

Debra Ragland

From: Sue McCormick
Sent: Wednesday, February 28, 2018 1:56 PM
To: Debra Ragland
Cc: Revia Bowie
Subject: Fwd: Nonrevenue Water City of Milwaukee
Attachments: AWWA Water Audit Best Practice Flyer.pdf; DearbornLetterDraft_v4_021618 CS_DAS.docx

Copies for board under coomunicatiions

Sent from my Verizon, Samsung Galaxy smartphone

----- Original message -----

From: "Murray, James" <jmurray@ci.dearborn.mi.us>
Date: 2/26/18 8:37 AM (GMT-05:00)
To: Sue McCormick <Sue.McCormick@glwater.org>
Cc: Mayor O'Reilly <joreilly@ci.dearborn.mi.us>, "Walling, Debra A." <dwalling@ci.dearborn.mi.us>, "Guido, Mark" <mguido2@ci.dearborn.mi.us>, Gary Brown <brownGary@detroitmi.gov>, Palencia Mobley <mobleyp@detroitmi.gov>, Samuel Smalley <smalleys@detroitmi.gov>, 'Eric Rothstein' <erothste@grg-ltd.com>, "Witte, Eric" <ewitte@ci.dearborn.mi.us>, "Patel, M" <mpatel@ci.dearborn.mi.us>, "O'Connor, Jim" <joconnor@ci.dearborn.mi.us>
Subject: FW: Nonrevenue Water City of Milwaukee

Good Morning Sue

Thank You for your February 23, 2018 email.

Dearborn continues to support GLWA and B&V to derive the appropriate non-revenue water use by non-master metered customers. Both Dearborn and Detroit participated in meetings and discussions with GLWA and B&V staff regarding the B&V study. As you point out the intent of the study was to use the best available data and science to derive an allocation of non-revenue water for non-master metered customers of GLWA. During those meetings Detroit and Dearborn repeatedly asked for non-revenue water of the GLWA master metered customers as well as meter records and accuracy of GLWA wholesale meters and water plant production meters. This request was an attempt to verify the assumptions and conclusions of the B&V study. Those requests were turned down by GLWA and B&V staff for two stated reasons; 1. There was doubt the data could be retrieved from the GLWA master metered customers, and 2. It was not a part of the study approach as directed by GLWA in the its RFP. Detroit and Dearborn made this request assuming the non-revenue water percentage would closely track all GLWA customers with similar water system infrastructure and would help to verify (or may raise concerns) the GLWA directed B&V study parameters being relied on were justified. GLWA staff directed B&V to proceed without honoring our request and complete its study as assigned.

In light of the above, I began to assemble non-revenue water percentages from GLWA master metered customers simply by requesting it. About a dozen of the GLWA customers responded within a week. Those reported numbers were forwarded to you. The results revealed uniform non-revenue water of master metered GLWA customers to be dramatically below what the B&V study predicts for Dearborn and Detroit. Dearborn believes this raises questions regarding the adequacy of the B&V study and thus Dearborn's and Detroit's request to you to continue working on

reviewing the study approach, assumptions and conclusions prior to proceeding the GLWA Board with any recommendation. The response from you is the B&V study be submitted to the GLWA Board February 28 as is without further review or adjustment. In addition you will recommend the GLWA Board adjust the Dearborn and Detroit non-revenue water allocation consistent with the B&V study over a two year phased approach to mitigate rate volatility. You reiterated the B&V study will continue and if adjustments are necessary they will be dealt with in the future. The magnitude of the dollar impact, both Detroit and Dearborn feel such an approach is premature and inappropriate.

Given the GLWA master metered customer's reported non-revenue water numbers I reached out to Ann Arbor and Lansing as to their experience with non-revenue water loss. Both report percentage numbers consistent with the GLWA master metered customer non-revenue water percentages. These percentages are dramatically inconsistent with the B&V non-revenue water number assumptions assigned to Detroit and Dearborn. Based on this I reached out to Cleveland, Toledo and Milwaukee for their experience with non-revenue water. Toledo and Milwaukee responded (Cleveland is pending). Both show non-revenue water numbers consistent with reported GLWA master metered customers as well as with Ann Arbor and Lansing. Milwaukee relies on the same AWWA Audit Best Practice Flyer you forwarded. Given your intimate knowledge of the Ann Arbor and Lansing systems you can verify their use of the same AWWA approach.

Given the above Dearborn feels there is ample "best available data" that is relevant and should be considered in the B&V study prior to proceeding to allocate any changes to the current non-revenue water calculations for Dearborn and Detroit. Dearborn stands ready to work diligently with GLWA and B&V staff to come to a defensible study and conclusion when all the available relevant data has been collected, analyzed, reviewed and is complete to the extent conclusions can be made that can be assumed to be scientifically sound and defensible. At this stage given the above Dearborn feels it is premature to move forward with reallocation of non-revenue water assignments to Dearborn and Detroit at this time. Dearborn respectfully requests the GLWA Board direct its staff to proceed as requested above by Detroit and Dearborn and continue the study in light of the data collected by Dearborn.

Please provide these comments to the GLWA Board at their February 28, meeting and pass on our thanks to them for this opportunity to comment.

James E. Murray, Director
City of Dearborn DPW
2951 Greenfield Rd.
Dearborn, Mi 48120
313-943-2075

From: Sue McCormick [mailto:Sue.McCormick@glwater.org]
Sent: Friday, February 23, 2018 5:03 PM
To: Murray, James
Cc: Mayor O'Reilly; Walling, Debra A.; Guido, Mark; O'Connor, Jim; Gary Brown; Palencia Mobley; smalleys@detroitmi.gov; 'Eric Rothstein'
Subject: RE: Nonrevenue Water City of Milwaukee

Hi Jim,

My apologies for not getting back with you sooner. This is my first day back since February 14.

While the GLWA Board will hold the public hearing on the proposed budget and charges for FY19 on February 28, no Board action is anticipate on that date. As we move forward, I expect the Board will keep the public hearing open as they deliberate on the budget and charges. At this time, we are moving forward intending to work within the framework of the B & V recommendation and the charge scenarios that were provided to each of our member partners. This of course acknowledges that changes can occur based on a number of issues which would include any changes in B&V's recommendations that may come as a result of new considerations.

Dearborn's water loss is currently calculated using a 15.4% water loss factor applied to all municipal connections, but exclusive of those serving the Ford Motor Company. When expressed in percentage terms, the units of service recommendation raises the water loss value to 17.3%. In addition, the units of service will be used and then adjusted, at the request of the Board and members, to put Dearborn on the same footing as master metered customers for peak hour and max day demands.

The contract between GLWA and City of Detroit for provision of water and wastewater services required GLWA to contract with an independent engineering and financial firm to conduct a *Units of Service Assessment for Non-Master Metered Customers of Great Lakes Water Authority. These customers were Detroit, Dearborn and Highland Park.* In preparing the request for proposal, in collaboration with representatives from Detroit and Dearborn, GLWA requested a units of service assessment based upon the approved American Water Works Association water audit methodology – AWWA M36. The use of the AWWA M36 methodology for determining water losses has been the recommended approach of the American Water Works Association since 2003 when the AWWA adopted improved best practice methods for defining and measuring water loss in water distribution systems. This transition into a new era of effective water management marked a departure from previous terms and practices no longer useful to the industry (see Attachment – AWWA Water Audit Best Practice Flyer).

With customer input into the proposal evaluation, Black and Veatch was selected in January, 2017 to perform the units of service assessment. They issued their recommendation in December 2017 and, as stipulated in the Detroit/GLWA contract, the GLWA customers, including Detroit and Dearborn representatives, agreed that Black and Veatch's recommended units of service should be used in setting FY2019 charges.

In your response to the GLWA recommendation to implement the units of service recommendation, you raise a legitimate point. To paraphrase, "My neighbors have reported that their water losses are lower than the amount that we will be allocated. Since our infrastructure is similar, why should our allocation for water losses be so much higher?"

The calculation performed by the neighboring systems subtracted total volume of water billed from total water received from the treatment source to arrive at a percentage of water loss (unaccounted for water). The AWWA does not recommend using this percentage 'unaccounted-for water' as a metric to determine and evaluate water losses. It was discontinued many years ago, because studies and research determined it was not sufficiently accurate. Using percentage indicators to assess water loss in distribution systems gives a misleading and unreliable measure of utility performance because a percentage indicator:

- is greatly affected by different levels of consumption (such as between individual communities in the GLWA service area)
- is greatly affected by changing levels of customer consumption over time and cannot distinguish among the specific components of non-revenue water occurring in a distribution system. These components are shown in the table below

- reveals nothing about water volumes and associated costs (the two most important factors in assessing water waste within a distribution system)

The M36 methodology that AWWA recommends evaluates up to 20 overarching data components as shown in Table 1 by providing a more comprehensive evaluation of the water system.

Table 1. Components of the AWWA Standard Water Balance

PARAMETER	AWWA STANDARD WATER BALANCE
Volume from Own Sources (VfOS)	n/a
VfOS Water Meter Inaccuracy	n/a
Imported Water	•
Imported Water Meter Inaccuracy	n/a
Exported Water	n/a
Exported Water Meter Inaccuracy	n/a
Billed Metered	•
Billed Unmetered	•
Unbilled Metered	•
Unbilled Unmetered	•
Customer Metering Inaccuracies	•
Unauthorized Consumption	•
Systematic Data Handling Errors	•
Miles of Main	•
Number of active and inactive connections	•
Pressure	•
Length of service line	•
Total Cost of Operating the Water System	•
Retail cost of water	•
Variable Cost of water	•

For reference, the AWWA Water Balance for Dearborn is presented in Figure 1 (all values in MGD).

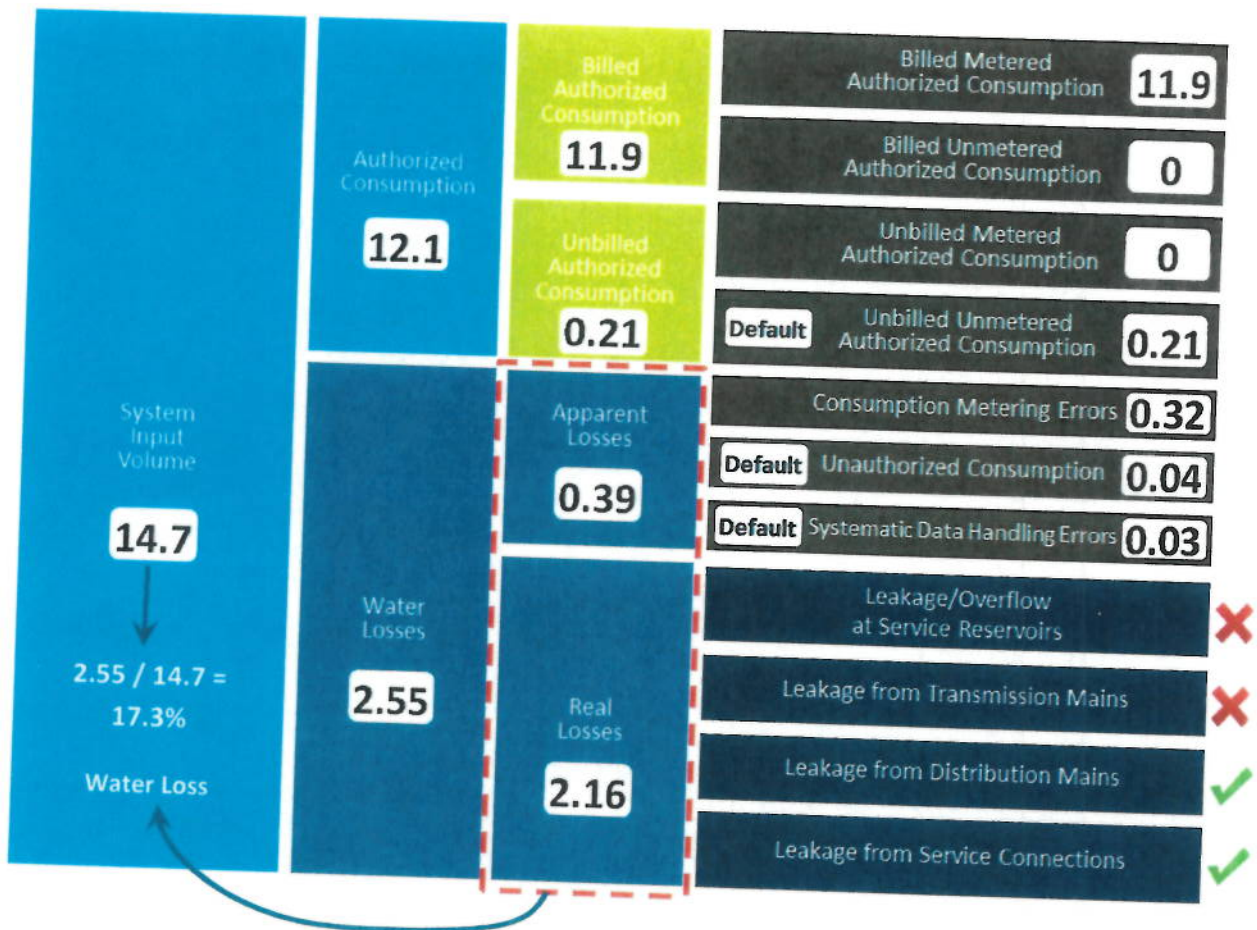


Figure 1. AWWA Water Balance: Dearborn

This water balance table was completed with best available data (as stipulated in the Detroit/GLWA contract). As you can see the Water Losses component is 17.3%, which equals 2.55 MGD water loss divided by 14.7 MGD System Input Volume.

This is currently the best available data. We value your input and look forward to your continued cooperation as we enter Phase 2 of the work and fully expect that this will improve upon the Phase 1 dataset, providing additional and more field-derived information to support the FY 2020 Charges.



Best Practice in Water Loss Control: Improved Concepts for 21st Century Water Management

In 2003 the American Water Works Association (AWWA) adopted improved best practice methods for defining and measuring water loss in water distribution systems. This transition into a new era of effective water management marked a departure from previous terms and practices no longer useful to the industry. The following explains this departure from obsolete practices and articulates key points and best practices in water loss control today.

Improved Terminology: Non-revenue Water

In 2003 AWWA abandoned use of the term “unaccounted-for” water (UFW) because all volumes of water supplied within a distribution system go toward either beneficial consumption or wasteful loss. *All water sent into the distribution system can be accounted for.* Today, the industry term favored by AWWA and its Water Loss Control Committee when quantifying water loss is “non-revenue” water (NRW).

NRW is specifically defined to include the sum of specific types of water loss and any authorized, unbilled consumption that occurs within water distribution systems.

Enhanced Performance Indicators to Measure Progress

Although percentage indicators—typically the ratio of authorized customer consumption to distribution system input—still exist in the industry, AWWA discourages use of percentage indicators, such as the “unaccounted-for” water percentage. Using percentage indicators to assess water loss in distribution systems gives a misleading and unreliable measure of utility performance because a percentage indicator

- › is greatly affected by changing levels of customer consumption
- › cannot distinguish among the specific components of non-revenue water occurring in a distribution system
- › reveals nothing about water volumes and associated costs (the two most important factors in assessing water waste within a distribution system).

Today, the industry best practice for water loss auditing created by the International Water Association (IWA) and AWWA now quantifies several key performance indicators, which provide vastly superior means for assessing water loss performance in distribution systems, while recognizing that contributing factors and potential corrective measures are specific to each water utility.



**American Water Works
Association**

Dedicated to the World's Most Important Resource™

The following table provides a guide to the most up-to-date industry best practices and water loss control terminology.

Editorial Guide for Use of Up-to-Date Water Loss Control Terminology		
INCORRECT	CORRECT	WHY
Unaccounted-for water (UFW)	Non-revenue water (NRW)	All water entering a distribution system can be defined as a component of either authorized consumption or water loss
% of system input volume to measure water loss performance	Suite of key performance indicators for water loss as outlined in IWA/AWWA audit method (As an example: gal/service connection/day)	A %-based expression obscures the underlying causes of water loss and impedes realistic solutions based on system specifics

It is important to understand that all water utility distribution systems incur leakage (real losses). Similarly, all water utilities fail to recover revenue from all of the water that is (or should be) billed to customers (apparent losses). Although every system is unique, all water utilities should employ leakage control and revenue recovery programs that strive to keep losses contained to appropriate, economically justified levels. AWWA's Manual: *Water Audits and Loss Control Programs* (M36) and the [AWWA FREE Water Audit Software](#) provide a robust pathway for utilities to develop data-driven programs to cost-effectively manage all water loss components (apparent and real) in distribution systems, as shown below in the IWA/AWWA Water Balance.

The IWA/AWWA Water Balance						
Volume From Own Sources (corrected for known errors)	System Input Volume	Water Exported (corrected for known errors)	Billed Water Exported			Revenue Water
		Water Supplied	Authorized Consumption	Billed Authorized Consumption	Billed Metered Consumption	Revenue Water
Water Imported (corrected for known errors)						Unbilled Authorized Consumption
		Apparent Losses	Unbilled Metered Consumption			Unbilled Unmetered Consumption
Water Losses				Real Losses	Customer Metering Inaccuracies	Non-revenue Water
		Unauthorized Consumption				
		Systematic Data Handling Errors				
				Leakage on Transmission and Distribution Mains		
				Leakage and Overflows at Utility's Storage Tanks		
				Leakage on Service Connections up to the Point of Customer Metering		

NOTE: All data in volume for the period of reference, typically one year.

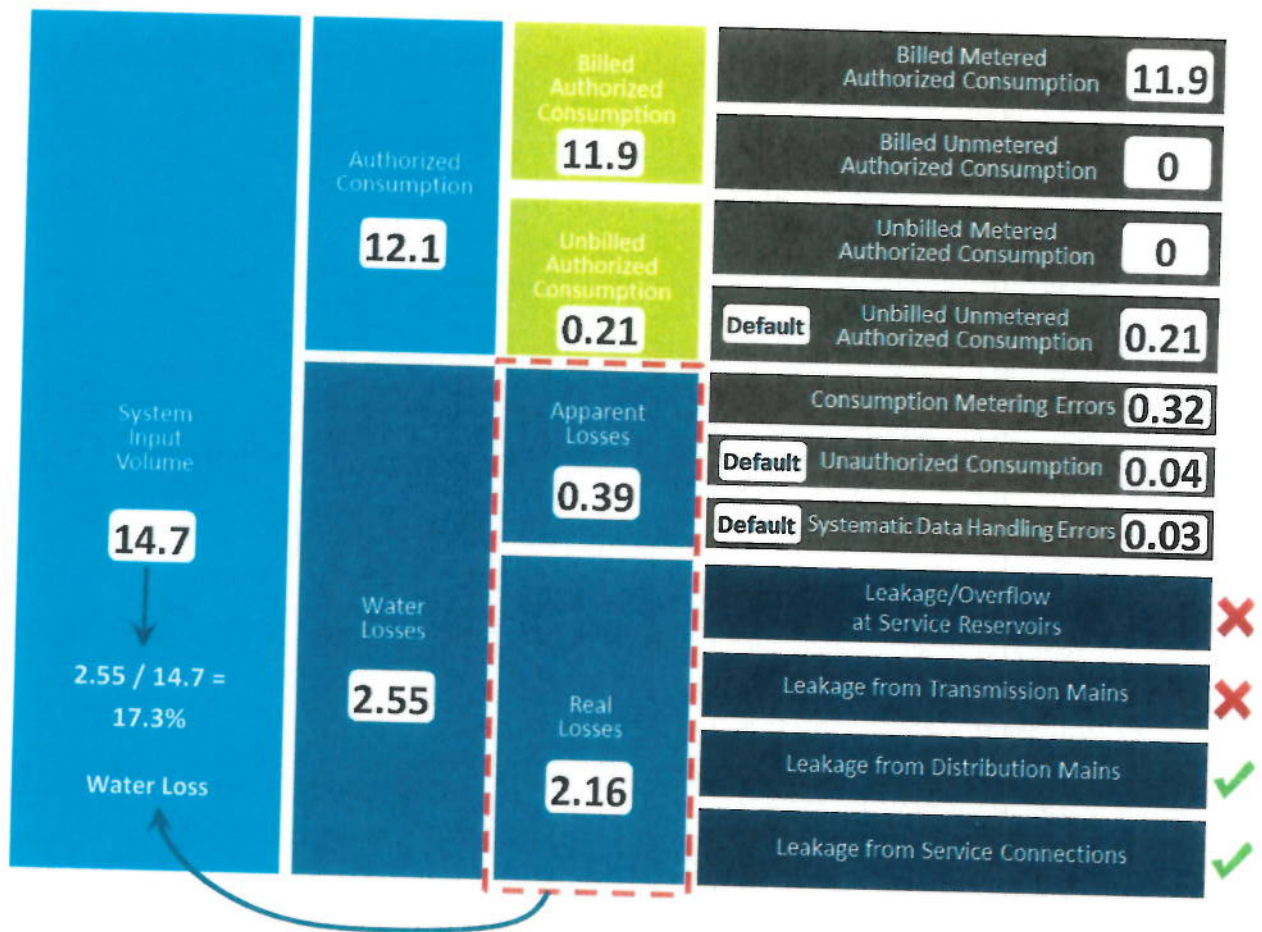


Figure 1. AWWA Water Balance: Dearborn

This water balance table was completed with best available data (as stipulated in the Detroit/GLWA contract). As you can see the Water Losses component is 17.3%, which equals 2.55 MGD water loss divided by 14.7 MGD System Input Volume.

This is currently the best available data. We value your input and look forward to your continued cooperation as we enter Phase 2 of the work and fully expect that this will improve upon the Phase 1 dataset, providing additional and more field-derived information to support the FY 2020 Charges.