City of Marco Island

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| Meeting Date: | Nov. 9, 2020 |
| To: | City Council |
| From: | Jeffrey E. Poteet, General Manager- Water & Sewer |
| Through: | Mike McNees, City Manager |
| Re: | Water and Sewer (W&S) Departmental Report |

Both the City's drinking water and wastewater operations follow Florida Department of Environmental Protection (FDEP) regulations and all other regulatory entity requirements. The Water and Sewer (W&S) Department is operating within the approved budget.

**Yellowbird Street Roadway and Utility Reconstruction Project**

Construction is in progress. The contractor completed the installation of the proposed underground 8-inch diameter PVC water main from Bald Eagle Drive to Collier Blvd along Yellowbird Street. The contractor continues with the installation of the proposed underground 10-inch diameter PVC raw water main via open/cut. The contractor is also removing the existing raw water main. The contractor milled the existing road. This project is on schedule and is within the approved budget.

**SWTP VFD Control Room Air Conditioning System Replacement**

The South Water Treatment Plant (SWTP) second floor electrical control room houses six variable frequency drives (VFD) for the reverse osmosis (RO) water treatment membrane feed pumps. The air conditioning system for the VFD room has failed and is beyond its service life. The backup cooling system is not able to meet the cooling load demand.

The City publicly bid the replacement of this air conditioning system. The bids were opened on 10/15/20. The award of contract will be presented at the 11/9/20 City Council Meeting.

The work includes the replacement of the existing air conditioning system including air handlers, condensers, control system, ducts, drain piping, and electrical as needed.

**Grease Damage Prevention Program**

The renewal period for the FY21 annual Grease Trap Permit is 8/1/20 through 11/1/20. There will be no fee for the permit during that period. Permits submitted after 11/1/20 will be assessed a non-compliance fee of $250 on their Water/Sewer billing account. Renewal packets were sent out to all Food Service Facilities (FSF) by regular mail and frequent e-mail correspondence. The renewal permit is also available for download on the City's website. There are 104 active FSFs (4 new applicants) in the City's Water and Sewer Service area. As of 10/20/20, there are 40 permit renewal applications received.

**NWTP Membrane Filtration Replacement**

The City publicly bid the purchase of membrane modules to replace the membranes on racks 2, 3, and 4. The bid was posted on 8/24/20; 1,075 suppliers were notified of this bid; 18 suppliers downloaded the bid documents; and three suppliers submitted bids on 9/24/20. The following is the tabulation of the bids:

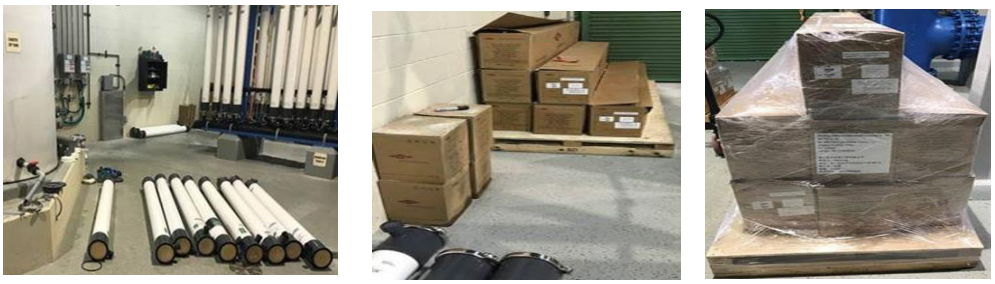
| Bidder | Amount |
|---|---|
| Scinor Water America, LLC | $ 235,950.00 |
| Toray Membrane US | $ 297,456.40 |
| Pall Water (Danaher Corp) | $ 381,831.43 |

City staff evaluated the bid submittals and determined that the submittals from Scinor and Toray did not meet the requirements of the bid. The bid required 20 successful similar installations of 10 years or more in public water systems with a treatment capacity 2 MGD or more. The bid also required "centrifugal" membrane potting to eliminate a repeat of membrane failures and reduced water treatment capacity experienced by the City after a purchase of membranes in 2017, as described below.

Pall Water was the only bidder that met the requirements of the bid. Pall membranes have a proven track record of reliable long-term performance in this type of system with minimal defects.

*Problems with Membranes Purchased in 2017:*

In 2017, the City purchased 72 membrane modules manufactured by Filmtec Corp (a subsidiary of Dow Chemical which is now DuPont) to replace the membranes on rack #1. By September of 2019, all 72 of the newly installed DuPont membrane modules had to be replaced because of membrane failures, leaks, and defects. Subsequently DuPont shipped 17 new membranes to replace the defective replacement membranes. To this date the replacement membranes continue to fail, crack, and develop leaks. City water treatment operations staff has spent numerous hours troubleshooting, repairing, and replacing these faulty membranes. As of today, only 59 of the 72 membranes are in use, and the City is continually having to ask DuPont to send replacements for the defective membranes. This process is lengthy since DuPont requests that the City return the membranes to DuPont headquarters in Minnesota for analysis. DuPont then ships replacement membranes from their manufacturing facility in China after they analyze the returned membranes. Then, shipping from China can take six months or more. Meanwhile, the City's water treatment capacity is diminished.



(*These photographs are of the defective DuPont membrane modules that were removed and photos of rack #1 with only 59 of the 72 membranes installed.)*

For this reason, the City added the successful installation, years in service, and membrane potting requirements to the current bid specification. The City cannot risk jeopardizing the City's water treatment capacity and supply with the installation of unproven membranes, which are prone to failure. Scinor submitted a protest to the City for rejecting their bid. However, Scinor's bid did not meet the requirements of the bid, and Scinor's protest did not comply with the City's ordinance for timeliness of the formal bid protest submittal.

| Water Service Interruptions with Boil Water Notice (BWN) | | | |
|---|---|---|---|
| Month | Number of Service Calls Resulting in a BWN | Total Number of Customers Affected in the Month | Large Interuptions 50 Customer or More |
| Oct-19 | 4 | 230 | 1 Condo 125 Units |
| Nov-19 | 5 | 123 | |
| Dec-19 | 4 | 128 | |
| Jan-20 | 7 | 379 | 2 Condos 66 Units-21 Commerical |
| Feb-20 | 1 | 14 | |
| March-20 | 2 | 76 | 1 Condo-57 Units |
| April-20 | 2 | 75 | 1 Condo-57 Units |
| May-20 | 2 | 19 | |
| June-20 | 2 | 39 | |
| July-20 | 2 | 57 | |
| Aug-20 | 4 | 216 | Jamaica/Echo area |
| Sept-20 | 9 | 236 | Yellowbird-60 |


# Treatment Plant Data

Starting Date: **9/1/2020**

Ending Date: **9/30/2020**

Rain Fall for Time Period **18.20** Inches

**A**verage **D**aily **F**low (ADF)

**M**illion **G**allons per **D**ay (MGD)

"U" Undetected - results below detection limit

## Aquifer Storage & Recovery

| | | | |
|---|---|---|---|
| ASR - Injection Avg. Daily Flow | **6.40** MGD | Sep-20 | |
| ASR - Recovery Avg. Daily Flow | **0.00** MGD | | |

## Marco Island Drinking Water

| | | Max Day | Max Day | Flow |
|---|---|---|---|---|
| Combined Consumer ADF | **6.84** MGD | 9/29/2020 | **11.09** | MGD |
| NWTP Consumer ADF | **3.14** MGD | 9/23/2020 | **4.40** | MGD |
| SWTP Consumer ADF | **3.69** MGD | 9/29/2020 | **8.41** | MGD |

**Finished Water Testing**

Minimum Chlorine Residual **0.00** mg/L

| | Maximum | Minimum | | | Maximum | Minimum | |
|---|---|---|---|---|---|---|---|
| Turbidity | **0.01** | **0.01** | NTU | Chlorides | **124** | **82** | mg/L |
| Total Dissolved Solids | **268.00** | **246.00** | mg/L | Color | **6** | **2** | mg/L |
| P-Alkalinity | **7.00** | **2.00** | mg/L | Phosphate | **0.94** | **0.78** | mg/L |
| M-Alkalinity | **39.00** | **34.00** | mg/L | Ammonia | **0** | **0** | mg/L |
| Cal-Hardness | **90.00** | **70.00** | mg/L | Aluminum | **0.1** | **0.08** | mg/L |
| Total Hardness | **120.00** | **100.00** | mg/L | pH | **8.89** | **8.62** | SU |

## Sep-20 Wastewater - RWPF

| | Average Flow | | Monthly Max Day | | Monthly Testing | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Influent | Effluent | |
| Influent | **2.34** | MGD | **9/12/2020** | **4.907** | | | | |
| Reuse | **1.68** | MGD | **9/25/2020** | **2.67** | BOD | **152.4** | **2.00** | **mg/L** |
| Deep Well | **0.695** | MGD | **9/11/2020** | **2.585** | TSS | **102.2** | **0.6 U** | **mg/L** |
| | | | | | NO3 | **NA** | **6.64** | **mg/L** |