

**City of Oconomowoc
Utility Committee**

Aldermen: Kowieski, Chairman / Zwart, Secy / Shaw

**Tuesday, January 28, 2020 - 4:00 PM
City Hall - Conference Room 3**



Notice: If a person with a disability requires that the meeting be accessible or that materials at the meeting be in an accessible format, call the City Clerk's office at least 48 hours in advance to request adequate accommodations. Tel: 569-2186

- 1. Call to Order, Roll Call and Confirmation of appropriate Meeting Notification**
- 2. Approve Minutes**
- 3. Committee Business**
 - a. Presentation on Hydraulic Capacity Study Final Report
- 4. Review Committee Reports**
- 5. Staff and Committee Comments**
 - a. UC Utility Billing Report - Jan 2020
 - b. UC Electric Report - Jan 2020
 - c. UC Water Report - Jan 2020
 - d. UC Wastewater Report - Jan 2020
- 6. Adjourn**

Diane Coenen, City Clerk
City of Oconomowoc

Members of other City governmental bodies (boards, commissions, committees, council, etc.) may attend the above noticed meeting of the Utility Committee to gather information. The only action to be taken at the above noticed meeting will be action by the Utility Committee. Utility Committee members should notify the City Clerk's Office at 569-2186 if they are unable to attend.



Excellence in Engineering Since 1946

Sanitary Sewer Hydraulic Capacity Study

City of Oconomowoc, Wisconsin

January 28, 2020





Presentation Overview

- Background & Scope
- Existing Collection System
- Flow Metering Program
- Existing & Future Development
- Hydraulic Modeling
- Analysis of Collection System
 - Existing Conditions
 - Future Conditions
- Conclusions & Recommendations



Background & Scope

Project Goals

- Evaluate existing collection system under existing and future development conditions
- Identify any potential bottlenecks

Several areas of potential development represent drivers for this project – Pabst Farms & Olympia



Collection System Overview

- Refer to Figure
- Sanitary sewers range in size from < 6 inches to 60 inches
- Total Length \approx 506,000 feet \approx 96 miles
- City owns 16 pumping stations and provides O&M services on 4 additional pumping stations
- City provides conveyance and treatment to 8 sanitary districts

Flow Metering Program

- 8 meters installed at key locations in the collection system
 - 5-week metering period
- Pumping station flow records also used as a “metering” location
- Rain gauge at WWTP

Results Overview

- Obtained dry- and wet-weather flow information
- Metering showed relatively low levels of I/I in the collection system – this is good!
- Data was used to develop a theoretical relationship between rainfall and system flows
- Relationship was used to project system flows at higher rainfall intensities

Flow Metering Results – Overall Summary

City of Oconomowoc, Wisconsin
Sanitary Sewer Hydraulic Capacity Study

Section 4–Collection System Flow Metering

Summary Table

Site Information

Table 4.03-6 Wet Weather Data Analysis–Meter 4-965-21

Wet Weather Event:	No. 1	No. 2	No. 3	No. 4
1 Wet Weather Event Start Date and Time	4/22/2019 19:00	4/28/2019 2:30	5/8/2019 19:30	5/24/2019 5:00
2 Wet Weather Observation Period (hrs)	36	48	36	36
3 Total Rainfall (in)	1.46	0.69	0.80	0.78
4 Peak 1-Hour Intensity (in/hr)	0.60	0.12	0.31	0.35
5 Overall Average Dry Weather Flow ^a (gpm)	114			
6 Average Wet Weather Flow ^b (gpm)	120	118	120	125
7 Average Dry Weather Flow ^c (gpm)	108	114	108	119
8 Average I/I ^d (gpm)	11	4	12	6
9 Total Metered Flow (gal)	260,608	342,325	261,912	271,098
10 Dry Weather Flow (gal)	235,775	329,399	235,579	258,980
11 Total I/I ^e (gal)	24,833	12,925	26,333	12,119
12 Peak 15-min Wet Weather Flow (gpm)	305	249	262	271
13 15-min Dry Weather Flow ^f (gpm)	146	112	139	127
14 Peaking Factor ^g	2.1	2.2	1.9	2.1
15 Peak Flow Ratio ^h	2.8	2.2	2.4	2.3
16 Peak 15-min I/I ⁱ (gpm)	159	137	122	143
17 R-Value ^j	0.0009	0.0038	0.0013	0.0014
Comments (see below)				

Notes:

- Overall Average Dry Weather Flow (gpm) is the average flow of the during the dry weather periods from April 19 to April 21, 2019 and May 12 to May 15, 2019.
- Average Wet Weather Flow is the wet weather flow averaged over the Wet Weather Observation Period starting at the Wet Weather Event Start Date and Time.
- Average Dry Weather Flow is an average of dry weather flows (April 19 to April 21, 2019 and May 12-May 15, 2019) on the same day(s) as the wet weather event.
- I/I - Infiltration and inflow.
- Average I/I is the Average Wet Weather Flow minus Average Dry Weather Flow. (Line 6 - Line 7)
- Total I/I is the total difference in Wet Weather Flow and Average Dry Weather Flow for the Wet Weather Observation Period beginning at the Wet Weather Event Start Date and Time.
- 15 Minute Dry Weather Flow is the Average Dry Weather Flow at the site at the same time as the Peak 15-Minute Dry Weather Flow.
- Peaking Factor is the Peak 15-Minute Wet Weather Flow divided by the 15-Minute Dry Weather Flow. (Line 12 + Line 13)
- Peak Flow Ratio is the Peak 15-Minute Wet Weather Flow divided by the Average Dry Weather Flow. (Line 12 + Line 6)
- Peak 15-Minute I/I is the Peak 15-Minute Wet Weather Flow minus the 15-Minute Dry Weather Flow. (Line 12 - Line 13)
- R-Value is the fraction of the rainfall volume entering the system as I/I.

Comments:

- Peaks in metered flow are a result of pump stations upstream of meter.



Site Description: In field off of Thackeray Trail near St. Jerome Parish School, Manhole 965

Pipe Diameter: 21 inches

Tributary Area: Residential areas in eastern Oconomowoc. Village of Oconomowoc Lake South Beach Sanitary District

Tributary Area Size: 680 acres

Rainfall Data: WWTP SCADA

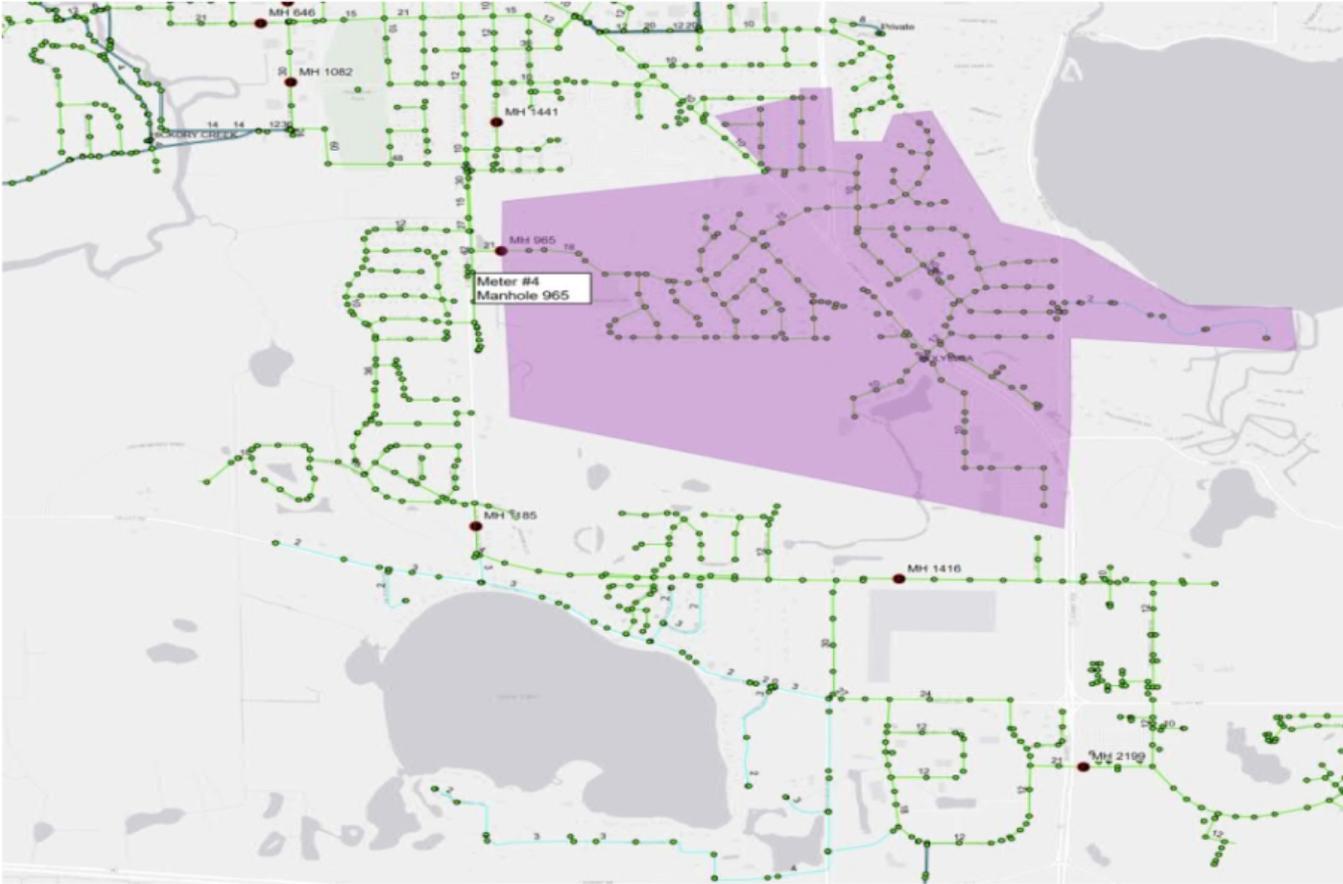
Prepared by Strand Associates, Inc.[®]
S:\08072020-1189\014\007\Design Studies\Report\Flow Metering Data Analysis\Site Info

Flow Metering Results – Summary Table

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	Comments (see below)				

Flow Metering Results – Site Information

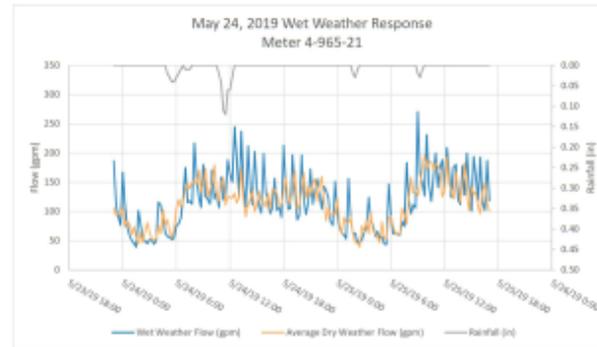
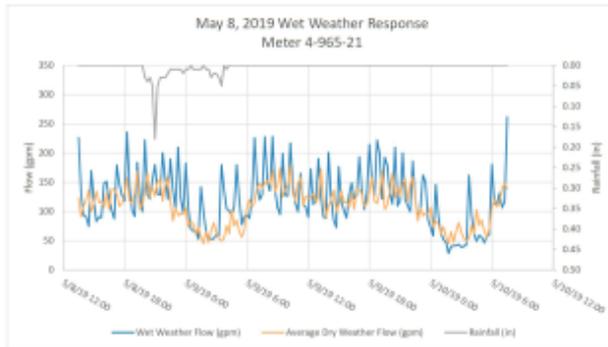
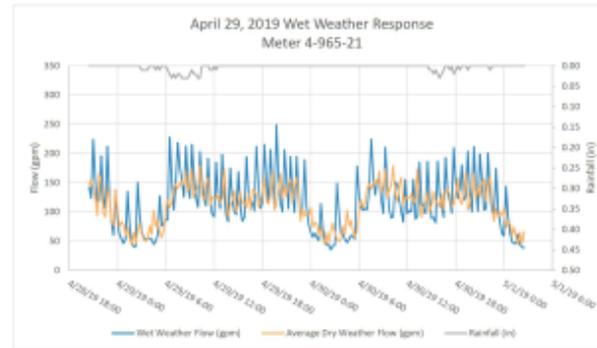
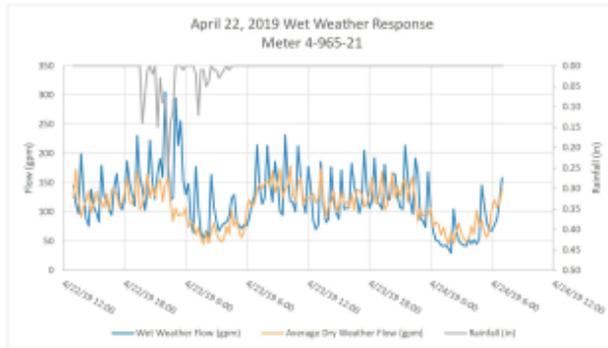


Flow Metering Results – Graphical Summary

City of Oconomowoc, Wisconsin
Sanitary Sewer Hydraulic Capacity Study

Section 4–Collection System Flow Metering

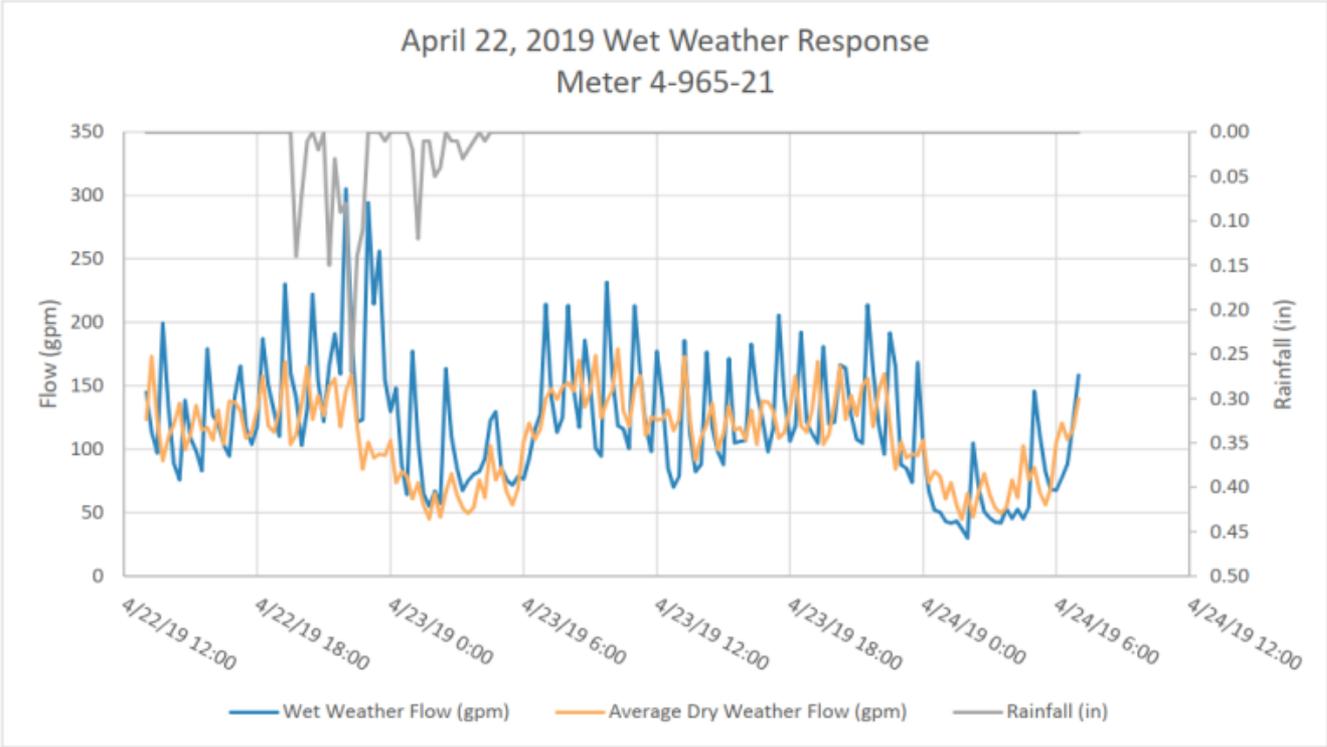
Table 4.03-6 Wet Weather Data Analysis–Meter 4-965-21



Prepared by Strand Associates, Inc.
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Flow Metering Results – Graphical Summary

Table 4.03-6 Wet Weather Data Analysis–Meter 4-965-21



OPTIONAL

Existing & Future Development

- Existing zoning shown on Figure 3.01-1
- Numerous development opportunities exist throughout the City, including the Sanitary Districts (refer to Tables 3.01-1 & 3.01-2)
- 20-year planning period used
- Primary drivers are on the south side of the city
 - Pabst Farms – areas tributary to Oconomowoc Parkway intercepting sewer
 - Olympia development
- Table 3.02-1 summarizes projected flow rates for development areas



Hydraulic Modeling

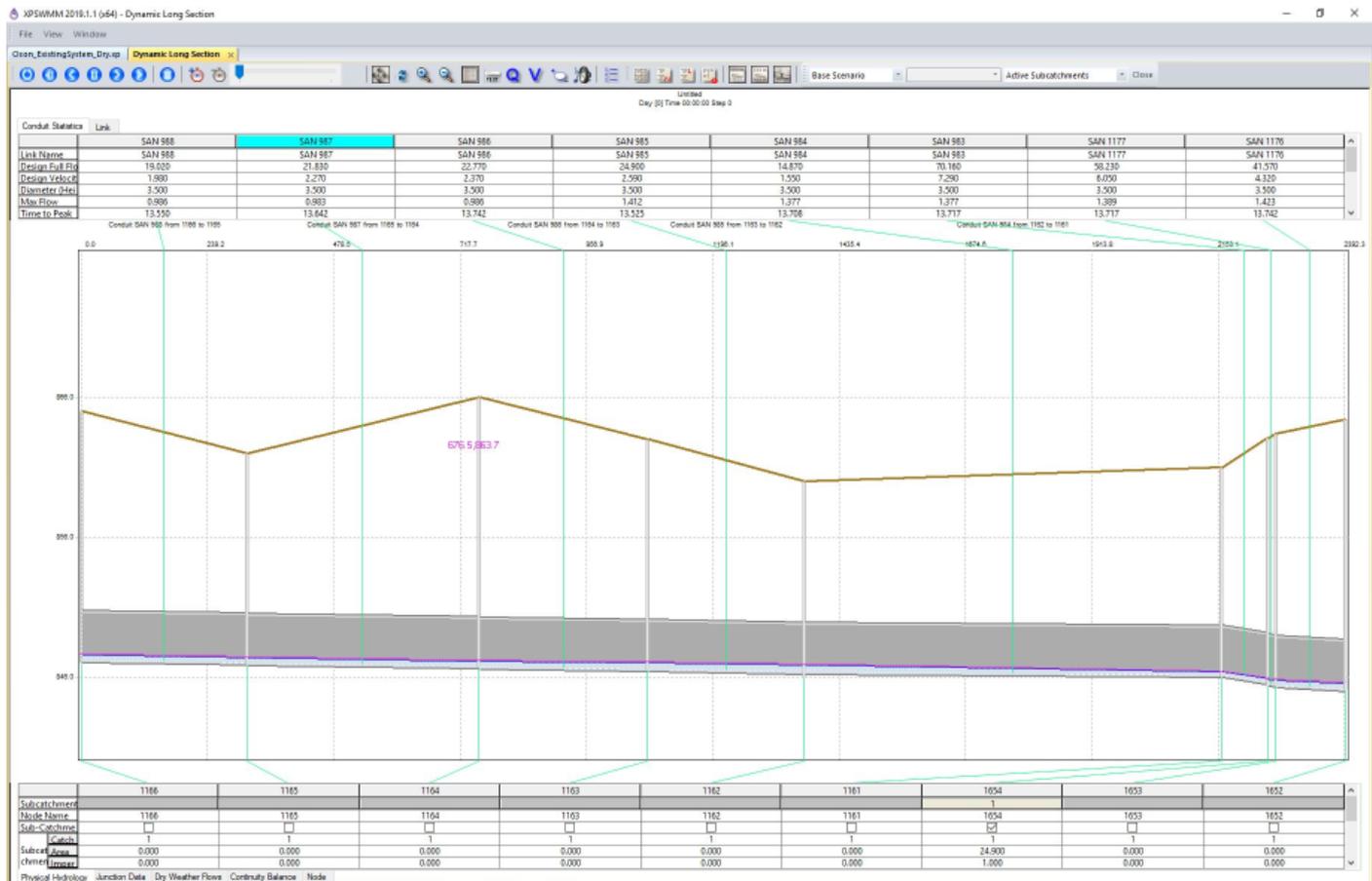
- Used XP-SWMM – commercial software designed to analyze collection systems
- Allows user to “route” flows through the system – also allows changes in rainfall characteristics to simulate more intense rainfall events
- Not all sewers are included in the model – only larger diameter sewers – typically > 12-inch

Modeling Scenarios – Existing & Future

- Dry weather
- Metered wet weather (< 1-year rainfall event)
- 1-year rainfall event
- 5-year rainfall event
- “Reality Check” at WWTP – historical flow records

Collection System Analysis – Existing Conditions

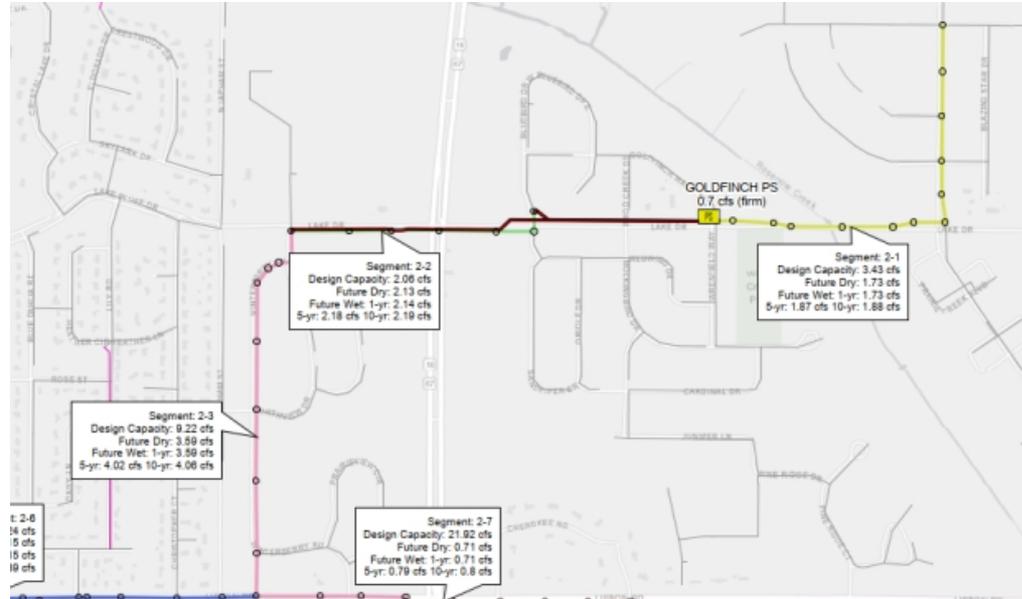
- Dry weather – no capacity issues noted
- Wet weather – no capacity issues noted



Collection System Analysis – Future Conditions

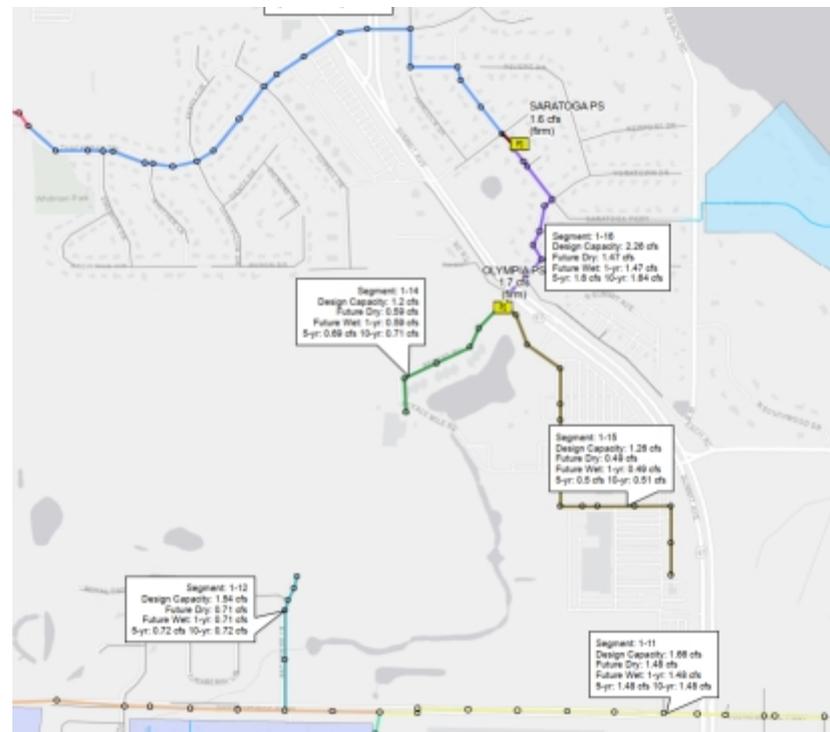
Three areas noted where capacity may be an issue

- Segment 2-2 – Downstream of Goldfinch Pumping Station (PS) – North side of service area
 - Projected Flow > Capacity (103%)
 - Flows from Goldfinch PS can be routed downstream of Segment 2-2



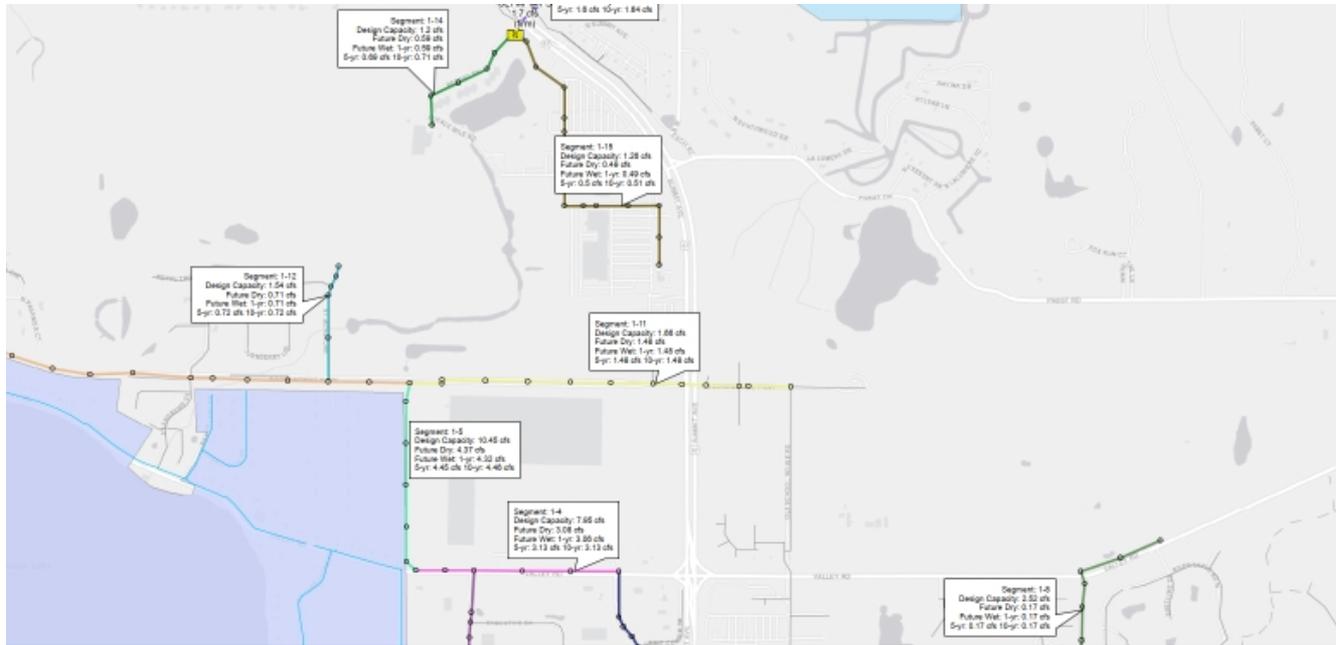
Collection System Analysis – Future Conditions^{cont.}

- Segment 1-1 – Downstream of Olympia Pumping Station – serves Olympia Development
 - Projected Flow \approx 70% of capacity
 - Future development can be routed to the south, if necessary



Collection System Analysis – Future Conditions^{cont.}

- Segment 1-11 – Oconomowoc Parkway Interceptor
 - Existing 12-inch sewer
 - Projected flow \approx 90% of capacity
 - Recommend 18-inch sewer
 - Projected flow \approx 60% of capacity



Conclusions & Recommendations

- Collection system is well maintained, with no current capacity issues
 - I/I levels are low!
- Two segments should be monitored as development occurs
 - Segment 2-2 → Reroute force main when necessary
 - Segment 1-16 → Monitor development plans and require flows to be directed south to the Oconomowoc Parkway interceptor, if necessary
 - Segment 1-11 → Install 18-inch sewer when development requires



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OCONOMOWOC UTILITIES - VOLUME STATISTICS

	Current Month				Year To Date			
ELECTRIC	kWh Sold Dec-19	kWh Sold Dec-18	Volume Increase (Decrease)	Percent Increase (Decrease)	kWh Sold Dec-19	kWh Sold Dec-18	Volume Increase (Decrease)	Percent Increase (Decrease)
Residential	5,883,700	5,960,768	(77,068)	-1.3%	74,568,140	76,387,698	(1,819,558)	-2.4%
Commercial	1,992,321	2,044,534	(52,213)	-2.6%	23,852,254	24,205,879	(353,625)	-1.5%
Large Power	9,317,370	9,769,036	(451,666)	-4.6%	123,257,256	125,537,376	(2,280,120)	-1.8%
Public Street/Hwy Ltg.	75,730	72,335	3,395	4.7%	708,920	745,757	(36,837)	-4.9%
Private Yard Lighting	3,451	5,886	(2,435)	-41.4%	48,907	56,924	(8,017)	-14.1%
Total Electric Sales	17,272,572	17,852,559	(579,987)	-3.2%	222,435,477	226,933,634	(4,498,157)	-2.0%
WATER	Gallons Sold (Thousands) Dec-19	Gallons Sold (Thousands) Dec-18	Volume Increase (Decrease)	Percent Increase (Decrease)	Gallons Sold (Thousands) Dec-19	Gallons Sold (Thousands) Dec-18	Volume Increase (Decrease)	Percent Increase (Decrease)
Residential	20,704	20,717	(13)	-0.1%	279,723	284,674	(4,951)	-1.7%
Multi Family	4,149	4,036	113	2.8%	49,785	48,008	1,777	3.7%
Commercial	9,794	9,582	212	2.2%	141,149	141,390	(241)	-0.2%
Industrial	2,976	2,733	243	8.9%	39,368	38,713	655	1.7%
Total Water Sales	37,623	37,068	555	1.5%	510,025	512,785	(2,760)	-0.5%
WASTEWATER	Gallons Sold (Thousands) Dec-19	Gallons Sold (Thousands) Dec-18	Volume Increase (Decrease)	Percent Increase (Decrease)	Gallons Sold (Thousands) Dec-19	Gallons Sold (Thousands) Dec-18	Volume Increase (Decrease)	Percent Increase (Decrease)
Residential	20,648	20,538	110	0.5%	240,172	237,874	2,298	1.0%
Commercial A	12,195	11,910	285	2.4%	148,963	146,911	2,052	1.4%
Commercial B	1,155	534	621	116.3%	15,131	15,161	(30)	-0.2%
Industrial A	1,769	1,685	84	5.0%	22,424	22,954	(530)	-2.3%
Industrial B	716	631	85	13.5%	8,454	7,198	1,256	17.4%
Industrial C	0	0	-	#DIV/0!	2,412	1,632	780	47.8%
Total Gallons Treated	36,483	35,298	1,185	3.4%	437,556	431,730	5,826	1.3%

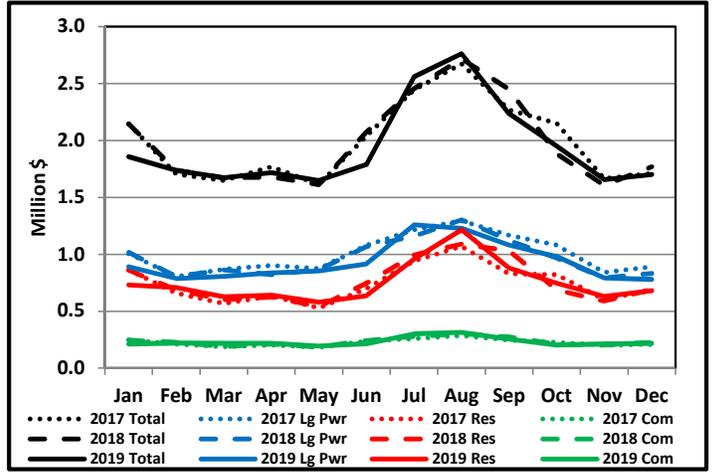
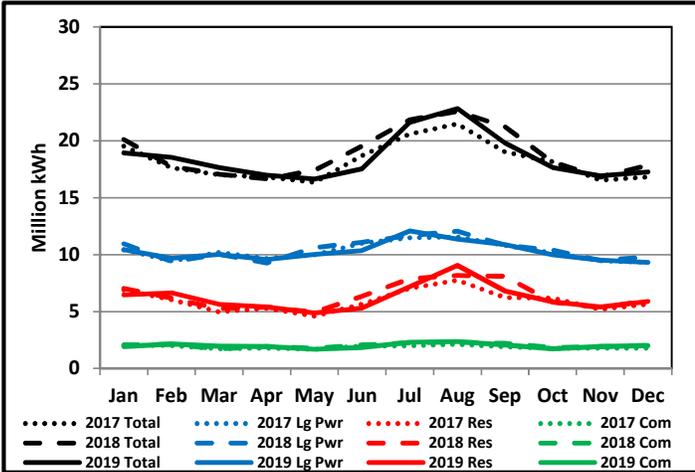
Note: Quantities sold are amounts invoiced during the month. Due to the timing of billing cycles, the amounts may not match consumption during the calendar month.
 Y:\Utility Billing\[Sales for Committee.xlsx]Dec 2019

Oconomowoc Utilities: Monthly Volume & Revenue Summary

Metered Volume Units

Metered Revenue Dollars

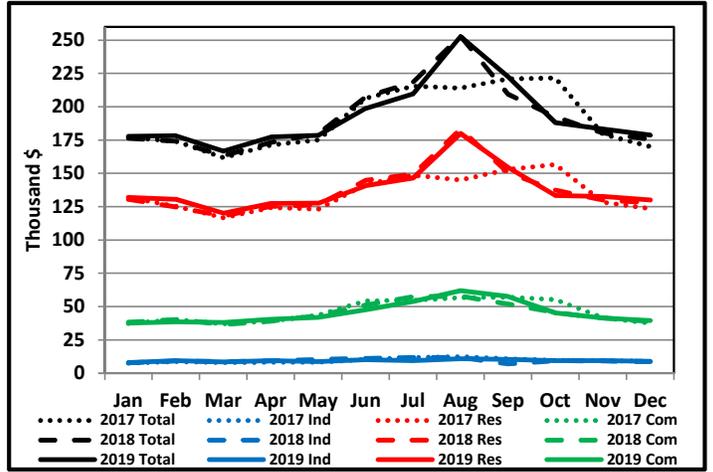
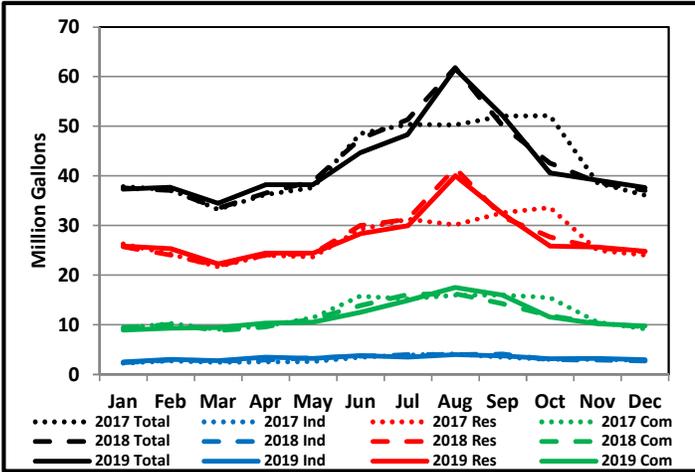
Electric



Note: Charts exclude non-metered revenue (pole attachments, etc.)

Note: Quantities represent amounts invoiced. Due to timing of mid-month billing cycles, line-loss, etc., amounts will differ from volume purchased from WPPI.

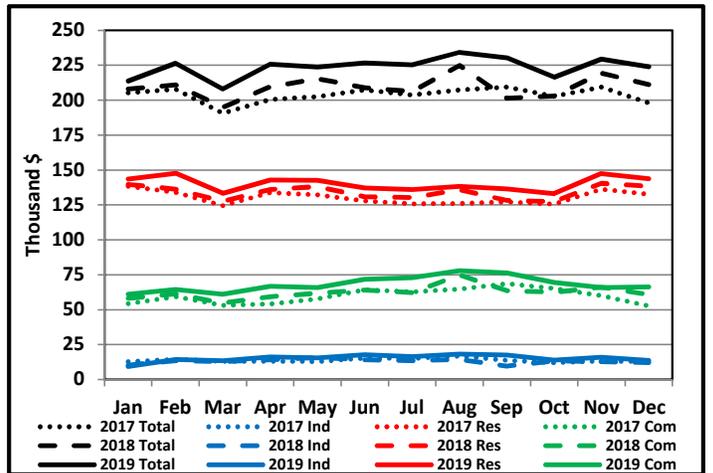
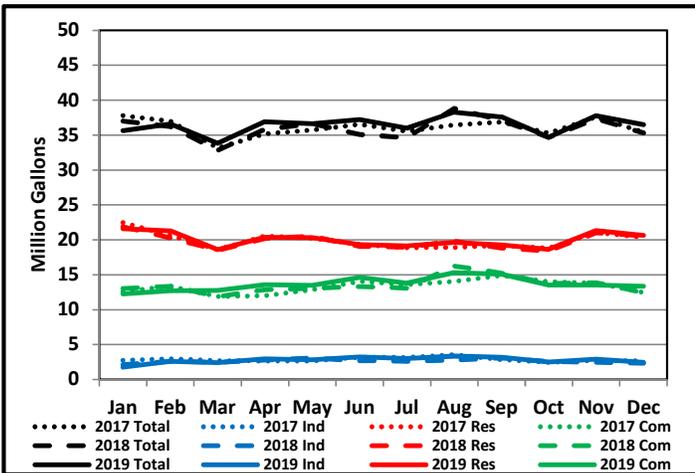
Water



Note: Charts exclude non-metered revenue (fire protection, etc.)

Note: Quantities represent amounts invoiced. Due to timing of mid-month billing cycles, main-breaks, etc., amounts will differ from volume pumped at well sites.

Wastewater



Note: Charts exclude adjoining sanitary districts and non-metered revenue (septic disposal, etc.)

Note: Quantities represent amounts invoiced. Due to timing of mid-month billing cycles, external sanitary districts, rain-seepage, etc., amounts will differ from volume received at treatment facility.

COMMITTEE REPORT – January 2020 Utility Billing



- **“Super” Electric Rates from WPPI** – The wholesale base rates at which WPPI sells electricity to its member communities are budgeted annually, and then further adjusted monthly for market fuel cost fluctuations. These rate changes are approved by WPPI’s board of directors, with participation from each member. The wholesale rates do not directly change the retail base rates that our electric utility sells power to our consuming customers. Our retail customer rates are adjusted and approved upon request to the Public Service Commission (PSC).

In 2018, WPPI began making rates more reflective of the predictable changes in supply & demand during the months within each year. Electric *demand* rates were adjusted higher in the peak summer months and lower in other months. *Demand*, measured in kW, represents a customer’s peak *single moment of* consumption during a month. Our larger commercial and industrial customers have an itemized *demand* charge on their invoice, while residential customers do not.

In 2020, WPPI is now implementing “super” changes to electric *energy* rates, literally. Electric energy, measured in kWh, represents a customer’s *cumulative* consumption during an *entire* month. WPPI previously invoiced us for *energy* in two categories, on-peak and off-peak, based on time of day and day of week. These are the same energy categories we invoice to optional residential and all larger commercial customers. Starting this month WPPI will add two additional energy categories; “super on” and “super off”. These categories will be further split by hour of day and now even month of year. (See the table on the next page.)

Again, these wholesale rates to us currently don’t directly impact the retail rates charged to our customers. Similar to the adjustments in 2018, the changes can indirectly make the net cost of power more expensive in the summer months, and less expensive other times of year when consumption is lower.

There is no immediate action for us to take. Our utility spends about \$18 million annually on purchased power from WPPI. Therefore, I thought it would be worthwhile to share some of the detail planning and consideration from WPPI to help ensure that energy costs are calculated and allocated appropriately. I serve as a member of WPPI’s Rate Services Advisory Group. These most recent changes have been in development for the past couple years. As customer metering technology continues to expand, the new data collected is being put to good use. Looking forward into the future, these changes may establish a foundation for potential future retail rates that could help customers save by finding the most efficient time to charge an electric vehicle, or conversely charge a premium for using power at peak moments when it costs the most.

- **Year End Reporting** – With the conclusion of 2019, we are now beginning preparing our various financial and operational reports, both for our financial audit and the operational Public Service Commission annual report. In the coming months, I will provide further details and statistics about the year recently completed.

John Schuh,
Utility Accounting Manager



Prior Energy Rates			New Energy Rates			
January - December			October - April		May - September	
Weekdays	Weekends & Holidays	Hour of Day	Weekdays	Weekends & Holidays	Weekdays	Weekends & Holidays
off-peak	off-peak	12:00 AM	super off	super off	super off	super off
off-peak	off-peak	1:00 AM	super off	super off	super off	super off
off-peak	off-peak	2:00 AM	super off	super off	super off	super off
off-peak	off-peak	3:00 AM	super off	super off	super off	super off
off-peak	off-peak	4:00 AM	super off	super off	super off	super off
off-peak	off-peak	5:00 AM	on-peak	off-peak	super off	super off
off-peak	off-peak	6:00 AM	on-peak	off-peak	off-peak	super off
off-peak	off-peak	7:00 AM	on-peak	off-peak	off-peak	super off
on-peak	off-peak	8:00 AM	on-peak	off-peak	off-peak	super off
on-peak	off-peak	9:00 AM	on-peak	off-peak	off-peak	super off
on-peak	off-peak	10:00 AM	on-peak	off-peak	on-peak	super off
on-peak	off-peak	11:00 AM	on-peak	off-peak	on-peak	off-peak
on-peak	off-peak	12:00 PM	off-peak	off-peak	on-peak	off-peak
on-peak	off-peak	1:00 PM	off-peak	off-peak	on-peak	off-peak
on-peak	off-peak	2:00 PM	off-peak	off-peak	super on	off-peak
on-peak	off-peak	3:00 PM	off-peak	off-peak	super on	on-peak
on-peak	off-peak	4:00 PM	on-peak	off-peak	super on	on-peak
on-peak	off-peak	5:00 PM	on-peak	off-peak	on-peak	on-peak
on-peak	off-peak	6:00 PM	on-peak	off-peak	on-peak	off-peak
on-peak	off-peak	7:00 PM	on-peak	off-peak	on-peak	off-peak
off-peak	off-peak	8:00 PM	off-peak	off-peak	off-peak	off-peak
off-peak	off-peak	9:00 PM	off-peak	super off	off-peak	off-peak
off-peak	off-peak	10:00 PM	super off	super off	super off	super off
off-peak	off-peak	11:00 PM	super off	super off	super off	super off

super on	150% of average annual rate
on-peak	120% of average annual rate
off-peak	100% of average annual rate
super off	70% of average annual rate

COMMITTEE REPORT – January 2020
Electric Utility



The following **projects** have been completed by January 15, 2020

- Street light change out from HPS to LED on all rental lights

Services:

- Crews completed 9 new service tickets.
- Customer calls: (*tickets that are not planned and affect scheduled work.*) 6, to include DC/RC, miscellaneous problems, service relocates, trouble calls that are not OMU's

- **Street Light Tickets: 8**

Traffic control lights:

- None

Training: Safety training with MEUW rep Randy Larson on January 22.

Major projects that have been started:

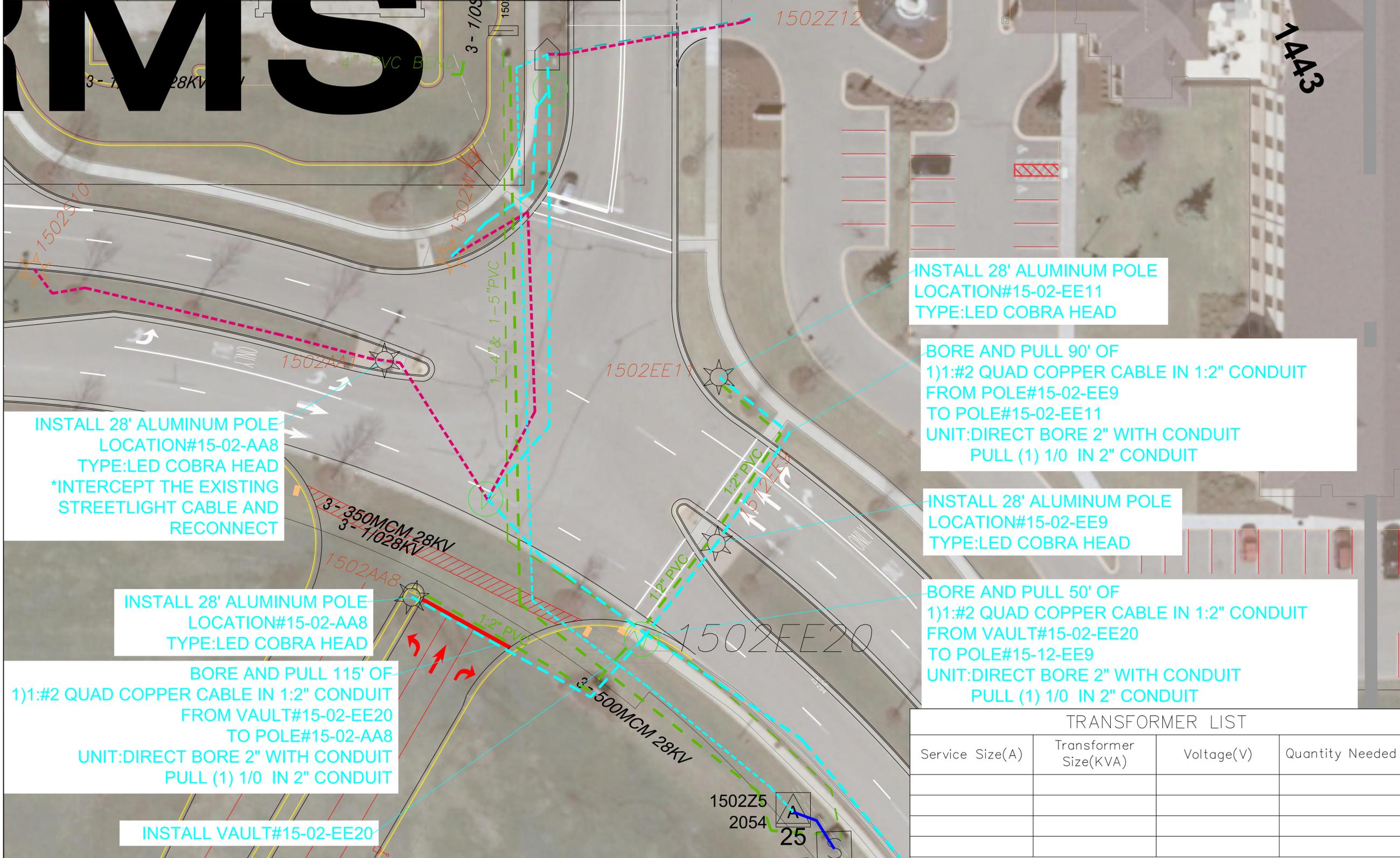
- Planned outages to convert customers to new underground system on Silver Lake Street
- New three phase service to Cornerstone Pub at 24 S. Main Street
- Finish three phase service at Tower Ridge apartments
- Line clearance around overhead power lines
- PSC inspections and field audits on circuits 73,74 and 86
- Ongoing oil sampling on Cooney Transformer eight Load Tap Changer
- PSC required periodic meter testing

Discussion Items:

- Intersection Lighting at Pabst Farm Circle and Fleet Farm West Access Road - The request to add street lights at the intersection near Fleet Farm has been reviewed by Utilities, DPW and the Engineering team to determine the best placement and design for proper lighting of the area. Easements, Right of Way and available power have all been considered and a request for quotes for the poles, arms and LED cobra heads are at the distributors. We are proposing to place five (5) black round tapered poles, two (2) with double arms and three (3) with single arms, all with black LED cobra head style lights at points within the intersection as illustrated on provided drawing/map.

O:\GIS\ELEC_SYS\2020_WO\WO_320900 - Mills Fleet Farm Streetlights\Plans\Work Order Base.dwg

CONTRACTOR BORE				
Work Order#	Description	Price(\$)/FT	Footage	Total



ECONOMOWOC
 808 S. Worthington Street
 Oconomowoc, WI 53066
 (262) 569-2196

MILLS FLEET FARM
 Project Location:
 OCONOMOWOC, WI 53066

Revisions				
1	2	3	4	5

Work Order#:320900
 Estimate#:

Date:
 01-17-2020

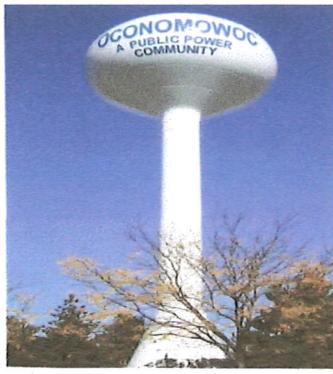
Drafted &
 Designed By:
 DDT

Checked By:
 LJC

Sheet No.
 01

TRANSFORMER LIST

Service Size(A)	Transformer Size(KVA)	Voltage(V)	Quantity Needed



COMMITTEE REPORT- January- 2020 Water Utility

The following are updates for ongoing projects:

- Well 8 Pumping Station – Engineering RFP for design and bidding services
 - Strand Associates revised contracts and task orders for execution per Attorney Riffle
- Powerhouse Building – Sanitary sewer lateral replacement work scheduled

Customer Interactions:

- 6 new meters were installed last month and 3 meter issues were addressed

Training:

- MEUW – ongoing monthly topics

Specialty Work:

- Inventory – Complete
- Frozen water lateral letters – Sent to homes that have historically froze (95)
- Water Quality Report (CCR) – preparing draft for customer wide mailing
- Interviews – Water Forman and First-Class Water Operators
- Investigate need for outside contract quotes – large water meter testing and cross connection control backflow prevention testing of City owned devices (25)

Respectfully submitted:

A handwritten signature in blue ink, appearing to read 'Scott Osborn', with a long, sweeping underline.

Scott Osborn P.E.

Water Superintendent

Wastewater Operations Summary

January 2020

Precipitation for December 2019 was 1.84" and as of January 20, 2020 we had 1.10". The Influent flow average for December was 2.71 MGD. The average flow for January 2020 is 2.661 MGD.

Permit parameters for December are as follows:

Parameter	Influent	Effluent	Permit Limits	% Reduction
BOD - mg/l	197	2.1	15	98.9%
TSS - mg/l	200	1.2	15	99.4%
Phos. - mg/l	4.41	.70	0.95	84.0%
Fecal - col/100ml	X	X	400#/100ml	Not run till spring
Amm. N - mg/l	14.0	.11	N/A	99.0%

Hydraulic Capacity Study Final Report has been submitted to the City

RFQ was sent out to do the load bank testing and RICE NESHAP testing on the WWTP Emergency generator with a closing date of Jan 22

RFP for Biosolids hauling was sent out for a 1-3-year contract with a closing date of February 6

RFP for the Digester Cover replacement and HVAC work at the WWTP was sent out with a February 6 closing date

The WDNR has submitted the WWTP permit to the EPA and it will be out for Public Comment shortly. They are now looking a July 1, 2020 for permit reissuance