

# RECOVERY ZONE

SUMMER

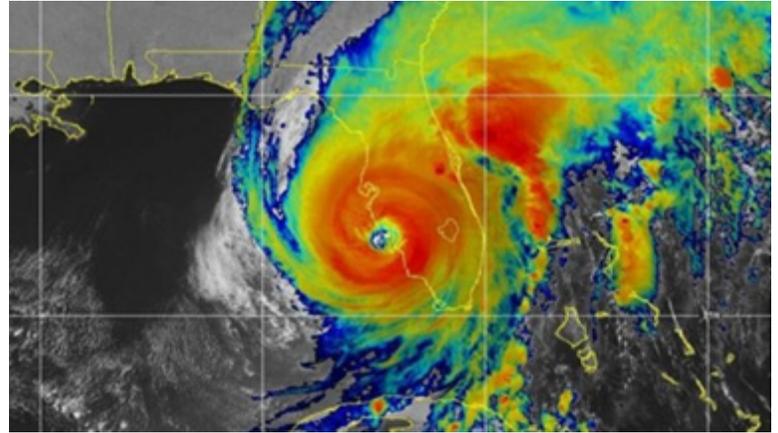
2023

## Responding to Nature's Fury with Teamwork, Talent, and Tenacity

Author: Kevin Carter, Broward County, FL, Water & Wastewater Services

As you might expect, water and sewer systems throughout Hurricane Ian's path suffered much damage. Florida's water sector primarily coordinates through the Florida Water and Wastewater Response Network (FlaWARN) during emergency events. Formed in April 2005, due to the very active 2004 hurricane season, FlaWARN's primary purpose is "to coordinate initial communication between member utilities to ensure the responding utility sends the appropriate personnel with the tools and equipment necessary to both assess and assist the impacted utility." The motto is "utilities helping utilities" and the ones who help those in need are "paying forward" for that day when they are hit by a disaster.

As a member of the FlaWARN Steering Committee, we organize and coordinate which resources, including utility personnel, are deployed to what locations. We track resources throughout their deployment until they are back home. FlaWARN coordinates closely with the Florida Department of Environmental Protection (FDEP) who is our contact at the State of Florida Emergency Operations Center. Due to Hurricane Ian's wide span, FDEP was especially engaged in the event and even their Secretary Shawn Hamilton was at ground zero for over a week. FlaWARN and FDEP also operate a web-based software platform called WATER Tracker, which is a clearinghouse of information after a storm including utilities' status, needs, and available resources.



Hurricane Ian



Broward County's Response Team Recognized by their Operations Director.



Miami-Dade County's Response Team gets set to respond to Fort Myers Beach.

As the SE Regional coordinator, I had the great privilege to coordinate with over 25 utilities, primarily in our Tri-County area, who were willing to assist in some way. We held daily meetings through the storm's first 10 days to coordinate and organize our response with the Steering Committee and impacted entities. We deployed over 100 personnel with much equipment (e.g., generators) and supplies from 14 SE utilities to the Southwest Coast over a period of about two and a half weeks. At least another 10 SE utilities were raring to go if needed. Overall, over 300 personnel from around the State were in the SW Coast during

*Continued on page 3>*

# MESSAGE FROM OUR PRESIDENT

Welcome Desalters! A year of presidency has passed with the amazing help of my board members and friends as well as words of wisdom from former board members. SEDA will continue reaching out to everyone so we can make our job of purifying water an easy and successful process. Our Annual Symposium is here, a place where we can finally get together to share our achievements. Just like a record album, we have reached the end, and it's time to take in all the good vibes from Side A and flip to Side B for another spectacular session.

This past year, we featured many great tracks that included updating our mission statement to encompass potable reuse, implementing a digital newsletter, boosting LinkedIn posts, increasing membership growth beyond the state of Florida and remaining financially sound. We are striving to become more engaged with regulatory agencies but some things take time to flourish. Symposium costs unfortunately increased due to higher food prices. To help offset these economic obstacles, the Board of Directors have introduced price reductions to young members for symposiums and workshops and added the Platinum Symposium Sponsorship Level which helped lower the other price levels.

This coming year on Side B, new tracks will be featured during the Strategic Plan Meeting being held during our upcoming Board of Directors Meeting on the last day of the symposium. Topics of discussion will include creating a website blogging opportunity, mailing of quarterly postcards for a non-digital touch and understanding how SEDA can maintain the uniqueness of a hit song as membership growth exceeds the 900 mark again. Maybe it's time for hosting an Annual Fall Symposium for our out-of-state members seeing that the number of RO facilities is growing rapidly. A foothold in the Carolinas could be a great place to start!

In conclusion, not all record albums come without the occasional skip. Therefore, proper upkeep of the player is essential. SEDA is successful because of the great membership that sharpens the needle to keep the music flowing like the water we purify. Thank you all for your continued support. I hope to live the Desalt Life with you in Delray Beach 2023!

Take care,

Pierre



< *continued from cover*

some portion of the FlaWARN response. These “Water Heroes” worked very long, hot hours in strange places with people who were still in shock from having their daily lives in paradise disrupted by nature’s fury. They then plopped down on a cot each night and tried to get some rest while thinking of their loved ones back home. Here are some photos of our great teams that deployed. As we always say...Hope for the Best and Prepare for the Worst!



Sanibel Causeway damage from Hurricane (Lee County Sheriff's Office footage from WLPG Channel 10 video)



JEA's Response Team crosses over a bridge on their way to Sanibel Island during a State of Florida Hurricane Ian Update Press Conference illustrating we may work behind the scenes, but we will return your community's most precious service – water – if you are impacted by a disaster.



Miami-Dade County's Rolday Chavez dives into work on devastated Fort Myers Beach.



# Role of Membrane Technology in Jackson, MS Water Crisis Recovery

An interview with Graham MacDonald

Author: Jaclynn Levy

In September 2022, Mount Pleasant Waterworks (MPW) responded to a call for assistance through the Emergency Management Assistance Compact (EMAC) to help Jackson, Mississippi, restore clean drinking water to its community. Four MPW employees volunteered their time and talents over the course of 18 days, including water operators Graham MacDonald and Raoul Edjoo and pump mechanics Jerrard Pusha and Quinn Tolbert.

I sat down with MPW's Graham MacDonald to dive deeper into the story and discuss his team's role in repairing membrane technology at one of Jackson's plants.

## 1. Why was MPW selected to assist in the Jackson water crisis?

MPW has a history of responding to natural disasters. We've responded to hurricanes in Florida and the Bahamas and flooding in Columbia, SC. In the case of Jackson, they had a specific need for water treatment operators with membrane experience, which is the method of treatment we use at MPW.



## 2. Does Jackson use the same membrane technology as MPW?

We use reverse osmosis (RO) and operate four R.O. plants with a combined production of about 6.5 MGD. In Jackson, the O.B. Curtis treatment plant had two methods: conventional filtration and membrane. On the membrane side, they used ultrafiltration membranes consisting of racks divided through 6-trains with a combined possible production of 26 MGD. This was different from what we use at MPW, but the same principles of membrane operation, such as running clean units and monitoring flows and pressures, still applied. Also, the physical assets, such as the pumps and actuators, were all very similar.

## 3. What are the main differences between the two technologies?

Reverse osmosis offers a higher rejection rate of contaminants than ultrafiltration and operates at a higher pressure. Both utilize pressure to force water through a semipermeable membrane creating an area of higher contaminant concentration on one side of the membrane. The ultrafiltration technology at Jackson uses hollow fiber membrane technology and pulls water through the membranes. At MPW, we use reverse osmosis membranes, and water is pushed through the membranes.

## 4. What are some key factors that affect the performance and efficiency of RO membranes?

Key factors are source water quality, effective pretreatment, and membrane quality. Pretreatment of the source water to improve the quality prior to loading the membranes can extend the life of the membranes and greatly improve operations.

## 5. What challenges did your team face with Jackson's membrane technology when you first arrived?

When we got to Jackson, one of the first things we saw was that the ultrafiltration membranes were in a very poor state. Due to the recent flooding of the Pearl River, their source water was high in turbidity and debris. This wreaked havoc on the hollow fiber membranes. They had a lot of holes in them, and they would fail their membrane integrity test (MIT). They were dirty, and the pressure difference on the trains was high. The trains were also in flow control mode, attempting to hit a max flow set point. They were not producing much water and couldn't continue to operate in this condition. We knew cleaning them would go a long way to fix this situation.

## 6. How did you go about cleaning the membranes in Jackson?

Even though the ultrafiltration trains were in very poor shape, we agreed that we could only take one down for 12 hours at a time to clean. The manufacturer supplied us with a spec sheet that said they could put up to 1,000 ppm (parts per million) sodium hypochlorite on the membranes to remove organic fouling. The main foulant was organic matter from the Pearl River. Once we got our hypo delivery, we craned up totes and poured them in until we got a concentration of about 600 ppm. We left that for eight hours, drained it, and refilled the train until we could see it was visibly clean. We put it back in service and saw that the pressure had dropped significantly, indicating that the cleaning was successful. We could now reach the desired gallons per minute (GPM) without the train faulting out.

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### 7. How do you maintain and clean RO membranes?

When running reverse osmosis membranes, you monitor and record your flows, pump speeds, and pressures daily. You're monitoring this continuously to see any change, which could indicate possible fouling. Rising feed pressures and a rising differential pressure (delta p) between your RO feed and RO concentration will let you know it's time for cleaning. Another important task is the assessment of your pretreatment and source water. It's typically a process that will occur over months or even years.

### 8. How do ultrafiltration and RO compare in terms of effectiveness and maintenance requirements?

Jackson had a 6-train ultrafiltration system manufactured by SUEZ. They had an estimated production of 25 MGD, but they were producing less than half of that at the time of the crisis. Ultrafiltration requires more frequent cleanings than RO because it deals with water with higher turbidity, so it will foul up much quicker than RO. Typically, RO feed water should be very low in turbidity with effective pretreatment preventing physical obstruction and decreasing the need for frequent cleaning. Overall, maintenance and effective operation are very dependent on source water quality.

### 9. What advice would you give someone responding to an emergency crisis?

My advice is to remember your training and the basic rules and information you learned in passing your licenses. Also, remember, it's not just you responding but your whole utility, so you have many resources and knowledge just a phone call away. Be sure to ask questions and include the entire team when needed. Also, remain calm and take your time. You typically don't have access to many spare parts or materials, so what you have on hand needs to remain operational. Finally, emergency response missions are very dangerous situations, and high awareness of safety is important. Verify what you're being told and always keep alert.





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# SAVE THE DATE

*2023 Annual Symposium*



Opal Grand Resort,  
Delray Beach FL  
June 25th –28th, 2023



# SEDA

## 2023 ANNUAL SYMPOSIUM



### ATTENDEES

1

- 147 individuals attended in 2022
- The most attendees at SEDA Symposium was 167
- Attendees include Operators, Operators, Engineers, and industry Suppliers/Manufacturers

### SPEAKERS

- There is typically 33 speakers at each Symposium
- Speakers include individuals from across the water sector
- The Program Committee reviews and selects speaker abstracts.

2

### SPONSORS / EXHIBITORS

3

- 16 Sponsors and 18 exhibitors were present at the 2022 Symposium.
- Without our sponsors we would not be able to produce this event. THANK YOU!

### SCHOLARSHIPS

- \$2,500 is awarded annually to undergraduate and graduate students
- University of Central Florida students have received the most scholarships

4



# WELCOME TO OUR NEW MEMBERS



## **LUIS ACOSTA**

CITY OF OCALA WATER RESOURCES

## **ANDREW ARLOTTA**

CITY OF PALM COAST - WTP #1

## **RON COOK**

CITY OF PALM COAST - WTP #1

## **SHANNON MORELEWICZ**

CITY OF PALM COAST - WTP #1

## **NOAH FONTENOT**

CITY OF PALM COAST - WTP #3

## **RAY WIEBER**

CITY OF PORT ST. LUCIE

## **ROSS BLAND**

CLAY COUNTY UTILITY AUTHORITY

## **PAM BROTHERIDGE**

FLORIDA RURAL WATER ASSOCIATION

## **LILIANA MUNOZ**

GENESYS

## **MIKAYLA ARMSTRONG**

NALA MEMBRANES

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# Florida Water and Wastewater Reciprocal Licensure Legislation

Author: Pierre Vignier, City of Pt. St. Lucie

Who: The State of Florida.

What: House Bill 23 and Senate Companion Bills directs the Department of Environmental Protection (DEP) to issue reciprocal licenses to water utility workers licensed in other jurisdictions and other license applicants who meet certain requirements.

When: House Bill 23 has passed State Legislature and is now waiting to be sent to the Governor for signature.

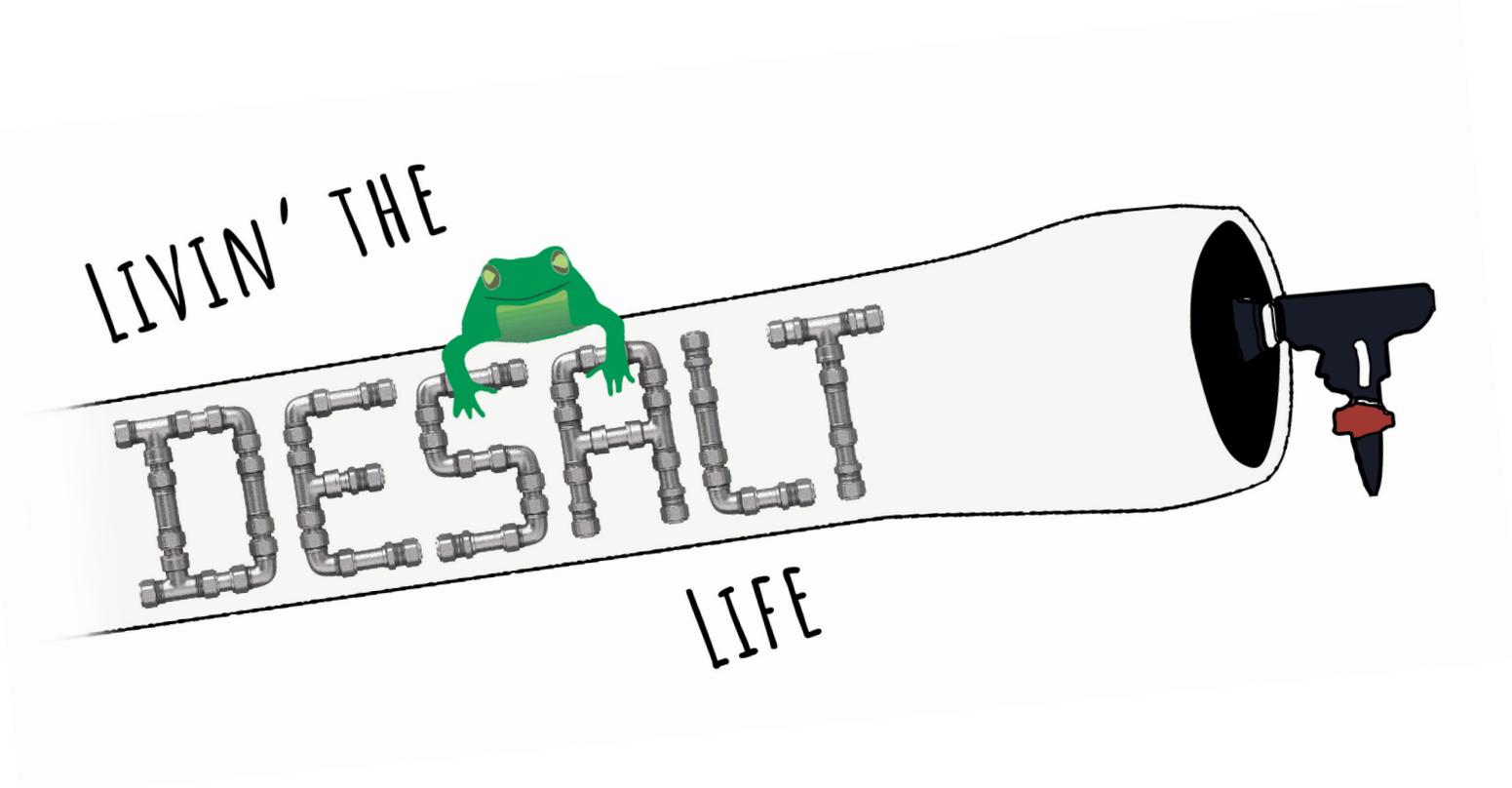
Where: Public drinking water systems and wastewater facilities under regulatory rule of the DEP.

Why: Ensuring a pool of qualified and certified operators is essential to addressing the workforce needs of water utilities. Florida is one of only three states that do not offer reciprocal licensure for operators of water treatment plants or water distribution systems and is one of two states that do not offer reciprocal licensure to operators of domestic wastewater facilities.

How: Under the authority from the Florida Safe Drinking Water Act and State of Emergency Management Act, the DEP shall uphold to the health and wellbeing for all citizens by issuing reciprocal licensure in any of the three conditions.

- 1) A current operator license holding an active or valid status.
- 2) Applicant who has performed duties comparable to a water treatment plant operator, waster distribution system operator, and of domestic wastewater treatment plant operator while serving in the U.S. Armed Forces.
- 3) During declared state of emergency pursuant to section 252.36 of Florida Statutes, temporary license may be issued who meet the requirements for licensing.

Resource Cite: <https://www.flsenate.gov/Session/Bill/2023/23>



# MEMBER SPOTLIGHT

**1. How did your career in the Water or Wastewater Industry get started?**

I was working as a commercial diver/ dredge operator with Hillsboro Inlet, some dredge spare parts were kept at a water treatment plant and they needed a person to run water quality tests during the weekends. The condition was to start up with the University of Sacramento workbook and complete it within a year which I did.

My interest in wastewater was sparked at a conference in Connecticut by a presenter that had visited plants throughout Asia. He was passionate about this field and asked us to give it a chance. Little a knew that there was so much to admire about these microbes and the important work they perform for the community.



**2. How long have you been a member of SEDA?**

Since 2010 Pompano Beach MOC class

**3. How did being a member of SEDA benefit you? What did you enjoy the most about SEDA?**

The quality of presenters, material covered, and group visits to different plants have helped many operators widen their knowledge in the field.

**4. What do you enjoy doing in your free time?**

My joy comes from spending time with my son and friends out on the boat. Giving people the opportunity to experience SCUBA diving and snorkeling. I also enjoy showing friends breathing techniques and meditation (Kriya Yoga)

**5. What is the most recent book you have read or a concert you have been to?**

Recent book. Autobiography of a Yogi by Paramahansa Yogananda. Recommended by Steve Jobs Concerts. Gipsy Kings and U2.

**6. What advice do you have for the younger generation in the beginning years of their careers in Water/Wastewater and SEDA?**

Even though we feel like running away when problems pop up at the plant, that is exactly what will help us shine in the future. Do not be afraid of being hands-on, get dirty, and learn. See problems as invaluable lessons. These are times were we are overloaded with information and stress. Work is very important. Inner peace is a must.



**Juan Pablo Jimenez**

# Lessons Learned from Hurricane Ian

Author: Chris George, Deputy General Manager of GPIWA

*In late September, 2023, Hurricane Ian made landfall in Southwest Florida as a Category 5 – the 5th-strongest hurricane on record to make landfall in the contiguous United States. Pine Island, located near Ft. Myers/Cape Coral, was directly in the path of Hurricane Ian. As we approach the beginning of hurricane season, SEDA asked the Greater Pine Island Water Association (GPIWA) to provide their perspective and lessons learned from Hurricane Ian. Chris George, Deputy General Manager of GPIWA, provided the following words of wisdom to help other utilities be more prepared.*

The biggest issue for our utility during the hurricane was not having enough diesel for all of our generators. GPIWA's goal is to carry two weeks of fuel during future hurricane seasons and to have multiple main generators at the reverse osmosis water treatment plant. GPIWA has purchased diesel and gas DOT fuel trailers. We also purchased fuel recovery transfer pumps to move large amounts of fuel to storage tanks and generators.

Make sure that the distribution and plant work order system is FEMA compliant. Documenting things correctly will save a lot of hours in the future when applying for FEMA aid. This was the first time GPIWA accepted mutual aid after a storm. Pinellas County distribution staff was friendly and helpful. We gave Pinellas County and our main underground contractor the larger main breaks/leaks while our distribution staff went street by street turning off meters that were spinning due to damage to the homes or homes that were gone. The mutual aid was important for our staff so they could take days off to assess their own damage due to Hurricane Ian. We had multiple staff members without homes and vehicles after the storm. It is super important to have extra maps of your distribution system printed out before the hurricane for mutual aid workers, out of town law enforcement and firefighters, the military, and for volunteer groups.

Having Starlink for communication and internet was great. Make sure to have cash on hand to purchase items or supplies from your community. You just never know what will survive or what you might need after a hurricane due to damage. GPIWA set up bulk drinking water totes at the WTP and showers for the community that could not receive water at their homes due to leaks in our distribution system. Having water totes are great because you can drop off large amounts of drinking water to customers throughout the community. Being on island without a road to leave and a community without homes or vehicles you must be able to deliver supplies to them.

I believe between COVID and having one WTP at GPIWA without a viable interconnect to another city has helped GPIWA become better prepared for hurricane season in general. These last couple of years, with supply chain issues, GPIWA has significantly added to our inventory of parts, equipment, and chemicals. GPIWA was able to get the plant running and distributing water the next day after the hurricane hit the island. We were just unable to provide water 24/7 due to the lack of diesel. We would ration water 2 to 4 hours per day for each side of the island. We also passed out newsletters at the major intersection on the island of water distribution times.

The major damage GPIWA received from Hurricane Ian was the RO WTP lost its' membrane roof, AC system, and the main generator failed after the storm. The other major damage was to our distribution system, including leaks and not being able to maintain pressure. It was a very frustrating time for all of us in Lee County that were on the island living or working.



# Upcoming Events

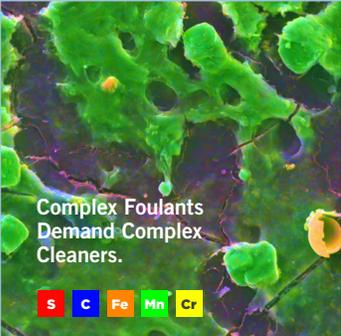


Look for these events coming in July

<p><b>JULY 18-20</b></p> <p><b>Moc 1</b></p> <p>Collier County, FL</p> <p>2.0 CEU's 8:00 AM - 5:00 PM</p>  <p>\$250 Members \$350 Non-Members Lunch Provided</p>	<p><b>JULY 26th</b></p> <p><b>Scaling and Fouling Workshop</b></p> <p>Clearwater, FL</p> <p>2.0 CEU's 8:00 AM - 5:00 PM</p>  <p>\$150 Members \$250 Non-Members Lunch Provided</p>
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## Upcoming Membrane Operator Certificate trainings

<p><b>MOC I</b></p> <p>North Miami Beach, FL August 8-10</p> <p>Orlando, FL Aug 24-26</p> <p>Collier County, FL July 18-20</p> <p>Mount Pleasant, SC August 1-3</p>	<p><b>MOC II</b></p> <p>Plantation FL Oct 3-5</p>
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S C Fe Mn Cr

# SEDA QUIZ

By: Fred Greiner, JEA  
H2O Purification Manger

1. A \_\_\_\_\_ is installed around the outside of the feed end of each element separates the feed water from the concentrate and prevents the feed water from bypassing the element.  
A. Brine Seal  
B. Permeate adapter  
C. Thrust cone  
D. Head seal
2. An approximate rule of thumb for the osmotic pressure of fresh or brackish water is approximately \_\_\_\_\_ psi for every 100 mg/L difference in total dissolved solids (TDS) concentration on opposite sides of the membrane.  
A. 5 psi  
B. 1 psi  
C. 10 psi  
D. 15 psi
3. What is called a group of MF/UF modules that share common valving that allows the unit to be isolated from the rest of the system for the purpose of integrity testing? (2005 EPA membrane filter guidance pg 43)  
A. Membrane module  
B. Membrane Stack  
C. Membrane Unit  
D. Membrane Bundles
4. What is the most common form of membrane fouling? (CSUS Volume II Water Treatment Plant Operation manual pg. 351 seventh edition)  
A. Calcium sulfate and calcium carbonate  
B. (NOM) Natural Organic Matter  
C. Coagulant fouling (ferric and alum)  
D. Calcium sulfate
5. Which of these parameters is considered a default method of continuous indirect integrity monitoring of a UF system? (2005 EPA membrane guidance filtration manual pg 202)  
A. MWCU  
B. NTU  
C. SDI  
D. Conductivity
6. Scale inhibitor is used to protect membranes from precipitation of calcium sulfate. Which is the most common type of scale inhibitor? (CSUS Volume II Water Treatment Plant Operation manual pg. 380 seventh edition)  
A. SHMP  
B. H<sub>2</sub>SO<sub>4</sub>  
C. Al<sub>2</sub>SO<sub>4</sub>  
D. NaOH
7. Which of these pathogens will routinely pass through a MF membrane?  
A. Bacteria  
B. Giardia  
C. Cryptosporidium  
D. Viruses
8. Why should pre-aeration and/or application of an oxidant be avoided when a feed water has hydrogen sulfide (H<sub>2</sub>S)? (CSUS Volume II Water Treatment Plant Operation manual pg. 377 seventh edition)  
A. To prevent the formation of sulfuric acid when exposed to scale inhibitor  
B. To prevent internal corrosion of RO feed and booster pumps  
C. To eliminate formation of elemental sulfur  
D. Pre aeration is preferred and extends cycles between cleanings

Answers can be found on the SEDA website at  
<http://www.southeastdesalting.com/members-only/quiz/>



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## Inside Recovery Zone

Responding to Nature's Fury with Teamwork, Talent, and Tenacity . . . . .	1, 3	Welcome to our new Members . . . . .	10
Message From The President . . . . .	2	Water & Wastewater Reciprocal Licensure Legislation . .	11
Role of Membrane Technology in Jackson Water Crisis Recovery . . . . .	4 - 6	Member Spotlight . . . . .	12
Symposium Save the Date & Did you know? . . . . .	8, 9	Lessons Learned from Hurricane Ian . . . . .	13
		Upcoming Events. . . . .	14
		SEDA Quiz . . . . .	15