



City of Marco Island

Meeting Date: January 8, 2024
To: City Council
From: Jeffrey E. Poteet, General Manager- Water & Sewer
Through: Mike McNees, City Manager
Re: Water and Sewer (W&S) Departmental Report

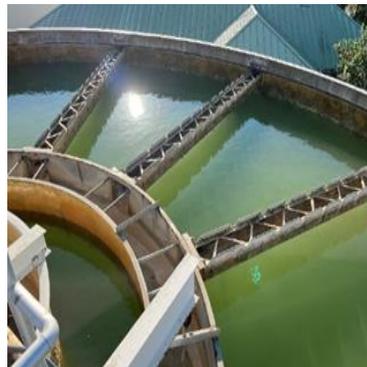
Both the City's drinking water and wastewater operations follow Florida Department of Environmental Protection (FDEP) regulations and all other regulatory entity requirements. The Water and Sewer (W&S) department is operating within the approved budget. Below is a summary of department activities during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

North Water Treatment Plant (NWTP) Lime Reactor Cleaning

The City's raw surface water is treated to reduce the water's hardness through the lime softening process. Raw surface water is mixed with hydrated lime along with alum (aluminum sulfate) in a vessel known as a "lime reactor". The lime reactor process allows the bicarbonate in the water to precipitate and settle out, reducing the level of hardness. As the precipitate settles with the lime sludge, scaling forms in the reactor vessel. Over time, these deposits buildup on the reactor surfaces, pipes, and other components, reducing the effectiveness of the treatment. Periodic cleaning of the lime reactor is necessary to maintain optimal performance.

The lime reactor tank cleaning is a crucial component of the NWTP's annual maintenance program. Effective preparation, coordination, and planning are imperative weeks in advance, given that this process necessitates the temporary shutdown of treatment production for at least 12 hours. The cleaning procedure is labor intensive and intricate, involving thorough attention to every component of the reactor, including the center mixing column (both top and bottom), weirs, walls, etc. These elements tend to accumulate calcium particles as a result of the flocculation and sedimentation processes, making the cleaning process time-consuming but essential.

In November, the lime reactor was drained, exposing the walls, weirs, mixing chamber, and lime sludge collection mechanism. Staff entered the reactor and used pressure washing equipment to remove the scale buildup from the exposed areas. Substantial accumulations of calcium deposits were shoveled into a collection basket and the basket was removed by crane. Staff completed the reactor cleaning and placed the reactor back in service.



Reclaimed Water Production Facility (RWPF) Rotary Drum Screens Rehabilitation

Prior to sewage entering the treatment process, the influent wastewater passes through three 2mm, in-channel rotating drum screens. These screens are part of the pre-treatment process and are designed to remove solids and debris from the wastewater influent stream. The solids removed from the wastewater stream

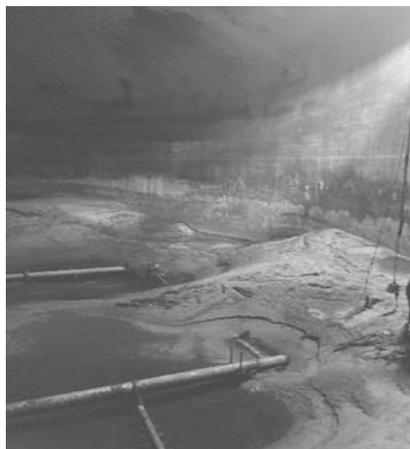


are dewatered and placed in dumpsters for disposal in a landfill. The wastewater influent stream is a harsh environment that damages this equipment. The screens are inspected annually, and parts are replaced as needed. This year's inspection identified the need to replace the solenoid manifold valves and various parts on the rotary drum screens that were damaged. The rehabilitation consisted of the removal of the screen from the headworks channel (located 30 feet high), pressure wash the screen, lift the screen with a crane, replace all the wearable parts, reinstall the screen back to the channel and place the screen back into service. The removal, repair, and replacement of each screen was done individually. On 6/26/23, the City Council approved the purchase order to rehabilitate these influent screens in the amount of \$87,410.69. These repairs were done on time and within the approved budget.

Reclaimed Water Production Facility (RWPF) Influent Storage Tanks Cleaning

After the preliminary pre-treatment and screening phase but before the initiation of wastewater treatment, sewage is stored in four 500,000-gallon tanks. Post-screening, the influent sewage is temporarily stored in these tanks. Over time, sand, debris, and sludge settle within, necessitating routine removal to maintain storage capacity and prevent undue wear on mechanical equipment. Consequently, these tanks undergo periodic cleaning, encompassing the dewatering of the tanks and the careful extraction and proper disposal of sand, debris, and sludge originating from both the sanitary sewer collection system and the wastewater treatment process.

The tank cleaning process began in November and spanned over six consecutive weeks. Each tank had accrued more than 3 feet of grit and sand at the bottom. Utilizing vac-con trucks, the debris was removed, dewatered, and transported to a certified landfill facility in Okeechobee for environmentally responsible disposal. Once most of the sediment was extracted from the tank bottom, high-pressure water was strategically employed at entry points along the drainage pipes to flush out sediment, cleanse the pipes, and vacuum residues from both the tank and around the diffusers. This meticulous cleaning procedure ensures the optimal functionality of the tanks and contributes to the overall efficiency of the wastewater treatment system. On 10/2/23, the City Council approved the purchase order to clean these tanks in the amount of \$446,059. The tank cleaning was done on time and within the approved budget.



Pre-cleaning



Post-cleaning

Grease Damage Prevention Program

Food Service Facilities (FSFs) are required to submit renewals for the annual grease damage prevention (GDP) permit from August 1 to November 1 each year. There are 99 active FSFs operating within the Water and Sewer district which includes Isles of Capri and Marco Shores.

There is no fee for the GDP permit if submitted by the deadline of November 1st. To date we are at 99 percent of submittal. The permits submitted were reviewed, approved, and issued.

There is still 1 facility that did not submit a permit renewal application. A 10-day written notice was sent to this facility requesting submittal of the permit application with all required documentation. To date, there has been no response from the facility. Fees of up to \$500.00 will be assessed for continued non-compliance.

Water Service Interruptions with Boil Water Notice (BWN)			
Month	Number of Service Calls Resulting in a BWN	Number of Customers Affected in the Month	Large Interruptions 50 Customer or More
Dec-22	3	59	
Jan-23	5	248	Mimosa-85/ Royal Ma
Feb-23	3	116	Stone Court-51
March-23	4	71	Marco Academy
April-23	1	16	
May-23	2	47	
June -23	2	117	Seaview-220
July-23	7	564	Somerset-122, Shalimar -247
Aug-23	6	317	Grand Bay Condo-60, Gulfport 93, Mainsail 88.
Sept-23	5	378	1065 Borghese 123; 991 Barfield 60;1150 N. Collier 76;1310 Auburndale 52.
Oct.23	4	190	1065 Borghese 123.
Nov-23	2	52	



Treatment Plant Data

Starting Date: 11/1/2023 Rain Fall for Time Period 5.10 Inches
Ending Date: 11/30/2023

Aquifer Storage & Recovery		Average Daily Flow (ADF)	
		Million Gallons per Day (MGD)	
ASR - Injection Avg. Daily Flow	1.36 MGD	Nov-23	
ASR - Recovery Avg. Daily Flow	0.00 MGD	"U" Undetected - results below detection limit	
Marco Island Drinking Water			
		Max Day	Max Day Flow
Combined Consumer ADF	10.21 MGD	11/11/2023	11.73 MGD
NWTP Consumer ADF	3.89 MGD	11/21/2023	4.74 MGD
SWTP Consumer ADF	6.31 MGD	11/9/2023	7.68 MGD
Finished Water Testing			
Minimum Chlorine Residual		0.60 mg/L	
	Maximum	Minimum	Maximum Minimum
Turbidity	0.01	0.01 NTU	Chlorides 145 134 mg/L
Total Dissolved Solids	436.00	321.00 mg/L	Color 8 3 mg/L
P-Alkalinity	6.00	4.00 mg/L	Phosphate 0.68 0.06 mg/L
M-Alkalinity	40.00	31.00 mg/L	Ammonia 0.85 0.66 mg/L
Cal-Hardness	100.00	84.00 mg/L	Aluminum 0.08 0.04 mg/L
Total Hardness	128.00	114.00 mg/L	pH 8.85 8.53 SU
Nov-23 Wastewater - RWPF		Monthly Testing	
	Average Flow	Monthly Max Day	Influent Effluent
Influent	2.37 MGD	11/15/2023 3.72	BOD 152.2 1.00 mg/L
Reuse	2.12 MGD	11/24/2023 2.72	TSS 146.4 0.6 U mg/L
Deep Well	0.325 MGD	11/16/2023 1.656	Total N NA 7.47 mg/L
			Total P 18.8 3.22 mg/L

*The wastewater influent total phosphorous result for 11/1/23 was 70 mg/L (typically under 10mg/L)