



AUGUSTA TOWNSHIP WATER AND SEWER UTILITY ACTIVITIES

APRIL 13, 2021 BOARD REVIEW

2016 WHAT WE INHERITED

Financially Mismanaged System

- Michigan Department of Treasury oversight
- Water and sewer utility operating on a net loss basis for years.
- Total losses over the past 10+ years exceed \$3,000,000 – used new customer connections to cover loss
-
- Running out of reserves

2016 WHAT WE INHERITED

Operationally Mismanaged System

- Michigan Department of Environment, Great Lakes & Energy oversight
- \$2,000,000 in needed Capital repairs and no way to pay for this. Sold bonds – interest cost of \$577,000.
- State SAW grant of \$339,600 required rate changes to meet capital

#1 PROBLEM

WATER LOSS/SEWER LOSS

Water Loss is the unsold portion of the water purchased from YCUA

Water loss happens with every water utility. Water main breaks, hydrant usage, leaks in the system, and even water theft occur everywhere.

Was ... 24%

Now ... 21%

Sell a gallon.....Buy 1.21 gallons

WHAT IS A RESIDENTIAL EQUIVALENT USER? REU

Your Home is 1 REU



An REU is a unit of measure used to represent the average usage of a single-family residential dwelling.

It is based on meter size and type of use.

Larger water services will have a multiple of the REUs assigned based on their capacity and meter size.

A “Residential Equivalent Unit” (REU) of 1 is assumed for all residential users with a meter size up to 1”.

- Commercial, educational, or residential properties with meters larger than 1” are charged proportionally to the size of the meter installed based on the **American Water Works Association** national standard. Larger meters bear a larger proportion of the system’s capacity costs.



Under the AWWA standards, a retail facility with a 2” meter is the equivalent of eight (8) residential homes.

WHAT IS A RESIDENTIAL EQUIVALENT USER?

REU

Users Pay for the System – The more users to help pay the less it costs each user

System	Sept 2019 REUs	April 2021 REUs
Water	1828.0	1894.5
Sewer	846.0	909.5

Corrections to billing records during the meter replacement program and new water and sewer connections have added REUs to the system. By adding REUs, fixed costs are distributed across a wider customer base.

New connections to the system also increase the REUs

METER REPLACEMENT PROGRAM

- **Badger E-Series**
- **Digital meter system**
- **BEACON monitoring and management system**
- **Cellular network**
- **Reads every meter 96 times per day, transmits read four times per day**



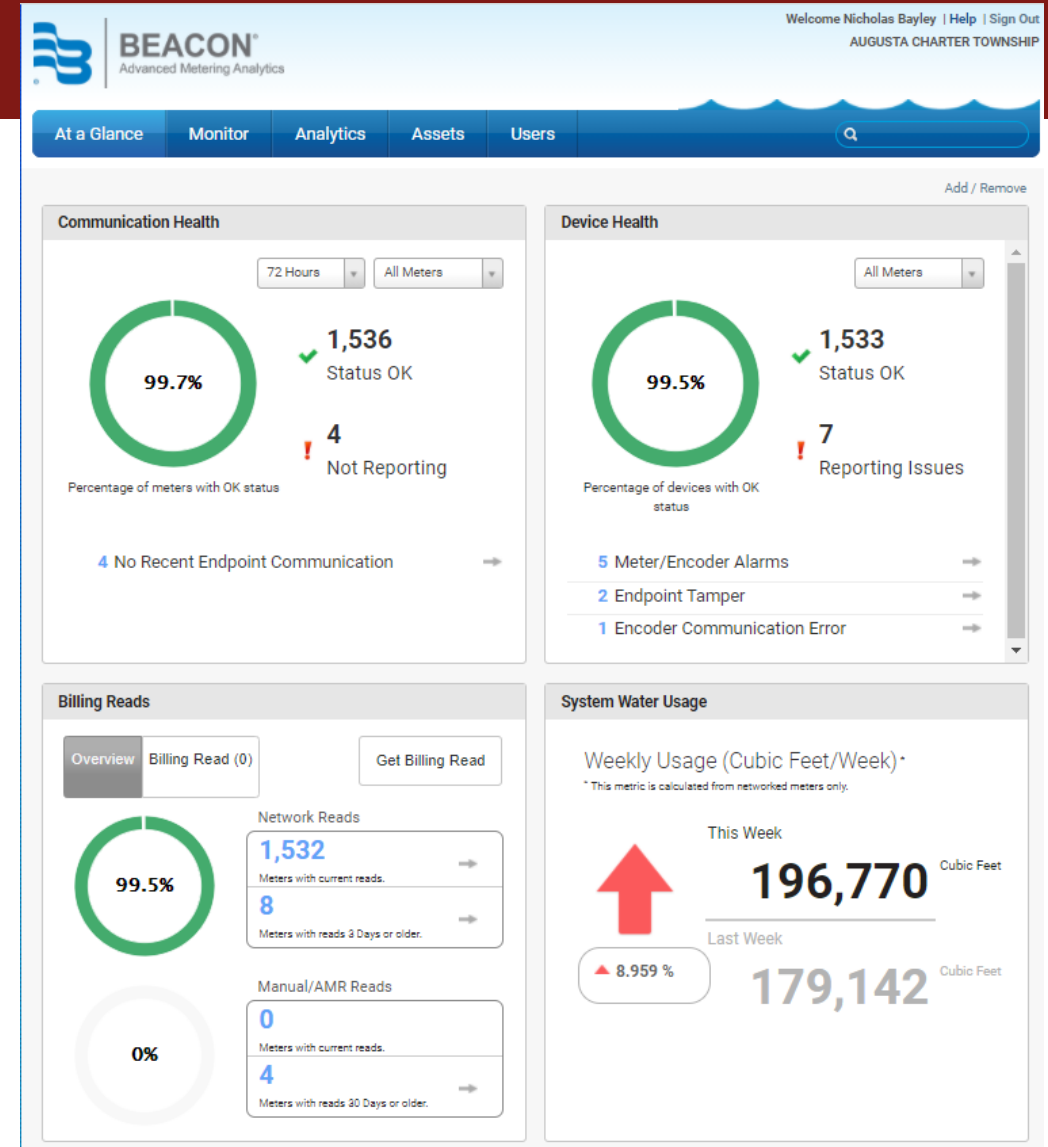
SYSTEM MONITORING – BEFORE AND AFTER

Before:

- Meter reads every two months
- **40%** of transmitters failing, **HUNDREDS** of manual reads and estimated reads.
- Diverted resources away from system improvement.

After

- Meter reads every 15 minutes
- Full historical usage history
- Constant monitoring of system health
- Historical data for every meter
- Leak detection, alerts
- On-demand monitoring of every meter in system



Meter Replacement

- Over 600 meters were being estimated or manual reads because meter transmitters were not working
- Found cases where existing meters had been bypassed, theft of water
- New meters brings the system up to date and provide near real time remote reading to the Twp and property owner
- New meters use ultrasonic tech, very accurate no moving parts to wear or slow down



KEY HIGHLIGHTS

Increased REU

- Replacement of meters has resulted in correction of old billing records to properly account for meter size.

Improvement in billing process

- Elimination of estimated reads saves time and increases accuracy.
- Ease of access to complete usage data
- Assists in answering utility customer billing questions

Benefits

- Full township control of billing
- Increase accuracy, save time and money on billing cycle tasks
- Provide better customer service and reduce questions

LARGE METER ISSUES

- **Lincoln Schools 7425 Willis #1 meter**
 - Meter has been improperly read since 2001
 - Reading 4 digits instead of 5 on meter
 - 90% underbilling for usage since 2001
- **Lincoln Schools bus garage meter**
 - 3" meter not 1" as recorded (lost revenue)
 - Meter reading in gallons not cubic feet – 33% underbilling
- **Whittaker Oaks 2" Meter**
 - Discrepancy between billing records and final meter read
 - Actual final read of 99,019 ccf vs billing records of 59,260 estimate at time of replacement
 - 40,000 units of water and sewer unbilled based on final meter read.

LINCOLN METERS –OLD AND BEYOND THEIR SERVICE LIFE.

8850 WHITTAKER
MODEL ELEMENTARY



BISHOP ELEMENTARY
8888 WHITTAKER RD



LINCOLN BUS GARAGE

8622 WHITTAKER
BUS GARAGE

GALLONS!



- The township bills in “units” of 748 gallons.
- This is a meter that reads in “units” of 1,000 gallons.
- Bus garage has been underbilled by 33% since at least 2001.
- Estimated commodity underbilling \$4,581 over time
- Additional loss of revenue due to improper meter size in BS&A resulting in underbilling of certain charges.
- Billing adjusted going forward to accommodate until replacement

LINCOLN HIGH SCHOOL 7425 WILLIS #1 METER UNDERBILLING



This meter reads in 1,000 cubic feet increments. A residential meter reads in 100 cubic feet.

Since **January 2001**, this meter has been reporting a **4-digit read** instead of the proper **5-digit read**. ***This resulted in a 90% underbilling for this meter for the past 20 years.***

A read of “6,036” needs to be multiplied by 10X and are actually “60,360” for billing purposes.

Estimated underbilling - \$385,000 since 2001

LINCOLN HIGH SCHOOL 7425 WILLIS #1 METER

Correct vs Actual billings

- Meter has been **underbilled** by 90% since 2001
- Estimated underbilling for both water and sewer is approximately \$385,000 since 2001.
- Problem resolved by adding a 10X multiplier in the billing record.
- Meter to be replaced.

Lincoln High School - 7425 Willis #1

Year	Billed	Total Correct Billing	Total Underbilling
2021	\$207	\$376	-\$169
2020	\$1,653	\$16,526	-\$14,874
2019	\$3,713	\$39,702	-\$35,989
2018	\$3,147	\$31,475	-\$28,327
2017	\$4,702	\$47,016	-\$42,314
2016	\$3,911	\$39,105	-\$35,195
2015	\$3,804	\$38,039	-\$34,235
2014	\$4,463	\$44,793	-\$40,331
2013	\$2,991	\$29,911	-\$26,920
2012	\$2,417	\$24,170	-\$21,753
2011	\$1,207	\$12,309	-\$11,102
2010	\$2,407	\$24,413	-\$22,006
2009	\$1,470	\$17,969	-\$16,499
2008	\$1,594	\$15,936	-\$14,342
2007	\$787	\$7,872	-\$7,085
2006	\$326	\$3,904	-\$3,578
2005	\$366	\$3,658	-\$3,292
2004	\$366	\$4,064	-\$3,698
2003	\$227	\$2,696	-\$2,469
2002	\$855	\$8,551	-\$7,696
2001	\$2,077	\$15,917	-\$13,840
	\$42,689	\$428,401	-\$385,713

WHITTAKER OAKS 2" METER

When replaced, the 2" meter at Whittaker Oaks had a significant discrepancy between the billing records in BS&A and the actual final reading of the meter. The actual meter read of 99,019 was higher than the corresponding billing history in BS&A (59,260), leaving about 40,000 units unexplained, and possibly unbilled.

Account Information

Location ID: WHI1-011333-0000-00

Customer: WHITTAKER OAKS


Status: Active


Service Address: 11333 WHITTAKER RD


Cycle: ALL

Route/Book: ALL

1. History 2. Charts 3. Certifications

 Reverse

 View Archived Data

 Print


Filter: Meter Info


Created	Posted	Action	Additional Information	Read	Usage	Transaction Amount	Balance
03/10/20	03/10/20	Meter Read	Water	59260E	2012	\$0.00	\$0.00
01/07/20	01/07/20	Meter Read	Water	57248E	1848	\$0.00	\$0.00
11/11/19	11/11/19	Meter Read	Water	554000	1891	\$0.00	\$0.64
09/12/19	09/03/19	Meter Read	Water	53509A	2094	\$0.00	\$0.00
07/09/19	07/03/19	Meter Read	Water	51415A	1668	\$0.00	(\$10.00)
05/08/19	04/29/19	Meter Read	Water	49747A	1864	\$0.00	\$0.00
03/06/19	02/21/19	Meter Read	Water	47883A	1811	\$0.00	\$0.00
01/08/19	12/26/18	Meter Read	Water	46072A	1806	\$0.00	\$0.00
11/05/18	10/29/18	Meter Read	Water	44266A	1792	\$0.00	\$0.00
09/06/18	08/22/18	Meter Read	Water	42474A	1711	\$0.00	\$0.00
07/02/18	06/26/18	Meter Read	Water	40763A	1773	\$0.00	\$0.00
05/07/18	04/24/18	Meter Read	Water	38990A	1587	\$0.00	\$0.00
03/07/18	02/28/18	Meter Read	Water	37403A	1702	\$0.00	\$0.00
01/08/18	12/27/17	Meter Read	Water	35701A	1673	\$0.00	\$0.00
11/07/17	10/23/17	Meter Read	Water	34028A	1659	\$0.00	\$0.00
09/05/17	08/21/17	Meter Read	Water	32369A	1596	\$0.00	\$0.00
07/06/17	06/29/17	Meter Read	Water	30773A	1601	\$0.00	\$0.00
05/03/17	04/24/17	Meter Read	Water	29172A	1590	\$0.00	\$0.00
03/02/17	02/22/17	Meter Read	Water	27582A	1894	\$0.00	\$0.00

Double Click or press the [ENTER] key to view details. Right click for more options.

Total History Items: 128

Posting Date - 04/11/2021

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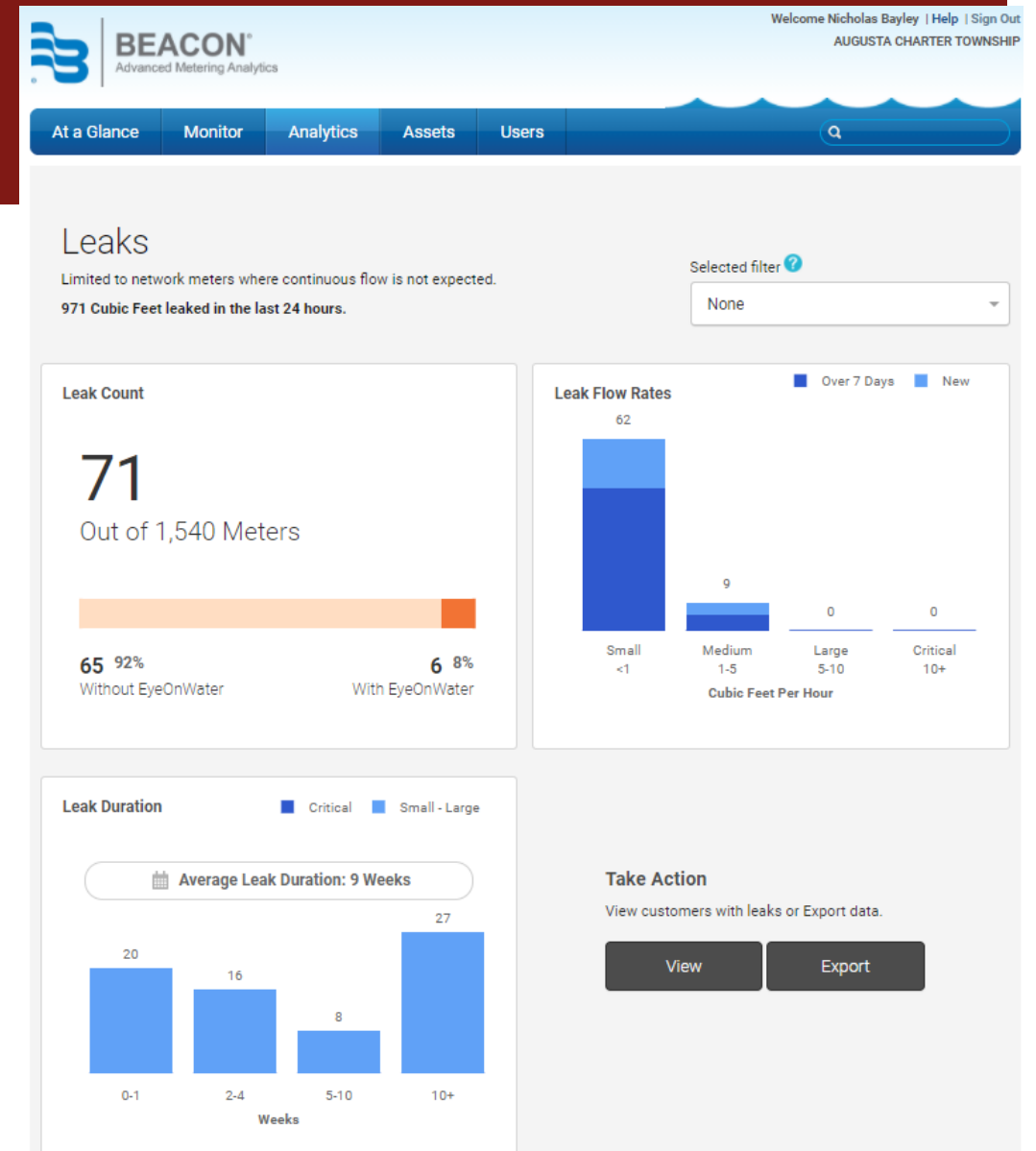
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BEACON LEAK DETECTION

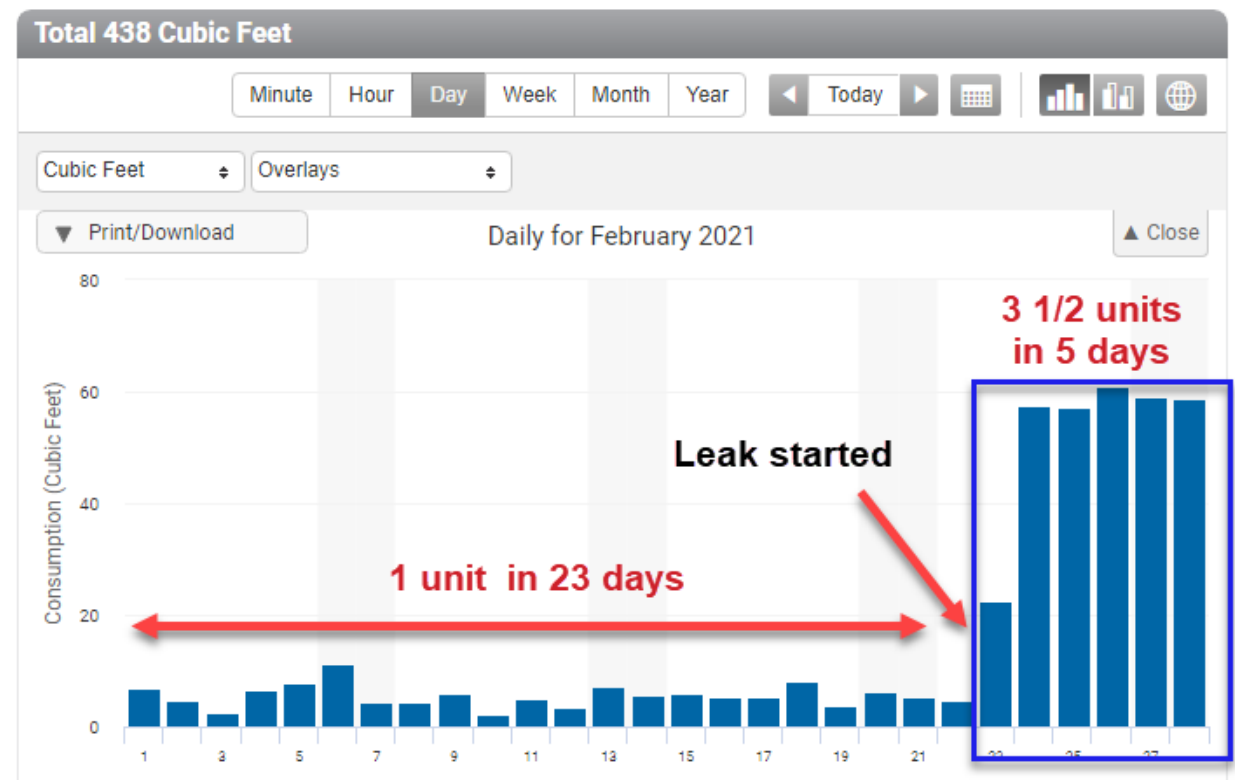
One key benefit of the BEACON system is the monitoring of “continuous flow” or “constantly running water” for a particular meter – as leak as little as 1 gallon per hour.

The BEACON dashboard highlights potential problems and provides quick access to customer meter information.



BEACON LEAK DETECTION

- **Customer had undetected leak causing a 600% increase in usage. Contacted customer and they corrected the problem, saving hundreds of dollars.**



SUCCESS STORIES

- Installed New Meter
- Immediately determined a leak of 9,000 gallons per day was occurring
- Contacted customer
- Problem fixed before damage could occur

11 March 2021

Carol,

I can't thank you enough for your call last week telling me the monitoring technology associated with my newly installed water meter indicated there was a leak somewhere in my home. There had been some telltale signs for the past few months but I failed to "connect the dots". I'm sure I would have eventually figured it out but, most likely, not until it was too late!

After hanging up with you I called three different plumbing services but all were booked for three weeks out. I finally found ABC Plumbing, right here in Willis. They showed up within an hour and found the leak fairly quick. It was fixed soon after. What cost a little more than \$300 could have easily turned into a big disaster if I had waited much longer! I was told if the pipe had completely burst it would have caused flooding. I just had new carpet and flooring installed last year and it would have been ruined!

This certainly gives merit to the old adage, "An ounce of prevention is worth a pound of cure!"

Thank you so much, once again!

A very appreciative customer,



UTILITY BILLING IMPROVEMENTS

Improvements in Actual Reads

- 97.5% Automatic and actual reads for most recent billing cycle.
- When meter replacement program complete, should be 99%+ automatic reads.
- Customers can access own information on Eye On Water app

Improvement in billing process

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Benefits

- Full township control of billing
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#1 PROBLEM

WATER LOSS/SEWER LOSS

Sewer Loss is the unsold portion of the waste sent to YCUA for treatment

Sewer loss happens with every system. Rainwater infiltrates the lines

Was 60% – Now 52%

Sell a gallon.....buy 1.52 gallons

INFRASTRUCTURE REPLACEMENT

\$7,400,000

Over next 5 years

INFRASTRUCTURE REPLACEMENT

System Reserves	March 2021 Projected	
Infrastructure Repairs		\$7,400,000
Water	\$1,105,000	
Sewer	\$200,000	
Capital Fund	\$765,000	\$2,070,000
	Total Fund Reserves	
Shortfall		(\$5,330,000)



\$5,000,000 Borrowed.....
.....Estimated Financing Costs \$1,600,000

Sanitary Sewer Inflow



Before



After



Sanitary Manhole Lining Needs

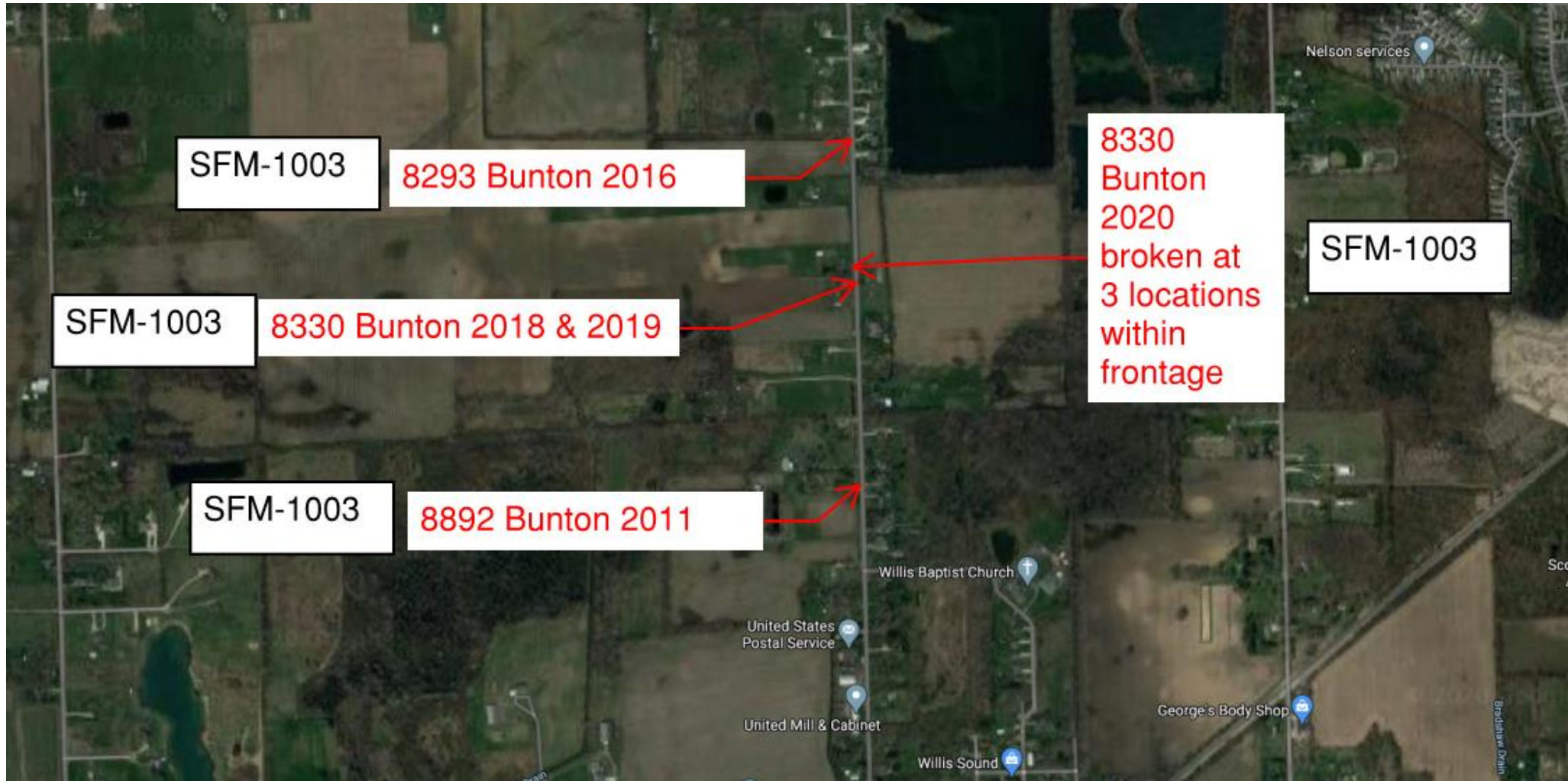


Existing San MH with High Needs

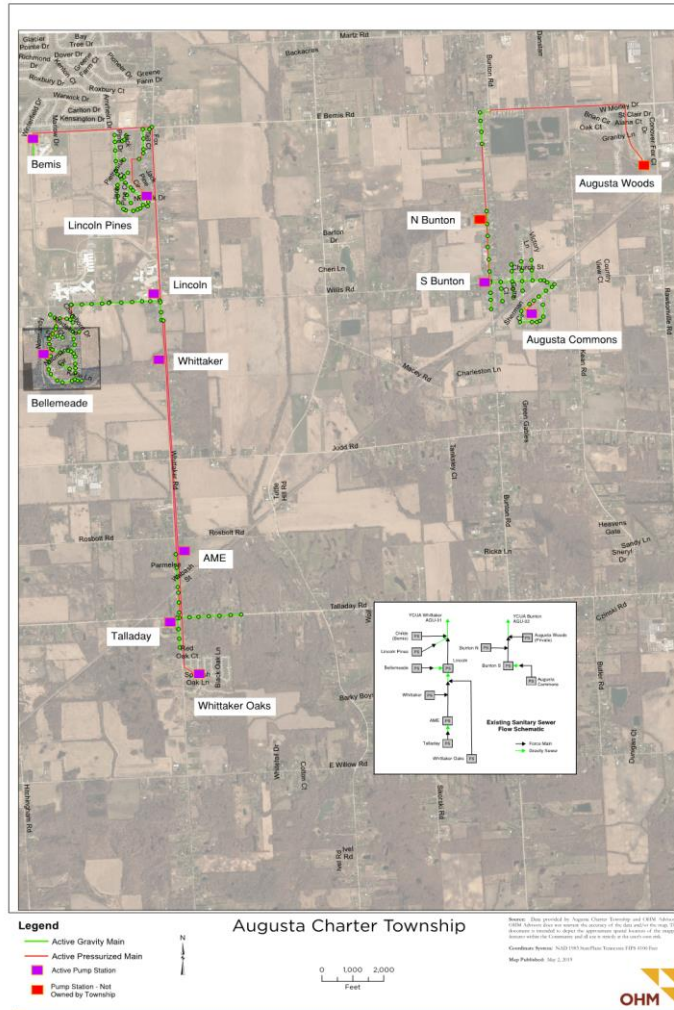


Exiting San MH After Lined

Bunton FM Break History



Augusta Pump Station Needs



Station	Annualized Repair	Capital Fund				
		2021	2022	2023	2024	2025
AME	\$ 13,800	\$ 36,700	\$ 4,500			\$ 27,700
Augusta Commons	\$ 10,700	\$ 34,700				\$ 19,000
Bellemeade	\$ 7,300	\$ 36,700				
Bemis	\$ 9,900	\$ 34,700		\$ 15,000		
Lincoln	\$ 38,000	\$ 61,700				\$ 128,200
Lincoln Pines	\$ 12,800	\$ 34,700				\$ 29,500
South Bunton	\$ 29,900	\$ 36,700				\$ 112,900
Talladay	\$ 13,900	\$ 36,700				\$ 33,000
Whittaker	\$ 10,900	\$ 37,200				\$ 17,500
Whittaker Oaks	\$ 6,900	\$ 34,700				
Total	\$ 154,100	\$ 398,700	\$ 4,500	\$ 15,000		\$ 367,800

Rate Structure

Many of the costs to operate the system are fixed and consistent year over year. A new structure was needed that did not depend on fluctuating usage sales.

The Rate Structure Has Three Components:	Water	Sewer
Operations and Maintenance (O&M/Capacity Charge)	X	X
Debt Service	X	X
Commodity Charge (based on actual usage)	X	X

HOW THE RATES ARE COMPUTED

WATER

	Amended Budget FY22				Calculated Rate Needed		Rate Needed Per Billing Period		Current Rate	Recommended Rate
			<u>REUs</u>							
Debt	\$ 66,682		1894.5		\$ 35.20		\$ 5.87		\$6.02	\$ 5.87
Operations & Maintenance	\$451,092		1894.5		\$ 242.72		\$ 40.45		\$42.67	\$ 40.67
			<u>Loss Rate</u>							
YCUA Water Purchases	\$ 660,149		21%		\$ 4.33*		\$ 4.33		\$4.34	\$ 4.34
Transfer to Capital	<u>\$ 33,000</u>									
Total Budget	\$ 1,243,283									

*YCUA raises rates in Oct. Twp adjusts at that time

HOW THE RATES ARE COMPUTED

SEWER

		Amended Budget FY22			Calculated Rate Needed		Rate Needed Per Billing Period		Current Rate	Recommended Rate
				REUs						
Debt		\$ 66,682		909.5	\$ 73.32		\$ 12.22		\$ 12.64	\$ 12.22
Operations & Maintenance										
	YCUA Fixed Fee Purchases	\$ 65,000								
	O&M Other	\$ 282,946		909.5	\$ 382.57		\$ 63.76		\$ 40.29	\$ 50.29
				Loss Rate						
YCUA Sewer Purchases		\$ 295,656		52%	\$ 3.09*		\$ 3.09		5.05	\$ 4.00
Capital Outlay		\$ <u>727,200</u>		Not Billed						
	Total Budget	\$ 1,444,524								

*YCUA raises rates in Oct. Twp adjusts at that time