SWEETWATER SPRINGS WATER DISTRICT

TO: Board of Directors **AGENDA NO. V-A**

FROM: Steve Mack, General Manager

Meeting Date: October 4, 2018

SUBJECT: 2017 WATER AUDIT

RECOMMENDED ACTION: Receive a presentation from General Manager Steve Mack regarding the 2017 Water Audit and provide direction to staff.

FISCAL IMPACT: none at this time.

DISCUSSION:

In October 2015 the California State Legislature adopted Senate Bill 555 (SB 555) because it found the state's urban retail water suppliers could improve water supplies by performing validated water loss audits on their water distribution systems. SB 555 added Section 10608.34 to the California Water Code, requiring the Department of Water Resources (DWR) to establish regulations for conducting and validating water loss audits, technical qualifications for persons performing water loss audit validation, and reporting requirements. for submitting validated water loss audits to DWR.

Water loss audits evaluate real water losses (leaks) and apparent water losses (e.g. data errors, water theft) occurring in a potable water distribution system. Estimating the scale and cost of these losses allows utilities to identify opportunities for saving water and recovering revenue. Staff had been doing these water audits for some time as part of our participation in the California Urban Water Conservation Coalition. In 2016 for the first time in California, water loss audit submissions were reviewed by validators which were funded by the State and then submitted to the State. The reviews followed the validation methodology detailed in Water Research Foundation Project 4639: Level 1 Water Audit Validation. Level 1 water audit validation aims to:

1. Identify and, where possible, correct inaccuracies in water audit data and application of methodology.
2. Evaluate and communicate the uncertainty inherent in water audit data.

This year the requirement continued but the validations were not funded by the State nor was there any assistance or direction in doing the validations provided by the State. Staff called around and were bailed out by the Sonoma County Water Agency (SCWA) who has trained validators that were made available to us (for a fee). The validation done by SCWA cost the District approximately $1400 which came out of the funding provided by the water conservation agreement that the District has with SCWA.

Staff completed the water audit in late August, did the validation in mid September and shortly thereafter submitted the District's validated water audit to the State.

Attached are the completed 2017 Water Audit and System Attributes and Performance Indicators that were submitted to the State.

We know we have water losses; we track it every month in our production versus sales spreadsheets. System losses is one of the key factors in deciding which projects belong in our CIP. The water audit approach thinks we need to look at other aspects of this issue as well:

- How accurate are out meters? - production meters may not accurately measure water that we produce; customer meters may not accurately measure the water that we sell. Correctly the latter would provide additional revenue to the District as meters rarely read high. The audit included a default value of 2% which is approximately 11 acre feet. The second page of the audit values that at $46,000.
- How much water is stolen from the District? Because we are a relatively hands-on district, it's difficult to believe much water is being stolen from the District; the audit has a default amount of 0.25 %. which is 1.8 acre feet.
- Pressure reduction has worked in other areas to reduce losses but because of our topography that is not a practical approach for us.

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: Sweetwater Springs Water District (4910004/0028)
Reporting Year: 2017 | 1/2017 - 12/2017

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

All volumes to be entered as: ACRE-FEET PER YEAR

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

Master Meter and Supply Error Adjustments

WATER SUPPLIED

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

							Pcnt:		Value:	
Volume from own sources:	+ ?	5	717.000	acre-ft/yr	+ ?	3				acre-ft/yr
Water imported:	+ ?	n/a		acre-ft/yr	+ ?					acre-ft/yr
Water exported:	+ ?	n/a		acre-ft/yr	+ ?					acre-ft/yr

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

WATER SUPPLIED: 717.000 acre-ft/yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

					Pcnt:	Value:	
Billed metered:	+ ?	5	546	acre-ft/yr			
Billed unmetered:	+ ?	n/a		acre-ft/yr			
Unbilled metered:	+ ?	n/a		acre-ft/yr			
Unbilled unmetered:	+ ?	5	1.793	acre-ft/yr		1.793	acre-ft/yr

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

AUTHORIZED CONSUMPTION: ? 548.057 acre-ft/yr

WATER LOSSES (Water Supplied - Authorized Consumption)

168.943 acre-ft/yr

Apparent Losses

					Pcnt:	Value:	
Unauthorized consumption:	+ ?		1.793	acre-ft/yr	0.25%		acre-ft/yr

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

Customer metering inaccuracies:	+ ?	3	11.148	acre-ft/yr	2.00%		acre-ft/yr
Systematic data handling errors:	+ ?		1.366	acre-ft/yr	0.25%		acre-ft/yr

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

Apparent Losses: ? 14.306 acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: ? 154.636 acre-ft/yr

WATER LOSSES: 168.943 acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: ? 170.735 acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	+ ?	10	65.0	miles
Number of active AND inactive service connections:	+ ?	8	3,800	
Service connection density:	?		58	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:	+ ?	10	$3,795,000	$/Year
Customer retail unit cost (applied to Apparent Losses):	+ ?	9	$2.73	$/100 cubic feet (ccf)
Variable production cost (applied to Real Losses):	+ ?	5	$300.00	$/acre-ft

☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 58 out of 100 ***

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

PRIORITY AREAS FOR ATTENTION:

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

1: Volume from own sources
2: Customer metering inaccuracies
3: Billed metered

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

WAS v5.0
American Water Works Association.
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Reporting Year: 2017 | 1/2017 - 12/2017

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 58 out of 100 ***

System Attributes:

	Apparent Losses:	14.306	acre-ft/yr
+	Real Losses:	154.636	acre-ft/yr
=	Water Losses:	168.943	acre-ft/yr
?	Unavoidable Annual Real Losses (UARL):	77.43	acre-ft/yr
	Annual cost of Apparent Losses:	$17,010	
	Annual cost of Real Losses:	$46,391	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:	23.8%	
	Non-revenue water as percent by cost of operating system:	1.7%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	3.36	gallons/connection/day
	Real Losses per service connection per day:	36.33	gallons/connection/day
	Real Losses per length of main per day*:	N/A	
	Real Losses per service connection per day per psi pressure:	0.48	gallons/connection/day/psi

	From Above, Real Losses = Current Annual Real Losses (CARL):	154.64	acre-feet/year
?	Infrastructure Leakage Index (ILI) [CARL/UARL]:	2.00	

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