for updated policies governing the water system; and

WHEREAS, the Board of Mayor and Aldermen has determined that it is in the best interest of the City of Erin to adopt the Water Meter Policy Statement referenced below;

NOW THEREFORE, BE IT ORDAINED by the Board of Mayor and Aldermen of the City of Erin, Tennessee that the following is hereby approved:

Section 1. Purpose:
To establish policies and fees related to ownership, installation, use, testing, replacement, and damages to city water meters and accessories.

Section 2. General:
The intent of this policy is to establish requirements related to the installation and use of the City of Erin water meters.

1. Applicability
   This policy establishes requirements for all existing and new water meters. The policy shall be effective upon approval by the City Council.

2. By establishment of this policy, the city is clarifying previous informal policies of the City Public Works Department.

3. The following requirements are made effective to all water customers of the City of Erin Water System:
   - All water used shall be metered, except for water used by Public Works or the Fire Department for firefighting or water system flushing.
   - All new water connections for irrigation purposes shall have a separate water meter installed or have an approved backflow preventing device.
   - The City of Erin shall own and maintain all water meters registering water consumption of the water customer from the street to the meter, including all components in the meter box. The water customer shall own and maintain all lines and any other devices beyond the meter box.
   - All meter boxes and service lines shall be installed according to the city standards and details on file in the Public Works Department.
   - All water meters shall be set or reset by the City of Erin Public Works Department or a City approved contractor. Any other person removing or tampering with the City water meter will be subject to fines and penalties as established herein. Theft of city water will be subject to action as determined and prosecuted by the City attorney in addition to a fine for each time of such theft as established herein.
   - The Public Works Department shall service and maintain city owned water meters without charge and shall replace defective or malfunctioning meters without charge. Provided, however, if damages to the meter (including meter box and accessories) are the result of an accident or of negligence other than by a City Employee or Agent, then the water customer shall be liable for the expense of repairs or replacement of such damaged items. Payment must be made within 30 days of invoicing of repairs or replacement or water service to the premises will be discontinued.
   - The Public Works Department can obtain a shop test of a ¾" water meter for a fee and provide a written certification of its accuracy. Should the test find the meter to be greater than 5% over true quantity, the fee will be returned, and an adjustment in the water bill made for a maximum of 3 months of use for the overage amount. If the meter is found to be over the under true quantity by more than 5%, the meter will be replaced at no expense to the customer.

- There will be a non-refundable fee of $25.00 assessed to each new customer account and or transfer of accounts. This fee is in addition to the refundable meter deposits as addressed in the service agreement.
- Leaks on the customers' side of the water meter that are no fault of the City of Erin must be repaired within 30 days of notification by the DPW. In the event leaks are not repaired in a timely manner service may be suspended.
- In the event of a leak that has been proven to be of no negligence or responsibility of the City of Erin an adjustment may be made on a case by case basis as prescribed in the Adjustment policy:
- Water meter re-check will be done at no cost to the customer for the first visit. A fee of $25.00 will be added to the customer's account for each visit thereafter. If the City of Erin is in any way at fault or found negligent all fees will be refunded.

Section 3, The following fees are hereby established as related to this water meter policy and such are subject to change by the City Council upon a favorable vote:

1. Water meter accuracy test $50.00 Fee
2. Tampering with city water meter $100.00 Fine
3. Theft of water, including fire hydrants $100.00 Fine
4. Damaged ¾" water meter and or hardware replacement $350.00
5. Damaged meter box replacement $200.00

Section 4. Payment of the above fees or fines shall be made by the water customer within 30 days of invoicing or the service may be discontinued.

Section 5. **Severability:** If any section, clause, provision, or other portion of this ordinance shall be held to be invalid or unconstitutional by any court of competent jurisdiction, such holding shall no affect any other section, clause, provision, or portion of this ordinance.

Section 6. **Conflicts with other ordinances and regulations:** All other ordinances and regulations and parts of other ordinances and regulations inconsistent or conflicting with any part of this ordinance are hereby repealed to the extent of such inconsistency or conflicts. This ordinance shall not affect any litigation or other proceedings pending at the time of adoption.

Section 7. **Adoption and effective date:** This ordinance shall become effective from and after its passage, the public welfare requiring it.

First Reading – July 3, 2012
Public Hearing –
Second Reading – August 7, 2012

Approve: _____
Tommy Parchman – Mayor

Attest: _____
Lori Pendergrass - Recorder

Town Of Linden

"A family kind of place"

GATEWAY TO FUN
PERRY COUNTY
LINDEN, TENNESSEE

Ms. Joyce Welborn
Water and Wastewater Financing Board
505 Deaderick Street, Suite 1500
James K. Polk State Office Building
Nashville, Tennessee 37243-1402

Dear Ms. Welborn,

This is a response to your letter dated January 20, 2015, concerning The Town of Linden's (Town) referral to the Water and Wastewater Financing Board for having reported non-revenue water as 56.4% of operating costs and validity score of 65. As you requested, we have provided: A) an updated plan to reduce water loss and B) responses to the questionnaire on the enclosed sheet.

A. **Updated Plan to Reduce Water Loss:**
In July of 2014, we contracted with Rye Engineering PLC (RYE), a consulting company specializing in water loss management, to provide basic water loss services to help bring us into compliance with Tennessee's water loss regulations and to recover lost revenue for the Town. The program known as the Tennessee Water Loss Management (TWLM) program for the Town of Linden that we have enrolled in will provide the following regular water loss activities:

1. ***Annual Master Meter Testing;***

2. ***Annual Master Meter Calibration;***

3. ***Annual Acoustic Leak Detection Survey;***

4. ***Emergency Leak Detection, Flow Based Leak Detection, & Step Testing (flow based/pressure observation).***

RYE has worked approximately six months in the Linden water system and has completed the annual acoustic leak survey, has completed testing of our water treatment plant master meter and is now working on the flow-based leak detection which involves searching for water leaks during the early morning hours when little water usage is occurring. RYE is scheduled to continue our flow-based leak detection and nighttime flow analysis the week of March 16th, 2015. Documentation of the work that RYE has performed to date is included in its update report attached to this letter as Appendix A.

B. **Response to Questions on Initial Checklist for Addressing Water Loss:**
We've provided answers to the questions you sent us that were listed on your initial check list. The questions are listed first and the answers follow in italics:

1. **Are you billing for all general government water use?**
Yes, it is the Town's policy to bill for all general government water use. We have meters installed on City Hall, Sewer Plant, Town Parks, and Water Treatment Plant.

2. **Are you accounting for the water used by the water and/or sewer department?**

P.O. Box 46 • 216 E. Main St. • Linden, Tennessee 37096 • 931-589-2736 • Fax 931-589-3767

Yes, water used by the water and sewer department is metered. In the distribution system, where possible, we use a 2" meter when water is used from a fire hydrant. If the use is by someone other than the Town, the user is billed for the water. These flows are tracked monthly.

3. **Do you periodically check or inspect all 2" and larger meters?**
   No, currently we only read these meters. However, we have contacted RYE to provide a proposal to test our 2" and larger meters annually.

4. **Do you have a recalibration policy and procedure in place?**
   Yes. Under the RYE TWLM program, our master meter at our water treatment plant is calibrated once a year. Other meters are not currently being tested or calibrated.

5. **Do you have a meter replacement policy? Is the trigger based on age (length of time in service) or on gallons?**
   The Town is currently on a 5-year program to replace all meters in the system with new automatic read meters (AMR). One meter route has been replaced in its entirety so far and another route is scheduled to be replaced this year. Additionally, meters that exhibit problems are replaced immediately as those problems are detected.

6. **Do you have a process to inspect for unauthorized consumption? What are the consequences if unauthorized consumption is discovered?**
   Yes, our meter readers check for unauthorized consumption during the meter reading cycle. If unauthorized consumption is detected, the water department contacts the customer first to let them know that they are not authorized to be using water and then, if unauthorized use continues, the Police Department cites the alleged offender into court.

7. **Do you have a leak detection program currently in place?**
   Yes. Until we enrolled in the RYE TWLM program, we would only leak detect on an emergency basis, that is, when we were already aware that a leak had developed by visible signs of water above the ground. The leak detection would be done to pin-point the exact location of the leak prior to excavation. Now, under the RYE TWLM program, our entire system will be leak surveyed once per year. Additionally, emergency leak detection and flow-based leak detection is included in the program and is built into the monthly fee that we are paying to RYE.

8. **Do you have written policies, including a policy for billing adjustments? Are the written policies followed correctly by all levels of staff?**
   Yes, customer bills are adjusted upon legitimate request and are documented. Bills are adjusted by a single staff level at City Hall. Customers are allowed one adjustment per year. The bill is adjusted to the average of the three most recent water bills.

9. **Do you have authorized non-customer users (volunteer fire departments, etc)? Do you account for the use? Do you have a method for the user to report water usage?**
   Yes, each time authorized non-customers, such as the fire department, uses water they must verbally report their usage to the Water Department.

10. **Is your system "zoned" to isolate water loss?**
Yes. We have broken down our water system into five main zones. During the flow-based leak detection that RYE is performing, they have further broken down each zone into sub-zones that can be isolated by temporarily closing water valves and using a temporary ultrasonic flow meter and step testing methods to search for leaks. We also use our SCADA system to monitor water tank levels, pump run times, and some flow rates through the system.

11. **Do you search for leaks at night when there is little traffic or small household usage?**
Yes. The flow-based leak detection that RYE is performing will occur during nighttime hours when household usage is at a minimum.

12. **Do you or can you control pressure surges?**
Yes, in one of our booster stations we have variable frequency drives (VFD) that slowly ramp up flow rates and pressure as the water demand requires. In other zones, we utilize soft starters where possible to help reduce the surges associated with pump start and stop. Additionally, we manage our pressure with a series of approximately 15 pressure reducing valves strategically positioned in the system.

13. **Do you have or have access to leak detection equipment?**
Yes. Under the TWLM program, we have employed RYE, a company with electronic ground microphones, acoustical correlators, ultrasonic flow meters, and employees knowledgeable in water distribution system operation and water loss control to use this equipment.

14. **What is your policy for notifying customers they have a leak?**
If we suspect that customers have a leak, we call them or send an employee to place door knocker signs on the property.

15. **Do you have a public relations program to encourage citizens to report leaks?**
No, we do not have a formal program to encourage water leaks to be reported, but citizens do sometimes call in of their own accord.

16. **Do you have a policy to prosecute water theft or meter tampering/damage?**
Yes, water theft is prosecuted in court and at higher levels if necessary as prescribed by law.

17. **What is the monetary value of the lost water?**
According to the AWWA Water Audit that was turned in, our Non-Revenue Water is approximately $362,076. However, in response to this letter, Rye has reevaluated our water audit to verify the accuracy of this number. We have attached a copy of the revised water audit as Appendix B for your information. Under this revised audit, our actual value of non-revenue water may be closer to $130,452. Please note that the significant change that RYE made to the water audit is a recalculation of the variable production costs by including only the costs required to produce "the next unit of water" such as chemicals and electricity, as is suggested by the AWWA M36 manual.

18. **Is the cost to repair the leak justified based on the amount of water being lost?**
We submit that in most cases, the costs to repair leaks are justified, and they are repaired as soon as they are found. According to the update report that RYE provided, approx $51,000 per year of leakage was detected in its leak survey, justifying the relatively small cost to repair the 19 leaks that were found. Under the revised audit the value of the leakage may actually be closer to $11,000. However this amount is still enough to justify repairs.

Please let me know if you have any questions about the information that we have provided or need more detail on our future plans to control and manage our water loss. We appreciate your time in reviewing our efforts.

Sincerely,

Jim Azbill, Mayor

APPENDIX A

RYE
ENGINEERING PLC

4210 West Main Street
Erin, TN 37061
Phone (931) 289-2300
Fax (931) 289-2313
srye@ryeengineering.com

UPDATE REPORT FOR

LINDEN WATER LOSS MANAGEMENT PROGRAM

FEBRUARY 23, 2015

RYE ENGINEERING PLC

TABLE OF CONTENTS

SECTION

1. UPDATE LETTER 3
2. ACOUSTIC LEAK SURVEY 5
3. FLOW BASED LEAK DETECTION 7
4. INPUT METER TESTING AND CALIBRATION 8
5. EFFECTS ON WATER LOSS 9
6. PLAN OF ACTION 11
7. APPENDICES 12
   - A. INDIVIDUAL LEAK REPORTS
   - B. METER TESTING REPORTS

1: SUMMARY LETTER

February 23, 2015

Mayor Jim Azbill
Town of Linden
216 East Main Street
Linden, TN 37096

RE: Linden Water Loss Management Program

Dear Mayor Azbill:

We are at the midway point of the first year of our water loss management program for the Town of Linden. As agreed upon last summer, the Linden Water Loss Management Program consists of an annual acoustic leak detection survey of the entire Linden water distribution system, flow-based leak detection to supplement the acoustic leak survey, and testing and calibration of Linden's water treatment plant master meter (input meter). This report is intended to update you on what tasks we have performed to date, the results of those efforts, and outline our plan going forward. It is important to keep in mind that we commenced work on the program in Late July 2014, so any improvements that we have made should be reflective in your AWWA water audit for Fiscal Year 2014-2015.

To summarize, during our acoustic leak survey (July – September 2014) we detected 19 water leaks that totaled approximately 1.4 million gallons per month in leakage (by our initial field estimates). Our flow-based leak detection performed in November and December of 2014 identified another approximately 1.7 million gallons per month (40 GPM) of leakage. We tested the input meter at the water plant on August 22nd and are scheduled to calibrate the meter in March.

From evaluating your monthly water loss worksheets, the effects of the program and your staff's diligent efforts in repairing the leaks that were detected, it appears that your water loss has been reduced by approximately 3.7 million gallons per month (85 GPM) from July to December 2014. The value of this non-revenue water is approximately $138,000 per year. Additionally, the input meter testing and calibration will allow you dramatically improve your AWWA validity scores on your upcoming water audit for Fiscal Year 2014-2015.

By our projections, we submit that Linden will come into compliance on the Validity Score portion of its next water audit, but while it will improve on the Non-Revenue Water performance indicator, much work remains to bring this part of the water audit

into compliance. Among our next steps toward compliance are continued flow-based leak detection (night-flow measurements and step-testing) and isolation of leaks on long stretches of rural water main in March and April of 2015. We also have suggestions of long-term improvements such as establishing district metered areas (zone meters) and configuring your SCADA system to perform night-time flow analysis which are discussed within the report.

We appreciate being able to work for the Town of Linden. Please let me know if you have any questions about our work to date.

Sincerely,

RYE ENGINEERING PLC

BY: Seth W. Rye, P.E., Esq.

2: ACOUSTIC LEAK SURVEY

During the course of the acoustic leak survey from July 21st to September 2nd 2014, we localized and pinpointed 19 leaks. Our field crews estimated these leaks to total approximately 1.4 million gallons per month in real water losses. While Appendix A contains copies of each of the individual leak reports, Table 1 below represents a master list of all leaks localized and pinpointed during the survey with location, type, and estimated leakage rate.

Table 1. Acoustic Leak Detection Summary

Town of Linden

Acoustic Leak Detection Summary (7-21-2014 to 9-2-2014)

Leak No.	Address	Street	Description	Rating	Estimated Water Loss (gpd)
1	21	Spring Street (Across St. Abandoned House)	Service Line	5	20,000
2	208	Pine St.	Service Line	2	3,000
3	131	Shelton St.	Meter Yoke	1	400
4	205	Webb St. (Vacant House to Right)	Meter Not Reg. Low Flow	1	400
5	127	Brookside Dr.	Meter Not Reg. Low Flow	1	400
6	92/94	Medical Dr.	Service Line	2	3,000
7		Hwy 100 (1st House on Left Across River)	Service Line	2	3,000
8		Hwy 100 (2nd House on Right Across River)	Service Line	2	3,000
9	564	Horseshoe Bend Dr.	Service Line	1	400
10	2791	Woods Prong Rd.	Meter Not Reg. Low Flow	1	400
11		Woods Prong Rd. (Brick House below Treadwell Cemetery)	Meter Not Reg. Low Flow	1	400
12	3283	Hwy 128	Service Line	2	3,000
13	3000	Hwy 128	Service Line	2	3,000
14	616	Cedar Creek Landing Rd.	Meter Yoke	1	400
15	1085	Paridse Landing Sub. (Right of)	Meter	1	400
16	2913	Beech Creek Loop	Customer Side/Meter	N/A	N/A
17	End	Field Drive	Blowoff	1	400
18	2491	Mayberry Prong	Meter Not Reg. Low Flow	1	400
19		11NYX Factory (2nd FH)	Fire Hydrant	2	3,000

TOTAL Estimated Water Loss	45,000	gallons/day
	1,350,000	gallons/month
	16,425,000	gallons/year
	39	***GPM***

When the real losses are valued at the rate listed on Linden's latest AWWA water audit, $3,109.35 per million gallons, the estimated 39 GPM of leakage or 16.4 million gallons per year is valued at approximately $51,000 of non-revenue water per year.

3. FLOW-BASED LEAK DETECTION:

From November 26th to December 15th 2014, we performed flow-based leak detection within the Linden water distribution system. Due to this being our first time to test flows in the system, all work was performed during daytime hours. Prior to entering the field, we divided the Linden system into five (5) zones and further subdivided those areas upon entering the field into multiple "steps" or sections of the system where valves could be manipulated to isolate areas of leakage. Our flow-based leak detection results are found below in Table 2. We plan to continue flow-based leak detection in March and April of 2015 in the order of priority listed below. As leaks are isolated, we will use our acoustic leak detection to pinpoint those leaks for repair.

Table 2. Flow-based leak detection results to date.

Zone	Description of Zone	Results	Recommendations
1	Northeast portion of system; Hwy 13 north of Town; Hwy 100 east of Town.	Step 1-B suspect **5 gpm** leak past Short Creek Pump Station; Suspect **15 gpm** leak in Hwy 13 area.	Perform night flow analysis and re-step test to isolate confirmed leaks. **5th Priority.**
2	Southeast portion of system; Hwy 13, Old 13, to Possum Creek area south of Town.	No leaks detected, but large area south of pump station needs re-testing.	Perform night flow analysis and re-step test to isolate confirmed leaks. **2nd Priority.**
3	Southwest portion of system; Hwy 128 area southwest of Town.	**20 gpm** leak suspected between pump station and New Era Ridge Road.	Perform night flow analysis and re-step test to isolate confirmed leaks. **1st Priority.**
4	West of Town; Cedar Creek Road to Denton Road.	No leaks detected, but area around Buck Fork, Cedar Creek, Marsh Creek is untested.	Test untested area first, then perform night flow analysis and re-step test to isolate confirmed leaks. **3rd Priority.**
5	Northwest portion of system; Hwy 438 and Hwy 100 area west of Town.	**15 gpm** suspected from 412 rock quarry to Hwy 438 to end.	Perform night flow analysis and re-step test to isolate confirmed leaks. **4th Priority.**

4. INPUT METER TESTING AND CALIBRATION:

On August 22nd, 2014, the water treatment plant input meter (Foxboro Magnetic Meter) was tested using a dual clearwell drawdown test and ultrasonic strap-on flow meter comparison test. The meter tested 94.02% accuracy. While some of the error may be due to the fact that the meter records in 1000 gallon increments, we have electronic calibration of the meter scheduled for March 3rd, 2015. We will also calibrate any other mag-meters in the water system as time allows on that day. Although not necessary for water loss purposes, please note that we also tested the raw water meter (Sensus Turbo Meter tested at 100.93%). Please see Appendix B for the meter test reports.

These testing and calibration activities are essential for meaningful water loss calculations and should be taken into consideration when Linden is filling out its next annual AWWA water audit for the 2014-2015 fiscal year. Testing and calibrating on an annual basis can significantly raise the AWWA validity score if credit for these activities is acknowledged in the proper location on the water audit.

5. EFFECTS ON WATER LOSS:

Through its diligent efforts repairing the leaks that were found during our acoustic leak survey and by repairing other leaks that surface to the top of the ground, the Town of Linden has reduced its water loss substantially over the last 12 months. Since the old "unaccounted for water percentage" method is no longer used in Tennessee, we took the Town's monthly water loss data sheets and compiled the data in terms of volume of non-revenue water in gallons per month and gallons per minute, instead of focusing on a percentage, which can often times be misleading due to variations in water demand throughout the year. As Figure 1. Illustrates, non-revenue water has decreased from approximately 8 MG per month when the water loss management began in July 2014 to approximately 4 MG per month in December 2014 at the six-month mark. Figure 2. illustrates these same values converted to gallons per minute (GPM), which gives us a better idea of the approximate value of leakage we are looking for during our future flow-based leak detection efforts. Viewing the data in these units suggests that, as of December 2014, non-revenue water is approximately 90 GPM by volume. This value will be confirmed during future flow-based leak detection efforts in March and April of 2015.

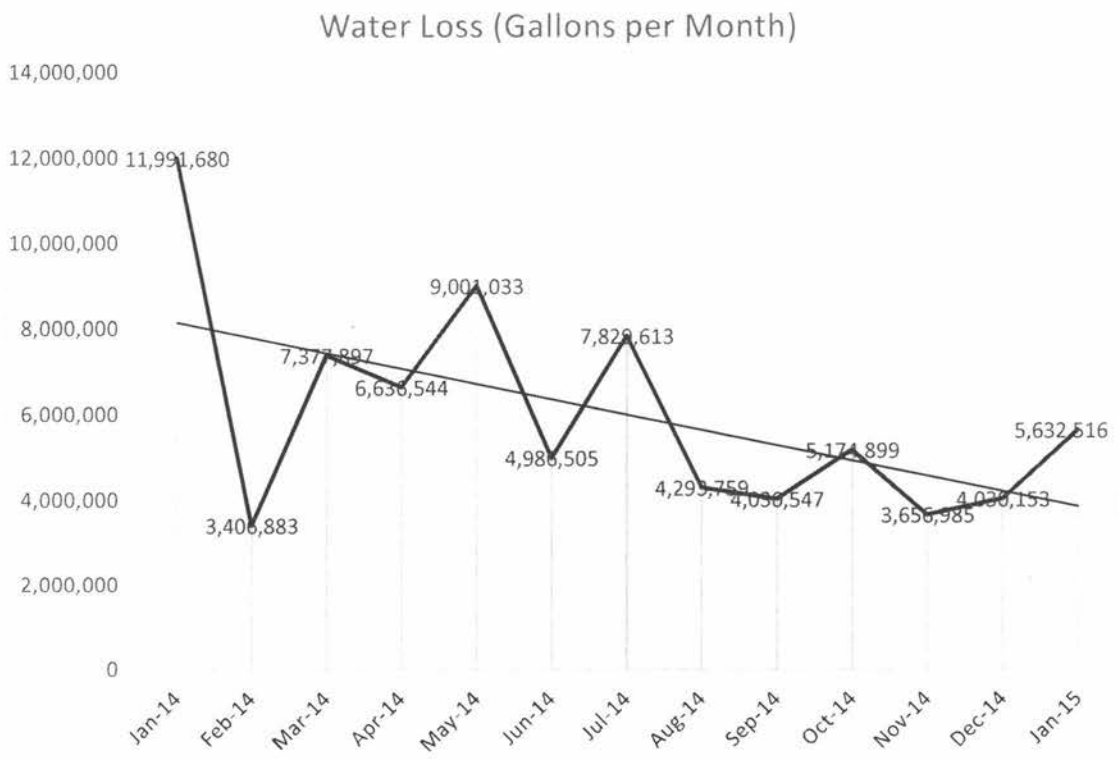


Figure 1. Non-revenue water has dropped from approximately 8 MG/Month to approximately 4 MG/Month from July 2014 to December 2014 in the first 6 months of the program.

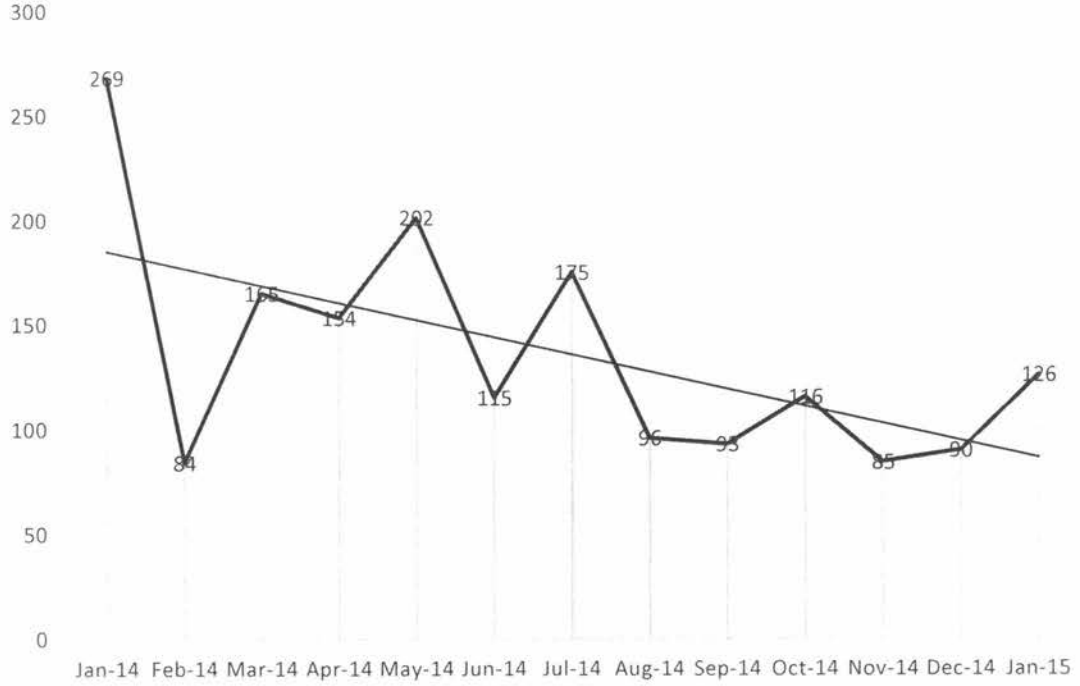


Figure 2. Non-revenue water is approximately 90 GPM by volume as of December 2014. This value will be confirmed during future flow-based leak detection efforts in March and April of 2015.

6. PLAN OF ACTION:

To continue our work under the Water Loss Management Program we have the following plan of action:

1. Meet with Mayor, staff, and Linden's Engineer on February 24th, 2015 to discuss future actions on water loss including the possibilities of installing permanent zone meters and configuring Linden's SCADA system to automatically calculate night-time flow rates on a regular basis to identify leaks when they occur instead of waiting for them to surface or be detected during the traditional leak detection processes. Various types of meters including ultrasonic strap-on meters for easy installation at pump stations and solid state meters such as the EVOQ4 or traditional magnetic flow meters will be discussed.

2. Calibrate the WTP Master Meter on March 3rd, 2015 and calibrate other existing mag-meters in the system;

3. In mid-March 2015, perform one week of night-flow analysis followed immediately by leak localization and pinpointing through step-testing and acoustic methods. Data gathered in previous flow-based efforts will be used to prioritize the work.

4. Continue night-flow analysis for one week in mid-April. Follow again with step-testing and acoustic methods to pinpoint leaks as they are detected.

5. Continue to analyze water loss on a monthly basis but consider converting to the AWWA water audit system on a monthly basis. This will help Linden determine where they are in terms of State compliance in advance of the annual audit being performed.

6. In July 2015, prepare annual water loss management report for Linden's use when preparing its annual AWWA water audit. Rye will assist if needed in supplying information for the audit (or helping to fill it out) to make sure that Linden takes credit for the water loss work that has been done during the course of the fiscal year.

7. In August 2015, begin the second annual acoustic leak survey and re-test the WTP master meter. We will then proceed through water loss management program again to reduce non-revenue water in the 2015-2016 fiscal year.

7. APPENDICES:

APPENDIX A: INDIVIDUAL LEAK REPORTS

Linden

RYE ENGINEERING PLC

Leak Detection Survey

Date: 7-21-2014

Street Address: Abandoned house across from 21 Spring St Leak #: 1

Customer Using Water - Recheck ☐

Rechecked ☐ Date rechecked: _____

Leak Survey

Meter Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 ☐

Notes _____

Meter Yoke Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 ☐

Notes _____

Service Size: (3/4") 1" 2" 3" 4" Material: poly copper galv. Rating 1-5 [5]

Notes 25 gpm customer leak, water running under house, service cut off + meter removed by City after leak found.

Valve Size: 2" 4" 6" 8" 10" 12" Rating 1-5 ☐

Notes _____

Fire Hydrant Make & Size: _____ Rating 1-5 ☐

Main Line Size: 2" 4" 6" 8" 10" 12" Piping Material: PVC CI DI

Rating 1-5 ☐

Water Loss from Leaks

Rating	Pipe Leak Size	Gallons Lost/Day	Gallons Lost/Month	Gallons Lost/Month x 5 Leaks
1	•	360	11,160	55,800
2	●	3,096	95,976	479,880
3	●	8,424	261,144	1,305,720
4	●	14,952	463,512	2,317,560
5	Severe Leak – Repair as soon as possible (20,000+ per day)			

Linden

RYE ENGINEERING PLC

Leak Detection Survey

Date: 7-21-2014

Street Address 208 Pine St Leak # 2

Customer Using Water - Recheck ☐

Rechecked ☐ Date rechecked: _____

Leak Survey

Meter Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 ☐

Notes _____

Meter Yoke Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 ☐

Notes _____

Service Size: 3/4" 1" 2" 3" 4" Material: poly copper galv. Rating 1-5 2

Notes _____

Valve Size: 2" 4" 6" 8" 10" 12" Rating 1-5 ☐

Notes _____

Fire Hydrant Make & Size: _____ Rating 1-5 ☐

Main Line Size: 2" 4" 6" 8" 10" 12" Piping Material: PVC CI DI

Rating 1-5 ☐

Water Loss from Leaks

Rating	Pipe Leak Size	Gallons Lost/Day	Gallons Lost/Month	Gallons Lost/Month x 5 Leaks
1	•	360	11,160	55,800
2	●	3,096	95,976	479,880
3	●	8,424	261,144	1,305,720
4	●	14,952	463,512	2,317,560
5	Severe Leak – Repair as soon as possible (20,000+ per day)			

RYE ENGINEERING PLC

Leak Detection Survey

Date: 7/22/14

Street Address 131 Shelton St Leak # 3

Customer Using Water - Recheck ☐

Rechecked ☐ Date rechecked: _____

Leak Survey

Meter Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 ☐

Notes _____

Meter Yoke Size: (5/8") 1" 2" 3" 4" 6" Rating 1-5 [1]

Notes Customer Leak ; Not picking up low flow

Service Size: ¾" 1" 2" 3" 4" Material: poly copper galv. Rating 1-5 ☐

Notes _____

Valve Size: 2" 4" 6" 8" 10" 12" Rating 1-5 ☐

Notes _____

Fire Hydrant Make & Size: _____ Rating 1-5 ☐

Main Line Size: 2" 4" 6" 8" 10" 12" Piping Material: PVC CI DI

Rating 1-5 ☐

Water Loss from Leaks

Rating	Pipe Leak Size	Gallons Lost/Day	Gallons Lost/Month	Gallons Lost/Month x 5 Leaks
1	•	360	11,160	55,800
2	●	3,096	95,976	479,880
3	●	8,424	261,144	1,305,720
4	●	14,952	463,512	2,317,560
5	Severe Leak – Repair as soon as possible (20,000+ per day)			

RYE ENGINEERING PLC

Leak Detection Survey

Date: 7/22/14

Street Address Vacant House to right of 205 Webb St Leak # 4

Customer Using Water - Recheck ☐

Rechecked ☐ Date rechecked: _____

Leak Survey

Meter Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 [1]

Notes Cutoff broken; Not picking up flow

Meter Yoke Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 [ ]

Notes _____

Service Size: ¾" 1" 2" 3" 4" Material: poly copper galv. Rating 1-5 [ ]

Notes _____

Valve Size: 2" 4" 6" 8" 10" 12" Rating 1-5 [ ]

Notes _____

Fire Hydrant Make & Size: _____ Rating 1-5 [ ]

Main Line Size: 2" 4" 6" 8" 10" 12" Piping Material: PVC CI DI

Rating 1-5 [ ]

Water Loss from Leaks

Rating	Pipe Leak Size	Gallons Lost/Day	Gallons Lost/Month	Gallons Lost/Month x 5 Leaks
1	•	360	11,160	55,800
2	●	3,096	95,976	479,880
3	●	8,424	261,144	1,305,720
4	●	14,952	463,512	2,317,560
5	Severe Leak – Repair as soon as possible (20,000+ per day)			

RYE ENGINEERING PLC

Leak Detection Survey

Date: 7/22/14

Street Address 127 Brookside Dr Leak # 5

Customer Using Water - Recheck ☐

Rechecked ☐ Date rechecked: _____

Leak Survey

Meter Size: (5/8") 1" 2" 3" 4" 6" Rating 1-5 [1]

Notes Not picking up low flow

Meter Yoke Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 [ ]

Notes _____

Service Size: ¾" 1" 2" 3" 4" Material: poly copper galv. Rating 1-5 [ ]

Notes _____

Valve Size: 2" 4" 6" 8" 10" 12" Rating 1-5 [ ]

Notes _____

Fire Hydrant Make & Size: _____ Rating 1-5 [ ]

Main Line Size: 2" 4" 6" 8" 10" 12" Piping Material: PVC CI DI

Rating 1-5 [ ]

Water Loss from Leaks

Rating	Pipe Leak Size	Gallons Lost/Day	Gallons Lost/Month	Gallons Lost/Month x 5 Leaks
1	•	360	11,160	55,800
2	●	3,096	95,976	479,880
3	●	8,424	261,144	1,305,720
4	●	14,952	463,512	2,317,560
5	Severe Leak – Repair as soon as possible (20,000+ per day)			

RYE ENGINEERING PLC

Leak Detection Survey

Date: 7/23/14

Street Address 9214 Medical Dr. Leak # 6

Customer Using Water - Recheck ☐

Rechecked ☐ Date rechecked: _____

Leak Survey

Meter Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 ☐

Notes _____

Meter Yoke Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 ☐

Notes _____

Service Size: 3/4" 1" 2" 3" 4" Material: poly copper galv. Rating 1-5 2

Notes Suspect Multiple Leaks; Pull new service

Valve Size: 2" 4" 6" 8" 10" 12" Rating 1-5 ☐

Notes _____

Fire Hydrant Make & Size: _____ Rating 1-5 ☐

Main Line Size: 2" 4" 6" 8" 10" 12" Piping Material: PVC CI DI

Rating 1-5 ☐

Water Loss from Leaks

Rating	Pipe Leak Size	Gallons Lost/Day	Gallons Lost/Month	Gallons Lost/Month x 5 Leaks
1	•	360	11,160	55,800
2	●	3,096	95,976	479,880
3	●	8,424	261,144	1,305,720
4	●	14,952	463,512	2,317,560
5	Severe Leak – Repair as soon as possible (20,000+ per day)			

1ST house on left across R.R.

RYE ENGINEERING PLC

Leak Detection Survey

Date: 7-23-2014

Street Address Hwy 100 Leak # 7

Customer Using Water - Recheck ☐

Rechecked ☐ Date rechecked: _____

Leak Survey

Meter Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 ☐

Notes _____

Meter Yoke Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 ☐

Notes _____

Service Size: (3/4") 1" 2" 3" 4" Material: (poly) copper galv. Rating 1-5 [2]

Notes Loud Deep Sound

Valve Size: 2" 4" 6" 8" 10" 12" Rating 1-5 ☐

Notes _____

Fire Hydrant Make & Size: _____ Rating 1-5 ☐

Main Line Size: 2" 4" 6" 8" 10" 12" Piping Material: PVC CI DI

Rating 1-5 ☐

Water Loss from Leaks

Rating	Pipe Leak Size	Gallons Lost/Day	Gallons Lost/Month	Gallons Lost/Month x 5 Leaks
1	•	360	11,160	55,800
2	●	3,096	95,976	479,880
3	●	8,424	261,144	1,305,720
4	●	14,952	463,512	2,317,560
5	Severe Leak – Repair as soon as possible (20,000+ per day)			

2nd house on right across River House for Sale

RYE ENGINEERING PLC

Leak Detection Survey

Date: 7-23-2014

Street Address Hwy 100 Leak # 8

Customer Using Water - Recheck ☐

Rechecked ☐ Date rechecked: _____

Leak Survey

Meter Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 ☐

Notes _____

Meter Yoke Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 ☐

Notes _____

Service Size: (3/4") 1" 2" 3" 4" Material: (poly) copper galv. Rating 1-5 [2]

Notes Higher Pitch Sound

Valve Size: 2" 4" 6" 8" 10" 12" Rating 1-5 ☐

Notes _____

Fire Hydrant Make & Size: _____ Rating 1-5 ☐

Main Line Size: 2" 4" 6" 8" 10" 12" Piping Material: PVC CI DI

Rating 1-5 ☐

Water Loss from Leaks

Rating	Pipe Leak Size	Gallons Lost/Day	Gallons Lost/Month	Gallons Lost/Month x 5 Leaks
1	•	360	11,160	55,800
2	●	3,096	95,976	479,880
3	●	8,424	261,144	1,305,720
4	●	14,952	463,512	2,317,560
5	Severe Leak – Repair as soon as possible (20,000+ per day)			

RYE ENGINEERING PLC

Leak Detection Survey

Date: 7-25-2014

Street Address 564 Horseshoe Bend Rd Leak # 9

Customer Using Water - Recheck ☐

Rechecked ☐ Date rechecked: _____

Leak Survey

Meter Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 ☐

Notes _____

Meter Yoke Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 ☐

Notes _____

Service Size: (3/4") 1" 2" 3" 4" Material: poly copper galv. Rating 1-5 [1]

Notes Small leak, water in Box

Valve Size: 2" 4" 6" 8" 10" 12" Rating 1-5 ☐

Notes _____

Fire Hydrant Make & Size: _____ Rating 1-5 ☐

Main Line Size: 2" 4" 6" 8" 10" 12" Piping Material: PVC CI DI

Rating 1-5 ☐

Water Loss from Leaks

Rating	Pipe Leak Size	Gallons Lost/Day	Gallons Lost/Month	Gallons Lost/Month x 5 Leaks
1	•	360	11,160	55,800
2	●	3,096	95,976	479,880
3	●	8,424	261,144	1,305,720
4	●	14,952	463,512	2,317,560
5	Severe Leak – Repair as soon as possible (20,000+ per day)			

RYE ENGINEERING PLC

Leak Detection Survey

Date: 7-25-2014

Street Address 2791 Woods Prong Rd Leak # 10

Customer Using Water - Recheck ☐

Rechecked ☐ Date rechecked: _____

Leak Survey

Meter Size: (5/8") 1" 2" 3" 4" 6" Rating 1-5 [1]

Notes Meter Not Picking up low flow

Meter Yoke Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 [ ]

Notes _____

Service Size: ¾" 1" 2" 3" 4" Material: poly copper galv. Rating 1-5 [ ]

Notes _____

Valve Size: 2" 4" 6" 8" 10" 12" Rating 1-5 [ ]

Notes _____

Fire Hydrant Make & Size: _____ Rating 1-5 [ ]

Main Line Size: 2" 4" 6" 8" 10" 12" Piping Material: PVC CI DI

Rating 1-5 [ ]

Water Loss from Leaks

Rating	Pipe Leak Size	Gallons Lost/Day	Gallons Lost/Month	Gallons Lost/Month x 5 Leaks
1	•	360	11,160	55,800
2	●	3,096	95,976	479,880
3	●	8,424	261,144	1,305,720
4	●	14,952	463,512	2,317,560
5	Severe Leak – Repair as soon as possible (20,000+ per day)			

RYE ENGINEERING PLC

Leak Detection Survey

Date: 7-25-2014

Street Address On Woods Ferry Rd, Brick house below Treadwell Cemetary Leak # 11

Customer Using Water - Recheck ☐

Rechecked ☐ Date rechecked: _____

Leak Survey

Meter Size: (5/8") 1" 2" 3" 4" 6" Rating 1-5 [1]

Notes Meter Not Picking up low flow

Meter Yoke Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 [ ]

Notes _____

Service Size: ¾" 1" 2" 3" 4" Material: poly copper galv. Rating 1-5 [ ]

Notes _____

Valve Size: 2" 4" 6" 8" 10" 12" Rating 1-5 [ ]

Notes _____

Fire Hydrant Make & Size: _____ Rating 1-5 [ ]

Main Line Size: 2" 4" 6" 8" 10" 12" Piping Material: PVC CI DI

Rating 1-5 [ ]

Water Loss from Leaks

Rating	Pipe Leak Size	Gallons Lost/Day	Gallons Lost/Month	Gallons Lost/Month x 5 Leaks
1	•	360	11,160	55,800
2	●	3,096	95,976	479,880
3	●	8,424	261,144	1,305,720
4	●	14,952	463,512	2,317,560
5	Severe Leak – Repair as soon as possible (20,000+ per day)			

RYE ENGINEERING PLC

Leak Detection Survey

Date: 8-18-2014

Street Address 3283 Hwy 128 Leak # 12

Customer Using Water - Recheck ☐

Rechecked ☐ Date rechecked: _____

Leak Survey

Meter Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 ☐

Notes _____

Meter Yoke Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 ☐

Notes _____

Service Size: (3/4") 1" 2" 3" 4" Material: poly copper galv. Rating 1-5 [2]

Notes Replace Service

Valve Size: 2" 4" 6" 8" 10" 12" Rating 1-5 ☐

Notes _____

Fire Hydrant Make & Size: _____ Rating 1-5 ☐

Main Line Size: 2" 4" 6" 8" 10" 12" Piping Material: PVC CI DI

Rating 1-5 ☐

Water Loss from Leaks

Rating	Pipe Leak Size	Gallons Lost/Day	Gallons Lost/Month	Gallons Lost/Month x 5 Leaks
1	•	360	11,160	55,800
2	●	3,096	95,976	479,880
3	●	8,424	261,144	1,305,720
4	●	14,952	463,512	2,317,560
5	Severe Leak – Repair as soon as possible (20,000+ per day)			

RYE ENGINEERING PLC

Leak Detection Survey

Date: 8-19-2014

Street Address 3000 Hy 128 Leak # 13

Customer Using Water - Recheck ☐

Rechecked ☐ Date rechecked: _____

Leak Survey

Meter Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 ☐

Notes _____

Meter Yoke Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 ☐

Notes _____

Service Size: (3/4") 1" 2" 3" 4" Material: poly copper galv. Rating 1-5 [2]

Notes leaking @ main, see red paint

Valve Size: 2" 4" 6" 8" 10" 12" Rating 1-5 ☐

Notes _____

Fire Hydrant Make & Size: _____ Rating 1-5 ☐

Main Line Size: 2" 4" 6" 8" 10" 12" Piping Material: PVC CI DI

Rating 1-5 ☐

Water Loss from Leaks

Rating	Pipe Leak Size	Gallons Lost/Day	Gallons Lost/Month	Gallons Lost/Month x 5 Leaks
1	•	360	11,160	55,800
2	●	3,096	95,976	479,880
3	●	8,424	261,144	1,305,720
4	●	14,952	463,512	2,317,560
5	Severe Leak – Repair as soon as possible (20,000+ per day)			

RYE ENGINEERING PLC

Leak Detection Survey

Date: 8-28-2014

Street Address 616 Cedar Creek Landing Rd Leak # 14

Customer Using Water - Recheck ☐

Rechecked ☐ Date rechecked: _____

Leak Survey

Meter Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 ☐

Notes _____

Meter Yoke Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 1

Notes Leaking in Box

Service Size: ¾" 1" 2" 3" 4" Material: poly copper galv. Rating 1-5 ☐

Notes _____

Valve Size: 2" 4" 6" 8" 10" 12" Rating 1-5 ☐

Notes _____

Fire Hydrant Make & Size: _____ Rating 1-5 ☐

Main Line Size: 2" 4" 6" 8" 10" 12" Piping Material: PVC CI DI

Rating 1-5 ☐

Water Loss from Leaks

Rating	Pipe Leak Size	Gallons Lost/Day	Gallons Lost/Month	Gallons Lost/Month x 5 Leaks
1	•	360	11,160	55,800
2	●	3,096	95,976	479,880
3	●	8,424	261,144	1,305,720
4	●	14,952	463,512	2,317,560
5	Severe Leak – Repair as soon as possible (20,000+ per day)			

Right of 1085 next to 1085

RYE ENGINEERING PLC

Leak Detection Survey

Date: 8-20-14

Landing

Street Address Paradise View Sub. Division Leak # 15

Customer Using Water - Recheck ☐

Rechecked ☐ Date rechecked: _____

Leak Survey

Meter Size: (5/8") 1" 2" 3" 4" 6" Rating 1-5 [1]

Notes Leaking in pan -

Meter Yoke Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 ☐

Notes _____

Service Size: ¾" 1" 2" 3" 4" Material: poly copper galv. Rating 1-5 ☐

Notes _____

Valve Size: 2" 4" 6" 8" 10" 12" Rating 1-5 ☐

Notes _____

Fire Hydrant Make & Size: _____ Rating 1-5 ☐

Main Line Size: 2" 4" 6" 8" 10" 12" Piping Material: PVC CI DI

Rating 1-5 ☐

Water Loss from Leaks

Rating	Pipe Leak Size	Gallons Lost/Day	Gallons Lost/Month	Gallons Lost/Month x 5 Leaks
1	•	360	11,160	55,800
2	●	3,096	95,976	479,880
3	●	8,424	261,144	1,305,720
4	●	14,952	463,512	2,317,560
5	Severe Leak – Repair as soon as possible (20,000+ per day)			

Customer is the leak!

RYE ENGINEERING PLC

Leak Detection Survey

Date: 8-20-14

Street Address 293 Beech Cr. Loop Leak # 16

Customer Using Water - Recheck ☐

Rechecked ☐ Date rechecked: _____

Leak Survey

Meter Size: (5/8") 1" 2" 3" 4" 6" Rating 1-5 ☐

Notes meter is picking up leak

Meter Yoke Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 ☐

Notes _____

Service Size: ¾" 1" 2" 3" 4" Material: poly copper galv. Rating 1-5 ☐

Notes _____

Valve Size: 2" 4" 6" 8" 10" 12" Rating 1-5 ☐

Notes _____

Fire Hydrant Make & Size: _____ Rating 1-5 ☐

Main Line Size: 2" 4" 6" 8" 10" 12" Piping Material: PVC CI DI

Rating 1-5 ☐

Water Loss from Leaks

Rating	Pipe Leak Size	Gallons Lost/Day	Gallons Lost/Month	Gallons Lost/Month x 5 Leaks
1	•	360	11,160	55,800
2	●	3,096	95,976	479,880
3	●	8,424	261,144	1,305,720
4	●	14,952	463,512	2,317,560
5	Severe Leak – Repair as soon as possible (20,000+ per day)			

Leak in the blow off!
@ the end of the Rd.

RYE ENGINEERING PLC

Leak Detection Survey

Date: 8-22-14

Street Address Field Drive - End of Rd Leak # 17

Customer Using Water - Recheck ☐

Rechecked ☐ Date rechecked: _____

Leak Survey

Meter Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 ☐

Notes _____

Meter Yoke Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 ☐

Notes _____

Service Size: ¾" 1" 2" 3" 4" Material: poly copper galv. Rating 1-5 ☐

Notes _____

Valve Size: 2" 4" 6" 8" 10" 12" Rating 1-5 ☐

Notes _____

Fire Hydrant Make & Size: _____ Rating 1-5 ☐

Main Line Size: 2" 4" 6" 8" 10" 12" Piping Material: PVC CI DI

Rating 1-5 ☐

Water Loss from Leaks

Rating	Pipe Leak Size	Gallons Lost/Day	Gallons Lost/Month	Gallons Lost/Month x 5 Leaks
1	•	360	11,160	55,800
2	●	3,096	95,976	479,880
3	●	8,424	261,144	1,305,720
4	●	14,952	463,512	2,317,560
5	Severe Leak – Repair as soon as possible (20,000+ per day)			

RYE ENGINEERING PLC

Leak Detection Survey

Date: 8-22-14

Street Address 2491 Maybrry Road Leak # 18

Customer Using Water - Recheck ☐

Rechecked ☐ Date rechecked: _____

Leak Survey

Meter Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 [1]

Notes Meter not picking up low flow

Meter Yoke Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 [ ]

Notes _____

Service Size: ¾" 1" 2" 3" 4" Material: poly copper galv. Rating 1-5 [ ]

Notes _____

Valve Size: 2" 4" 6" 8" 10" 12" Rating 1-5 [ ]

Notes _____

Fire Hydrant Make & Size: _____ Rating 1-5 [ ]

Main Line Size: 2" 4" 6" 8" 10" 12" Piping Material: PVC CI DI

Rating 1-5 [ ]

Water Loss from Leaks

Rating	Pipe Leak Size	Gallons Lost/Day	Gallons Lost/Month	Gallons Lost/Month x 5 Leaks
1	•	360	11,160	55,800
2	●	3,096	95,976	479,880
3	●	8,424	261,144	1,305,720
4	●	14,952	463,512	2,317,560
5	Severe Leak – Repair as soon as possible (20,000+ per day)			

RYE ENGINEERING PLC

Leak Detection Survey

Date: 9-2-2014

Street Address 1 LNYX Factory 2nd hydrant Leak # 19

Customer Using Water - Recheck ☐

Rechecked ☐ Date rechecked: _____

Leak Survey

Meter Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 ☐

Notes _____

Meter Yoke Size: 5/8" 1" 2" 3" 4" 6" Rating 1-5 ☐

Notes _____

Service Size: ¾" 1" 2" 3" 4" Material: poly copper galv. Rating 1-5 ☐

Notes _____

Valve Size: 2" 4" 6" 8" 10" 12" Rating 1-5 ☐

Notes _____

Fire Hydrant Make & Size: Kennedy Rating 1-5 2 Dripping out of Barrell with caps on. Loud noise.

Main Line Size: 2" 4" 6" 8" 10" 12" Piping Material: PVC CI DI

Rating 1-5 ☐

Water Loss from Leaks

Rating	Pipe Leak Size	Gallons Lost/Day	Gallons Lost/Month	Gallons Lost/Month x 5 Leaks
1	•	360	11,160	55,800
2	●	3,096	95,976	479,880
3	●	8,424	261,144	1,305,720
4	●	14,952	463,512	2,317,560
5	Severe Leak – Repair as soon as possible (20,000+ per day)			

APPENDIX B: METER TEST REPORTS

Office Copy

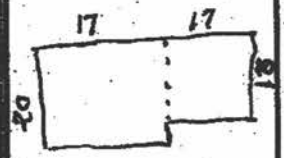
[redacted]

WATER METER TESTING REPORT

GENERAL INFORMATION		SUBJECT METER		TEST INFORMATION	
Date:	8/22/14	Meter Name:	Linden WTP Finished Water	Type of Test:	Clearwell Drawdown
Start Time:	0	Make:	Invensys Foxboro	Quality Control Test:	Comparison
Stop Time:	31:40	Size:	6"	Quality Control Meter:	G.E. Sensing Ultra Sonic Meter
Personnel:	Rudolph/Spears	Type:	Magnetic 9100 A Series		
Location:	Linden TN WTP	Model No.	9106A-51CA BHJ-GN		

CLEARWELL INFORMATION

RECTANGULAR	FT	[redacted]	DECIMAL FT
Clearwell [redacted]	20x17		
Clearwell [redacted]:	18x17		
Total Baffle Wall Length:			
Baffle Wall Thickness:			
Support Column Width:			
Support Column Length:			
Number of Columns:			
CIRCULAR	FT	IN	DECIMAL FT
Diameter			
Volume per Depth (GAL/IN):		401.06 gals/inch of clearwell	



TEST DATA & CALCULATIONS

	BEFORE (GAL)	AFTER (GAL)	VOLUME (GAL)		
SUBJECT	504609000	504632000		SUBJECT METER ACCURACY	
QUALITY CONTROL	0	21800			QC CHECK
	BEFORE (IN)	AFTER (IN)	VOLUME (GAL)		
*CW DRAWDOWN	20.5	81.5			

NOTES: Meter records in 1000's

COMPLETED BY: W. Rudolph

Office Copy

RYE ENGINEERING PLC

METER TEST AND REPAIR REPORT

Technician: W. Rudolph Date: 8/22/14

Location: Linden TN Water Plant

Type of Test: Field Comparison Test
Test Meter: G.E. Ultrasonic

Subject Meter

Size			Make	Type	Number
6"	WTP Raw Water Meter		Sensus	Turbo	W-2000

AWWA Standards for this meter:

Meter Readings

Before Test	After Test
Hi	Hi
Lo	Lo

Reason for Test or Repairs

Stopped	Frozen	Leaking	Turn-Off	Complaint	Yearly Test
					✓

Bypass Yes ☐ No ☑

Results

Test	~~Flow GPM~~	Meter Reading	Test Meter Reading	Tested%
High	Start	15581210	Start 0	
	Stop	15615210	Stop 33684	
Med				
		34,000	33,684	100.93%
Low				

$\frac{34000}{33684} = 100.93$

Notes:

12:23 pm 8/22/14 W. Rudolph
Time/Date Completed By

APPENDIX B

AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0
American Water Works Association

? Click to access definition
+ Click to add a comment

Water Audit Report for: Town of Linden (TN0000404)
Reporting Year: 2013-2014 | 7/2013 - 6/2014

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

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

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

Master Meter and Supply Error Adjustments

WATER SUPPLIED

		Grading	Volume		Pcnt:	Value:	
Volume from own sources:	+ ?	8	207.900	MG/Yr	-6.00%		MG/Yr
Water imported:	+ ?	n/a		MG/Yr			MG/Yr
Water exported:	+ ?	n/a		MG/Yr			MG/Yr
WATER SUPPLIED:			**221.170**	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

		Grading	Volume		Pcnt:	Value:	
Billed metered:	+ ?	8	118.200	MG/Yr			
Billed unmetered:	+ ?	n/a		MG/Yr			
Unbilled metered:	+ ?	n/a		MG/Yr			
Unbilled unmetered:	+ ?	8	0.800	MG/Yr		0.800	MG/Yr
AUTHORIZED CONSUMPTION:	?		**119.000**	MG/Yr			

Use buttons to select percentage of water supplied OR value

WATER LOSSES (Water Supplied - Authorized Consumption)

102.170 MG/Yr

Apparent Losses

		Grading	Volume		Pcnt:	Value:	
Unauthorized consumption:	+ ?		0.553	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	3.656	MG/Yr	3.00%		MG/Yr
Systematic data handling errors:	+ ?	6	2.300	MG/Yr		2.300	MG/Yr
Apparent Losses:	?		**6.509**	MG/Yr			

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses:	?		**95.662**	MG/Yr
WATER LOSSES:			**102.170**	MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER:	?		**102.970**	MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

		Grading	Volume	
Length of mains:	+ ?	5	337.0	miles
Number of active AND inactive service connections:	+ ?	9	2,687	
Service connection density:	?		8	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:	+ ?	5	100.0	psi

COST DATA

Total annual cost of operating water system:	+ ?	9	$646,435	$/Year
Customer retail unit cost (applied to Apparent Losses):	+ ?	3	$10.30	$/1000 gallons (US)
Variable production cost (applied to Real Losses):	+ ?	7	$662.89	$/Million gallons

☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 71 out of 100 ***

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

PRIORITY AREAS FOR ATTENTION:

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

1: Volume from own sources
2: Customer retail unit cost (applied to Apparent Losses)
3: Unauthorized consumption

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

WAS v5.0
American Water Works Association.

Water Audit Report for: Town of Linden (TN0000404)
Reporting Year: 2013-2014 | 7/2013 - 6/2014

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 71 out of 100 ***

System Attributes:

	Apparent Losses:	6.509	MG/Yr
+	Real Losses:	95.662	MG/Yr
=	**Water Losses:**	**102.170**	MG/Yr
?	Unavoidable Annual Real Losses (UARL):	81.26	MG/Yr
	Annual cost of Apparent Losses:	$67,039	
	Annual cost of Real Losses:	$63,413	Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumption

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	46.6%	
	Non-revenue water as percent by cost of operating system:	20.3%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	6.64	gallons/connection/day
	Real Losses per service connection per day:	N/A	gallons/connection/day
	Real Losses per length of main per day*:	777.71	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):	95.66	million gallons/year
?	Infrastructure Leakage Index (ILI) [CARL/UARL]:	1.18	

* 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

WAS v5.0
American Water Works Association
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? Click to access definition
+ Click to add a comment

Water Audit Report for: Town of Oakland (0000521)
Reporting Year: 2014 | 7/2013 - 6/2014

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:	5	360.492	MG/Yr	7	-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: 364.133 MG/Yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

				Pcnt:		Value:
Billed metered:	7	282.829	MG/Yr			
Billed unmetered:	n/a	0.000	MG/Yr			
Unbilled metered:	n/a	0.000	MG/Yr			
Unbilled unmetered:		4.552	MG/Yr	1.25%		MG/Yr

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

AUTHORIZED CONSUMPTION: 287.381 MG/Yr

Use buttons to select percentage of water supplied OR value

WATER LOSSES (Water Supplied - Authorized Consumption)

76.753 MG/Yr

Apparent Losses

				Pcnt:		Value:
Unauthorized consumption:		0.910	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	8.747	MG/Yr	3.00%		MG/Yr
Systematic data handling errors:		0.707	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: 10.365 MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 66.388 MG/Yr

WATER LOSSES: 76.753 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 81.304 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	9	90.0	miles
Number of active AND inactive service connections:	7	4,105	
Service connection density:		46	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	70.0	psi

COST DATA

Total annual cost of operating water system:	9	$1,608,414	$/Year
Customer retail unit cost (applied to Apparent Losses):	8	$5.62	$/1000 gallons (US)
Variable production cost (applied to Real Losses):	9	$332.06	$/Million gallons

☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 66 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: Billed metered
3: Unauthorized consumption

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

WAS v5.0

American Water Works Association.
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Water Audit Report for: Town of Oakland (0000521)
Reporting Year: 2014 | 7/2013 - 6/2014

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 66 out of 100 ***

System Attributes:

	Apparent Losses:	10.365	MG/Yr
+	Real Losses:	66.388	MG/Yr
=	**Water Losses:**	**76.753**	MG/Yr
?	Unavoidable Annual Real Losses (UARL):	28.17	MG/Yr
	Annual cost of Apparent Losses:	$58,250	
	Annual cost of Real Losses:	$22,045	Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumption

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	22.3%	
	Non-revenue water as percent by cost of operating system:	5.1%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	6.92	gallons/connection/day
	Real Losses per service connection per day:	44.31	gallons/connection/day
	Real Losses per length of main per day*:	N/A	
	Real Losses per service connection per day per psi pressure:	0.63	gallons/connection/day/psi
	From Above, Real Losses = Current Annual Real Losses (CARL):	66.39	million gallons/year
?	Infrastructure Leakage Index (ILI) [CARL/UARL]:	2.36	

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

Joyce Welborn

From: tlhightower@oaklandtennessee.org
Sent: Saturday, January 17, 2015 12:49 PM
To: Joyce Welborn
Subject: RE: Town of Oakland
Attachments: CurrentWaterCodeTitle18.pdf; CurrentPolicyBeingRevised.pdf; CurrentRates.pdf; tapfees.pdf; OrdinanceCurrentlyUnderBoardConsideration.pdf

Mrs. Welborn,

Attached are the current adopted policies that the Town of Oakland has in place for the Water Department. Ordinance 15-1 is currently before the Board to begin a review and update of current code and policies. I have been here for a little over a year, and numerous policies need written or rewritten, including an adjustment policy. These are in discussion and process with the Board of Mayor and Aldermen.

We are wrapping up our 2013-2014 fiscal year audit. The AWWA report was compiled and provided to our financial auditor last week. The validity score is 66, so the water department has much work to do with nonrevenue water @ 81 million gallons out of 364 million in water supplied. From what I see, the water department will be submitted to the utility board again once the audit is submitted to the Comptroller's office in the next few weeks. I am uncertain as to where the exact problem lies, but I would like to perform a complete comparison of the billed meters to the actual meters that have been installed by the department. The only issue is that they do not have a master listing of installed meters w/location for me to perform that comparison to the billing records. There has never been a reconciliation of the billed accounts to the actual installed meters to my knowledge. The problem may not rest here at all, but it was something I thought needed to be completed just in case.

The Town's intentions were to have an MTAS rate study performed after the Town became current on all missing financial audits, as they were not performed prior to my hire for multiple years (I have been working on completion of missing audits since June of 2014). I believe the nonrevenue water issue needs to be addressed before that rate study is performed, but your thoughts on that would be appreciated.

If you have some recommendations for the Town, they would be welcomed. I will do everything I can to assist the water department in improving their current score.

Tammie Hightower
Town of Oakland
Recorder/Chief Financial Officer
901-465-8523

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-------- Original Message --------
Subject: RE: Town of Oakland
From: Joyce Welborn <Joyce.Welborn@cot.tn.gov>
Date: Tue, January 06, 2015 7:19 am
To: "tlhightower@oaklandtennessee.org"
<tlhightower@oaklandtennessee.org>

That's fine. All you have to do is send me a list of them. I don't need the actual policies for my files.

From: tlhightower@oaklandtennessee.org [mailto:tlhightower@oaklandtennessee.org]
Sent: Monday, January 05, 2015 4:52 PM
To: Joyce Welborn
Cc: Chris Goodman
Subject: Town of Oakland

Ms. Welborn,
Please accept my apologies for not having the written policies for our utilities to you today as requested. If you would allow me till Friday, I will have them all pulled and emailed to you. Please let me know if this is acceptable. Again, I apologize for letting this wait till the last minute.

Tammie Hightower
Town of Oakland
Recorder/Chief Financial Officer
901-465-8523

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This message may contain confidential information and/or privileged information. If you are not the intended recipient, you must not use, copy, disclose or take any action based on this message or any information herein. If you have received this message in error, please advise the sender immediately by reply E-mail and delete this message. Thank you for your cooperation.

TITLE 18

WATER AND SEWERS[1]

CHAPTER
1. WATER AND SEWERS.
2. SEWER USE ORDINANCE.
3. SEWAGE AND HUMAN EXCRETA DISPOSAL.
4. CROSS CONNECTIONS, AUXILIARY INTAKES, ETC.

CHAPTER 1

WATER AND SEWERS

SECTION
18-101. Application and scope.
18-102. Definitions.
18-103. Obtaining service.
18-104. Application and contract for service.
18-105. Service charges for temporary service.
18-106. Connection charges.
18-107. Water and sewer main extensions.
18-108. Variances from and effect of preceding section as to extensions.
18-109. Meters.
18-110. Meter tests.
18-111. Schedule of rates.
18-112. Multiple services through a single meter.
18-113. Billing.
18-114. Discontinuance or refusal of service.
18-115. Re-connection charge.
18-116. Termination of service by customer.
18-117. Access to customers' premises.
18-118. Inspections.
18-119. Customer's responsibility for system's property.
18-120. Customer's responsibility for violations.
18-121. Supply and resale of water.
18-122. Unauthorized use of or interference with water supply.
18-123. Limited use of unmetered private fire line.
18-124. Damages to property due to water pressure.

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[1]Municipal code references
Building, utility and housing codes: title 12.
Refuse disposal: title 17.

18-125. Liability for cutoff failures.
18-126. Restricted use of water.
18-127. Interruption of service.

18-101. Application and scope. The provisions of this chapter are a part of all contracts for receiving water and/or sewer service from the municipality and shall apply whether the service is based upon contract, agreement, signed application, or otherwise.

18-102. Definitions. (1) "Customer" means any person, firm, or corporation who receives water and/or sewer service from the municipality under either an express or implied contract.

(2) "Household" means any two (2) or more persons living together as a family group.

(3) "Service line" shall consist of the pipe line extending from any water or sewer main of the municipality to private property. Where a meter and meter box are located on private property, the service line shall be construed to include the pipe line extending from the municipality's water main to and including the meter and meter box.

(4) "Discount date" shall mean the date ten (10) days after the date of a bill, except when some other date is provided by contract. The discount date is the last date upon which water and/or sewer bills can be paid at net rates.

(5) "Dwelling" means any single structure, with auxiliary buildings, occupied by one or more persons or households for residential purposes.

(6) "Premise" means any structure or group of structures operated as a single business or enterprise, provided, however, the term "premise" shall not include more than one (1) dwelling.

18-103. Obtaining service. A formal application for either original or additional service must be made and be approved by the municipality before connection or meter installation orders will be issued and work performed.

18-104. Application and contract for service. Each prospective customer desiring water and/or sewer service will be required to sign a standard form of contract before service is supplied. If, for any reason, a customer, after signing a contract for service, does not take such service by reason of not occupying the premises or otherwise, he shall reimburse the municipality for the expense incurred by reason of its endeavor to furnish said service.

The receipt of a prospective customer's application for service, regardless of whether or not accompanied by a deposit, shall not obligate the municipality to render the service applied for. If the service applied for cannot be supplied in accordance with the provisions of this chapter and general practice, the liability of the municipality to the applicant shall be limited to the return of any deposit made by such applicant.

18-105. Service charges for temporary service. Customers requiring temporary service shall pay all costs for connection and disconnection incidental to the supplying and removing of service in addition to the regular charge for water and/or sewer service.

18-106. Connection charges. Service lines will be laid by the municipality from its mains to the property line at the expense of the applicant for service. The location of such lines will be determined by the municipality.

Before a new water or sewer service line will be laid by the municipality, the applicant shall make a deposit equal to the estimated cost of the installation.

This deposit shall be used to pay the cost of laying such new service line and appurtenant equipment. If such cost exceeds the amount of the deposit, the applicant shall pay to the municipality the amount of such excess cost when billed therefore. If such cost is less than the amount of the deposit, the amount by which the deposit exceeds such cost shall be refunded to the applicant.

When a service line is completed, the municipality shall be responsible for the maintenance and upkeep of such service line from the main to and including the meter and meter box, and such portion of the service line shall belong to the municipality. The remaining portion of the service line beyond the meter box (or property line, in the case of sewers) shall belong to and be the responsibility of the customer.

18-107. Water and sewer main extensions. Persons desiring water and/or sewer main extensions must pay all of the cost of making such extensions.

For water main extensions cement-lined cast iron pipe, class 150 American Water Works Association Standard (or other construction approved by the governing body), not less than six (6) inches in diameter shall be used to the dead end of any line and to form loops or continuous lines, so that fire hydrants may be placed on such lines at locations no farther than 1,000 feet from the most distant part of any dwelling structure and no farther than 600 feet from the most distant part of any commercial, industrial, or public building, such measurements to be based on road or street distances. Cement-lined cast iron pipe (or other construction approved by the governing body) two (2) inches in diameter, to supply dwellings only, may be used to supplement such lines. For sewer main extensions eight-inch pipe of vitrified clay or other construction approved by the governing body shall be used.

All such extensions shall be installed either by municipal forces or by other forces working directly under the supervision of the municipality in accordance with plans and specifications prepared by an engineer registered with the State of Tennessee.

Upon completion of such extensions and their approval by the municipality, such water and/or sewer mains shall become the property of the

municipality. The persons paying the cost of constructing such mains shall execute any written instruments requested by the municipality to provide evidence of the municipality's title to such mains. In consideration of such mains being transferred to it, the municipality shall incorporate said mains as an integral part of the municipal water and sewer systems and shall furnish water and sewer service therefrom in accordance with these rules and regulations, subject always to such limitations as may exist because of the size and elevation of said mains.

18-108. Variances from and effect of preceding section as to extensions. Whenever the governing body is of the opinion that it is to the best interest of the municipality and its inhabitants to construct a water and/or sewer main extension without requiring strict compliance with the preceding section, such extension may be constructed upon such terms and conditions as shall be approved by the governing body.

The authority to make water and/or sewer main extensions under the preceding section is permissive only and nothing contained therein shall be construed as requiring the municipality to make such extensions or to furnish service to any person or persons.

18-109. Meters. All meters shall be installed, tested, repaired, and removed only by the municipality.

No one shall do anything which will in any way interfere with or prevent the operation of a meter. No one shall tamper with or work on a water meter without the written permission of the municipality. No one shall install any pipe or other device which will cause water to pass through or around a meter without the passage of such water being registered fully by the meter.

18-110. Meter tests. The municipality will, at its own expense, make routine tests of meters when it considers such tests desirable.

In testing meters, the water passing through the meter will be weighed or measured at various rates of discharge and under varying pressures. To be considered accurate, the meter registration shall check with the weighed or measured amounts of water within the percentage shown in the following table:

Meter Size	Percentage
5/8", 3/4", 1", 2"	2%
3"	3%
4"	4%
6"	5%

The municipality will also make tests or inspections of its meters at the request of the customer. However, if a test requested by a customer shows a meter to be accurate within the limits stated above, the customer shall pay a meter testing charge in the amount stated in the following table:

Meter Size	Test Charge
5/8", 3/4", 1"	$12.00
1-1/2", 2"	$15.00
3"	$18.00
4"	$22.00
6" and over	$30.00

If such test shows a meter not to be accurate within such limits, the cost of such meter test shall be borne by the municipality.

18-111. Schedule of rates. All water and sewer service shall be furnished under such rate schedules as the municipality may from time to time adopt by appropriate ordinance or resolution.[1]

18-112. Multiple services through a single meter. No customer shall supply water or sewer service to more than one dwelling or premise from a single service line and meter without first obtaining the written permission of the municipality.

Where the municipality allows more than one dwelling or premise to be served through a single service line and meter, the amount of water used by all the dwellings and premises served through a single service line and meter shall be allocated to each separate dwelling or premise served. The water and/or sewer charges for each such dwelling or premise thus served shall be computed just as if each such dwelling or premise had received through a separately metered service the amount of water so allocated to it, such computation to be made at the municipality's applicable water rates schedule, including the provisions as to minimum bills. The separate charges for each dwelling or premise served through a single service line and meter shall then be added together, and the sum thereof shall be billed to the customer in whose name the service is supplied.

18-113. Billing. Bills for residential water and sewer service will be rendered monthly.

Bills for commercial and industrial service may be rendered weekly, semimonthly, or monthly, at the option of the municipality.

Both charges shall be collected as a unit; no municipal employee shall accept payment of water service charges from any customer without receiving at the same time payment of all sewer service charges owed by such customer. Water service may be discontinued for non-payment of the combined bill.

Water and sewer bills must be paid on or before the discount date shown thereon to obtain the net rate, otherwise the gross rate shall apply. Failure to

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[1]Administrative ordinances and resolutions are of record in the recorder's office.

receive a bill will not release a customer from payment obligation, nor extend the discount date.

In the event a bill is not paid on or before five (5) days after the discount date, a written notice shall be mailed to the customer. The notice shall advise the customer that his service may be discontinued without further notice if the bill is not paid on or before ten (10) days after the discount date. The municipality shall not be liable for any damages resulting from discontinuing service under the provisions of this section, even though payment of the bill is made at a time on the day that service is actually discontinued.

Should the final date of payment of bill at the net rate fall on Sunday or a holiday, the business day next following the final date will be the last day to obtain the net rate. A net remittance received by mail after the time limit for payment at the net rate will be accepted by the municipality if the envelope is date-stamped on or before the final date for payment of the net amount.

If a meter fails to register properly, or if a meter is removed to be tested or repaired, or if water is received other than through a meter, the municipality reserves the right to render an estimated bill based on the best information available.

If a utility bill is paid with a check that has insufficient funds on deposit to redeem the check a service charge of five dollars ($5.00) per check will be added to the utility bill to cover the cost to the city of processing such check.

18-114. Discontinuance or refusal of service. The municipality shall have the right to discontinue water and/or sewer service or to refuse to connect service for a violation of, or a failure to comply with, any of the following:

(1) These rules and regulations.
(2) The customer's application for service.
(3) The customer's contract for service.

Such right to discontinue service shall apply to all service received through a single connection or service, even though more than one (1) customer or tenant is furnished service therefrom, and even though the delinquency or violation is limited to only one such customer or tenant.

Discontinuance of service by the municipality for any cause stated in these rules and regulations shall not release the customer from liability for service already received or from liability for payments that thereafter become due under other provisions of the customer's contract.

No service shall be discontinued unless the customer is given reasonable notice in advance of such impending action and the reason therefore. The customer shall also be notified of his right to a hearing prior to such disconnection if he disputes the reason therefore and requests such hearing by the date specified in the notice. When a hearing is requested, the customer shall have the right to have a representative at such hearing and shall be entitled to testify and to present witnesses on his behalf. Also, when such hearing has been

requested, the customer's service shall not be terminated until a final decision is reached by the hearing officer and the customer is notified of that decision.

18-115. Re-connection charge. Whenever service has been discontinued as provided for above, a re-connection charge shall be collected. The charge shall be an amount as set by the board from time to time by ordinance or resolution.

18-116. Termination of service by customer. Customers who have fulfilled their contract terms and wish to discontinue service must give at least three (3) days written notice to that effect unless the contract specifies otherwise. Notice to discontinue service prior to the expiration of a contract term will not relieve the customer from any minimum or guaranteed payment under such contract or applicable rate schedule.

When service is being furnished to an occupant of premises under a contract not in the occupant's name, the municipality reserves the right to impose the following conditions on the right of the customer to discontinue service under such a contract:

(1) Written notice of the customer's desire for such service to be discontinued may be required; and the municipality shall have the right to continue such service for a period of not to exceed ten (10) days after receipt of such written notice, during which time the customer shall be responsible for all charges for such service. If the municipality should continue service after such ten (10) day period subsequent to the receipt of the customer's written notice to discontinue service, the customer shall not be responsible for charges for any service furnished after the expiration of such ten (10) day period.

(2) During such ten (10) day period, or thereafter, the occupant of premises to which service has been ordered discontinued by a customer other than such occupant, may be allowed by the municipality to enter into a contract for service in the occupant's own name upon the occupant's complying with these rules and regulations with respect to a new application for service.

18-117. Access to customers' premises. The municipality's identified representatives and employees shall be granted access to all customers' premises at all reasonable times for the purpose of reading meters, for testing, inspecting, repairing, removing, and replacing all equipment belonging to the municipality, and for inspecting customers' plumbing and premises generally in order to secure compliance with these rules and regulations.

18-118. Inspections. The municipality shall have the right, but shall not be obligated, to inspect any installation or plumbing system before water and/or sewer service is furnished or at any later time. The municipality reserves the right to refuse service or to discontinue service to any premises not meeting standards fixed by municipal ordinances regulating building and plumbing, or

not in accordance with any special contract, these rules and regulations, or other requirements of the municipality.

Any failure to inspect or reject a customer's installation or plumbing system shall not render the municipality liable or responsible for any loss or damage which might have been avoided had such inspection or rejection been made.

18-119. Customer's responsibility for system's property. Except as herein elsewhere expressly provided, all meters, service connections, and other equipment furnished by or for the municipality shall be and remain the property of the municipality. Each customer shall provide space for and exercise proper care to protect the property of the municipality on his premises. In the event of loss or damage to such property arising from the neglect of a customer to care for it properly, the cost of necessary repairs or replacements shall be paid by the customer.

18-120. Customer's responsibility for violations. Where the municipality furnishes water and/or sewer service to a customer, such customer shall be responsible for all violations of these rules and regulations which occur on the premises so served. Personal participation by the customer in any such violations shall not be necessary to impose such personal responsibility on him.

18-121. Supply and resale of water. All water shall be supplied within the municipality exclusively by the municipality, and no customer shall, directly or indirectly, sell, sublet, assign, or otherwise dispose of the water or any part thereof except with written permission from the municipality.

18-122. Unauthorized use of or interference with water supply. No person shall turn on or turn off any of the municipality's stop cocks, valves, hydrants, spigots, or fire plugs without permission or authority from the municipality.

18-123. Limited use of unmetered private fire line. Where a private fire line is not metered, no water shall be used from such line or from any fire hydrant thereon, except to fight fire or except when being inspected in the presence of an authorized agent of the municipality.

All private fire hydrants shall be sealed by the municipality, and shall be inspected at regular intervals to see that they are in proper condition and that no water is being used therefrom in violation of these rules and regulations. When the seal is broken on account of fire, or for any other reason, the customer taking such service shall immediately give the municipality a written notice of such occurrence.

18-124. Damages to property due to water pressure. The municipality shall not be liable to any customer for damages caused to his plumbing or property by high pressure, low pressure, or fluctuations in pressure in the municipality's water mains.

18-125. Liability for cutoff failure. The municipality's liability shall be limited to the forfeiture of the right to charge a customer for water that is not used but is received from a service line under any of the following circumstances:

(1) After receipt of at least ten (10) days' written notice to cut off a water service, the municipality has failed to cut off such service.

(2) The municipality has attempted to cut off a service but such service has not been completely cut off.

(3) The municipality has completely cut off a service but subsequently the cutoff develops a leak or is turned on again so that water enters the customer's pipes from the municipality's main.

Except to the extent stated above, the municipality shall not be liable for any loss or damage resulting from cutoff failures. If a customer wishes to avoid possible damage for cutoff failures, the customer shall rely exclusively on privately owned cutoffs and not on the municipality's cutoff. Also, the customer (and not the municipality) shall be responsible for seeing that his plumbing is properly drained and is kept properly drained, after his water service has been cut off.

18-126. Restricted use of water. In times of emergencies or in times of water shortage, the municipality reserves the right to restrict the purposes for which water may be used by a customer and the amount of water which a customer may use.

18-127. Interruption of service. The municipality will endeavor to furnish continuous water and sewer service, but does not guarantee to the customer any fixed pressure or continuous service. The municipality shall not be liable for any damages for any interruption of service whatsoever.

In connection with the operation, maintenance, repair, and extension of the municipal water and sewer systems, the water supply may be shut off without notice when necessary or desirable, and each customer must be prepared for such emergencies. The municipality shall not be liable for any damages from such interruption of service or for damages from the resumption of service without notice after any such interruption.

Water and Wastewater Financing Board
Compliance Reports
May 14, 2015

Town of Alexandria	Validity Score 85, Non-Revenue Water 13.2%
	Change in Net Position $ 406,703
City of Bradford	Validity Score 84, Non-Revenue Water 6.1%
	Change in Net Position $ 15,628
Town of Bruceton	Validity Score 80, Non-Revenue Water 8.8%
	Change in Net Position $ 75,276
Town of Decatur	Validity Score 76, Non-Revenue Water 14.9%
	Change in Net Position $ 27,452
Town of Halls	Validity Score 84, Non-Revenue Water 17.7%
	Change in Net Position Water $545,353
	Sewer $307,848
City of Henry	Validity Score 76, Non-Revenue Water 22.8%
	Change in Net Position $ 410,839
Town of Huntland	Validity Score 76. Non-Revenue Water 7%
	Change in Net Position $9,324
Town of Huntsville	Change in Net Position $ 596,536
Lauderdale County Water System	
	Validity Score 67, Non-Revenue Water 8.6%
	Change in Net Position $ 143,397
Town of Monteagle	Validity Score 76, Non-Revenue Water 9.8%
	Change in Net Position $ 104,891
Town of Oneida	Validity Score 77, Non-Revenue Water 13.8%
	Change in Net Position $ 329,468

City of Piperton Validity Score 71, Non-Revenue Water 5.7%

Change in Net Position $ 72,793

City of Red Boiling Springs

Validity Score 83, Non-Revenue Water 4.3 %

Change in Net Position $ 378,639

Scott County Sewer System

Donated all capital assets to Town of Huntsville

Change in Net Position ($2,840.25)

Town of Sharon Validity Score 83, Non-Revenue Water 8.7%

Change in Net Position $470,322

City of Springfield Validity Score 69, Non-Revenue Water 11.8%

Change in Net Position Water $ 1,003,420
Sewer $ 112,030

Town of Tennessee Ridge

Validity Score 74, Non-Revenue Water 3.0%

Change in Net Position $ 476,106

Town of Tellico Plains Validity Score 73, Non-Revenue Water 6%

Change in Net Position ($58,115) 1st year

Town of Woodbury Validity Score 82, Non-Revenue Water 24.5%

Change in Net Position ($119,540) 1st year

WATER AND WASTEWATER FINANCING BOARD Jurisdiction May 2015		
SYSTEM	**COUNTY**	**LAST AUDIT**
City of Bells WL	Crockett	2014
City of Bluff City	Sullivan	2014
Town of Brighton	Tipton	2013
Brownsville Energy Auth WL	Haywood	2014
Town of Byrdstown	Pickett	2014
Town of Chapel Hill	Marshall	2014
Coffee County WTA	Coffee	2014
City of Collinwood WL	Wayne	2013
City of Covington	Tipton	2014
Town of Cumberland Gap	Claiborne	2014
Town of Decaturville WL	Decatur	2014
City of Dunlap WL	Sequatchie	2014
Town of Englewood	McMinn	2014
City of Erin WL	Houston	2014
City of Friendship	Crockett	2014
Town of Gainesboro	Jackson	2014
City of Germantown	Shelby	2014
City of Gleason	Weakley	2014
City of Grand Junction	Fayette	2013
Town of Greenfield	Weakley	2014
Town of Henning	Lauderdale	2013
City of Hohenwald WL	Lewis	2014
Town of Hornsby WL	Hardeman	2014
Humphreys County	Humphreys	2014
City of Jellico WL	Campbell	2014
City of Kenton WL	Gibson/Obion	2013
City of Kingston WL	Roane	2014
Lincoln County BPU WL	Lincoln	2014
Town of Linden WL	Perry	2014
City of Lobelville WL	Perry	2014
City of McMinnville WL	Warren	2014
City of Middleton	Hardeman	2014
City of Millington WL	Shelby	2014
Town of Monterey WL	Putnam	2014
City of Munford	Tipton	2013
Town of Newbern	Dyer	2014
City of Niota	McMinn	2014
Town of Oakland WL	Fayette	2014
Town of Obion	Obion	2013
City of Puryear	Henry	2014
City of Ramer	McNairy	2014
City of Rockwood	Roane County	2014
Town of Rutledge	Grainger	2014
Town of Spring City WL	Rhea	2014
Town of Stanton	Haywood	2014
City of Sunbright	Morgan	2013
Town of Tiptonville WL	Lake	2014
Town of Vonore	Blount/Monroe	2014
City of Westmoreland	Sumner	2014

WATER LOSS STATUS

Utility system	original referral %	original audit referral date	subsequent review %	subsequent review date	subsequent review %	subsequent review date	subsequent review %	subsequent review date	subsequent review %	subsequent review date
Bells	68/17.6%	6/30/2014								
Bolivar	CARS	6/30/2014								
Byrdstown	82/49.2	6/30/2014								
Collinwood	45.96%	6/30/2009	51.30%	6/30/2010	51.30%	6/30/2011	46/5.4%	6/30/2012	46/7.4%	6/30/2013
Decaturville	65/13.7%	6/30/2014								
Dunlap	81/35.1%	6/30/2013	64/0.4%	6/30/2014						
Englewood	82/27.0%	6/30/2014								
Erin	51.00%	6/30/2010	49.76%	6/30/2011	42.54%	6/30/2012	80/32.3%	6/30/2013	81/35.1%	6/30/2014
Frienship	0/43.0%	6/30/2014								
Germantown	80/43.9%	6/30/2014								
Grand Junction	45.55%	6/30/2010	not included	6/30/2011	not included	6/30/2012	not included	6/30/2013		
Greenfield	68/9.6%	6/30/2014								
Halls	35.10%	6/30/2011	36.67%	6/30/2012	60/3.0%	6/30/2013				
Hohenwald	46.00%	6/30/2010	36.00%	6/30/2011	36.00%	6/30/2012	81/48.0%	6/30/2013	81/47.3%	6/30/2014
Jellico	43.76%	6/30/2010	40.25%	6/30/2011	38.96%	6/30/2012	74/32.2%	6/30/2013	74/0.0%	6/30/2014
Kenton	48.80%	6/30/2010	46.40%	6/30/2011	1.37%	6/30/2012	70/22.2%	6/30/2013		
Lincoln County BPU	70/33.3%	6/30/2014								
Linden	65/56.4%	6/30/2014								
Lobelville	85/52%	6/30/2014								
McMinnville	33.98%	6/30/2012	82/36.6%	6/30/2013	91/26790111.	7/6/1905				
Middleton	69/3065.3%	6/30/2014								
Millington	61/2.2%	6/30/2013	65/2.3%	6/30/2014						
Monterey	81/46.2%	6/30/2014								
Murfreesboro	80/33.3%	6/30/2014								
Oakland	62/39.0%	6/30/2013								
Ramer	69/11.80%	6/30/2014								
Tellico Plains	52.88%	6/30/2010	51.24%	6/30/2011	46.33%	6/30/2012	60/8.3%	6/30/2013		
Tiptonville	58/11.9%	6/30/2013	58/8.9%	6/30/2014						