

FWEA Manasota Chapter

Vol 25 – February 2016

Message from the Steering Committee

By Manasota Chapter Secretary
Linda Maudlin, Greeley and Hansen

The year 2015 was another successful one for the Manasota Chapter. A large crowd assembled at the quarterly luncheon in December to hear Cheryl Robitzsch of Haskell and Phil Locke of McKim & Creed present the City of Venice Water Treatment Plant RO project. The final event of the year was a Joint Society Holiday Social attended by members of FWEA, AWWA, APWA, ASCE and FES. Manasota Chapter leadership is already busy finalizing details for upcoming 2016 events.

The FWEA Leadership Development Workshop occurred February 7-8, 2016 at the Shores Resort and Spa in Daytona Beach Shores. The workshop concentrated on equipping and developing leadership skills among FWEA's current and incoming volunteer leaders. Kristiana Dragash, Lindsay Marten and Mike Knowles attended the workshop on behalf of the Manasota Chapter this year.



Kristiana Dragash and Lindsay Marten present at the FWEA Leadership Development Workshop on February 8 in Daytona Beach Shores, "It's never too young to start recruiting!"

The first luncheon of the year is a collaborative effort with AWWA Region X. It will be held on March 16, 2016 at the Sarasota County Operations Center (BOB Building). Katie Gilmore, Manatee County Water Treatment Plant Superintendent, will be presenting on the Manatee County Water Treatment Plant Filter Upgrade Project. Details can be found on the FWEA website. Please remember to pre-register by Wednesday, March 9 so we may provide the caterer with an accurate number of attendees. To encourage pre-registration, the following pricing tier has been established:

- \$15 FWEA/AWWA member pre-register: RSVP by Wednesday, March 9
- \$20 non-member pre-register: RSVP by Wednesday, March 9
- \$25 walk in rate

We look forward to seeing FWEA and AWWA members at the luncheon!

National Engineers Week is February 21-27, 2016. Engineers Week is dedicated to raising public awareness of engineers' positive contributions to quality of life, public health, safety, and prosperity. To celebrate E-Week, local County Commissioners and City Councils are asked to present proclamations to the engineering professionals throughout the month of February. City of Venice, City of North Port, and Sarasota County Chamber meetings were held earlier in the month of February. If your schedule permits, please support your fellow engineers and FWEA members by attending:

- Manatee County – February 23 at 9:00 AM at the County Commission Chambers

Continued from page 1



Mike Nixon (far right) representing the Manasota Chapter at the City of Venice Engineers Week Proclamation held on Tuesday February 9 at 9 AM.

It's back! Mark your calendars for April 1, 2016. The FWEA Manasota Chapter will be hosting a Kayak and Picnic event on Friday afternoon at South Lido Nature Park on Lido Key. The goal of this event is to bring friends, families, and members of the water profession together for a fun afternoon of kayaking, while raising awareness and funds for Water For People and FWEA's State Scholarship Fund. Event details and registration information are on the FWEA Manasota Chapter Events webpage.

Florida Water Resources Conference (FWRC) is coming soon. This year's conference is April 24-27, 2016 at the Gaylord Palms Resort in Kissimmee, Florida. Check the FWEA website for specific event information.

The Chapter is off to a great start in 2016. On behalf of the FWEA Manasota Chapter, we would like to thank all of the participants, volunteers, presenters, and sponsors for making these events possible. Be on the lookout for more great opportunities and occasions to come throughout 2016!



Linda Maudlin (far left) representing the Manasota Chapter at the Sarasota County Engineers Week Proclamation held on Wednesday February 17 at 9 AM.

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Calendar of Upcoming Events

FEBRUARY

- 5 FWEA West Coast Chapter Clay Sporting Event, Tampa
- 5 Math Counts (FES Myakka Chapter), Bradenton
- 16 Math Counts (FES Myakka Chapter), Bradenton
- 18 FWEA Wastewater Process Seminar, Tampa
- 18 Suncoast Chapter Luncheon, Sarasota
- 21-27 Engineers Week (E-Week)
- 26 ASCE LeBarge Sunset Cruise, Sarasota

MARCH

- 3 FWEA West Coast Chapter Luncheon, Tampa
- 9 FES Myakka Chapter Luncheon, Sarasota
- 16 FWEA Manasota Chapter/AWWA Region X Joint Luncheon, Sarasota
- 17 ASCE Suncoast Chapter Luncheon, Sarasota
- 31 FWEA West Coast Chapter Annual Round Table Luncheon, Tampa

February

SUN	MON	TUE	WED	THU	FRI	SAT
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29					

March

SUN	MON	TUE	WED	THU	FRI	SAT
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

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Consultant Corner: Biofiltration Performance-Tracking Tool: A User-Friendly Approach for Managing & Interpreting Data

By Jennifer Nyfennegger, Ph.D., P.E., Sarah Burns, E.I.T., Nishel Ross, E.I.T., Giridhar Upadhyaya, Ph.D., P.E., Jess Brown, Ph.D., P.E. [Carollo Engineers], and Chance Lauderdale, Ph.D., P.E. [HDR]

The Biofiltration Performance-Tracking Tool was developed as part of Water Research Foundation Tailored Collaboration Project 4525, co-sponsored by Tampa Bay Water. The objective was to create a user-friendly and comprehensive tool to help utilities efficiently organize and interpret biofilter data collected using real-time and non-real-time monitoring tools.

INTRODUCTION

Biofiltration for drinking water treatment offers a “green” treatment approach that can remove multiple contaminants and lower disinfection by-product (DBP) formation potential. Biofilters are granular media filters operated without the addition of a disinfectant to the feed or backwash water. In order for utilities to effectively operate and maintain biofilters, performance monitoring is important to promote a proper level of biological growth for sustained water treatment and hydraulic performance.

A comprehensive biofiltration monitoring program includes a number of hydraulic, water quality, and microbial parameters. The Biofiltration Performance-Tracking Tool was developed to help fill the gaps in typical monitoring programs for utility data systems that lack capabilities to compile and manage the data in a user-friendly format for easy interpretation. The Microsoft Excel®-based Biofiltration Performance-Tracking Tool can be customized and applied to various filter configurations and utility-specific goals. This tracking tool and associated guidance document provide utilities with a consistent and user-friendly monitoring approach that allows staff to effectively organize all types of filter data, assess trends, and identify/mitigate potential problems. The tracking tool has been developed for drinking water biofilters, but can also be applied to any filtration process.

USING THE TRACKING TOOL

In three easy steps, the user enters data and generates an output file to evaluate filter performance data and trends:

Step 1: Input Data

The user opens the tool in Excel® and follows prompts to enter facility-specific information, such as filter dimensions, type of filter control, and effluent turbidity goals (Figure 1). This information is saved in the tool, so a return user can simply select the facility from a drop-down menu.

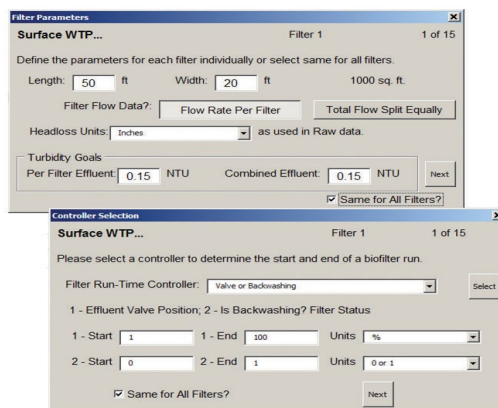



Figure 1. Dialogue boxes guide the user to input information about filter design and operation.



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Next, the user is prompted to select the location of the raw data for input to the tool. Input data may be from real-time or non-real-time monitoring tools that are relevant to filter performance and can be easily measured. Examples of real-time monitoring parameters from online instrumentation include filter headloss, level, flow, turbidity, and backwash pressure (Figure 2). Non-real-time data may include water quality lab results (e.g., organic carbon removal) and microbial analysis of filter media (e.g., ATP/microbial activity).

A	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX
Date / Time	Filter 11 Headloss	Filter 12 Headloss	Filter 13 Headloss	Filter 14 Headloss	Filter 15 Headloss	Filter 1 Flow	Filter 2 Flow	Filter 3 Flow	Filter 4 Flow	Filter 5 Flow	Filter 6 Flow	Filter 7 Flow	Filter 8 Flow	Filter 9 Flow	Filter 10 Flow
05/14/14 19:50	10.1	3.9	99.3	42.3	7.7	3.71	3.68	3.66	3.73	3.66	3.63	3.63	3.5	3.66	3.58
05/14/14 20:00	10	3.15	99.3	42.7	7.7	3.99	3.64	3.64	3.7	3.66	3.66	3.74	3.47	3.65	3.53
05/14/14 20:10	10.2	3.12	101.9	43	7.9	3.76	3.74	3.76	3.9	3.66	3.77	3.74	3.21	3.79	3.83
05/14/14 20:20	9	3.34	109.4	45.9	8.5	3.99	3.95	4.08	3.99	3.97	4.04	4.04	2.67	4.06	4.01
05/14/14 20:30	11.4	33.5	109	46.8	8.5	4.01	4.03	4.01	3.99	4.1	4.07	4.09	1.92	4.02	4.04
05/14/14 20:40	11.5	33.7	109.1	46.6	8.7	4.02	4.05	4.04	3.99	3.96	3.98	3.48	1.25	4.03	4.04
05/14/14 20:50	11.7	33.8	107.5	46.8	8.7	3.99	4.05	4	3.99	3.93	3.97	3.49	0.31	4	4.03
05/14/14 21:00	11.7	34.3	105.7	47.1	8.8	4.01	4.05	3.98	3.99	4.06	3.96	3.5	0.1	3.98	3.95
05/14/14 21:10	11.9	34	105.8	47.1	8.9	4.12	4	4.13	4.14	4.27	4.04	3.65	0.1	4.01	4.3
05/14/14 21:20	11.9	33.5	108.3	47.4	9	4.02	4.05	3.98	4.05	3.86	4.14	3.66	0.1	4.12	4.16
05/14/14 21:30	12.1	33.9	107.5	47.5	9.2	4.01	4.05	3.96	4.02	4.05	3.99	3.64	0.1	4.02	3.97
05/14/14 21:40	13.3	36.2	108.4	47.5	9.1	3.93	3.96	3.9	3.97	4.16	3.94	3.6	2.32	3.96	3.85
05/14/14 21:50	12.9	35.1											0.1	3.94	3.86
05/14/14 22:00	12.8	31.7											1.78	3.83	3.84
05/14/14 22:10	12.6	30.8											3.36	3.71	3.53
05/14/14 22:20	12.1	31.3											3.75	3.76	3.51
05/14/14 22:30	12.4	34.2											3.97	3.65	3.47
05/14/14 22:40	12.7	31.4											3.55	3.66	3.45
05/14/14 22:50	12.8	34											3.64	3.64	3.63
05/14/14 23:00	13	34.5											3.55	3.59	3.62
05/14/14 23:10	13.1	36.4											3.56	3.65	3.63
05/14/14 23:20	13.2	35.7											3.84	3.57	3.81
05/14/14 23:30	13.5	35.3											3.56	3.63	3.64
05/14/14 23:40	14.3	37.2											3.67	3.7	3.54
05/14/14 23:50	14	37.2											3.8	3.68	3.64
05/15/14 00:00	14.1	37.5											3.76	3.63	3.7
05/15/14 00:10	14.4	37.6											3.57	3.7	3.69
05/15/14 00:20	12.3	41.4											3.55	3.68	4.02
05/15/14 00:30	15.5	39.3											3.9	3.69	3.82
05/15/14 00:40	15.6	41.4											3.9	4.01	4.04
05/15/14 00:50	16.2	41.7											3.89	4.07	4.06
05/15/14 01:00	16.5	41.5											3.89	4.03	4.04
05/15/14 01:10	16.7	38.4											3.93	3.97	4.04
05/15/14 01:20	17	42											3.96	4.03	3.72
05/15/14 01:30	14	38.3											3.92	3.94	3.94
05/15/14 01:40	13.9	40.7	116.8	56.4	11.4	3.85	3.95	3.9	3.9	3.95	3.92	0.1	3.87	3.84	3.91
05/15/14 01:50	17.4	41.1	115.4	55.7	11.9	3.83	3.9	3.9	3.88	3.8	3.9	1.07	3.9	3.93	3.87
05/15/14 02:00	17.6	40.2	114.9	55.6	11.9	3.88	3.84	3.88	3.86	3.93	3.83	1.69	3.86	3.84	3.72

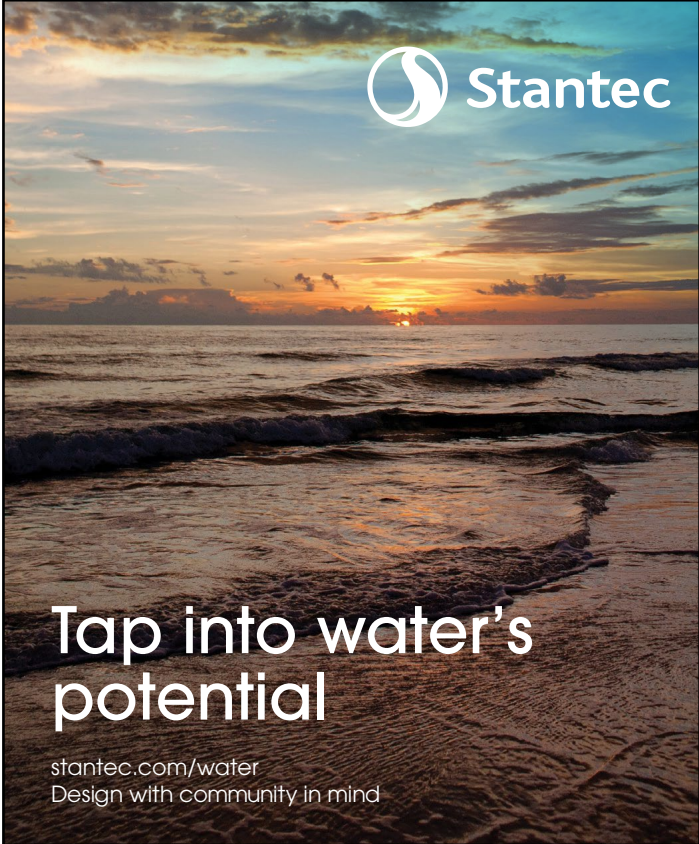
Figure 2. Example input to the tracking tool (filter monitoring from SCADA).

Step 2: Generate the Output File

After the user selects the data to input, the tool runs a Visual Basic program to calculate statistics for each filter run from the real-time data (e.g., unit filter run volume, run time, filter ripening time, average effluent turbidity). The tool generates an output file with this information, and automatically creates tables and graphs for tracking filter performance. Tables include lifetime and quarterly summary statistics. Bar charts and time-series graphs illustrate filter performance during operation and backwash.

Step 3: Analyze the Output Data

The user can easily view trends in filter performance by evaluating the output tables and graphs. A guidance document was developed to assist the user



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with data interpretation. The document identifies and describes biofiltration monitoring parameters, expected measurements, established regulations, and recommendations for tracking trends and identifying/mitigating potential problems. Two example output graphs from the tracking tool are discussed below.

Filter performance trends can be used to identify and mitigate problems before they manifest. Figure 3 shows example backwash statistics over time. The highlighted boxes in the graph may indicate underdrain or filter clogging, which could ultimately lead to mechanical failure. These trends can help prompt further investigation, inspection, and maintenance cleaning procedures to prevent expensive damage to equipment.

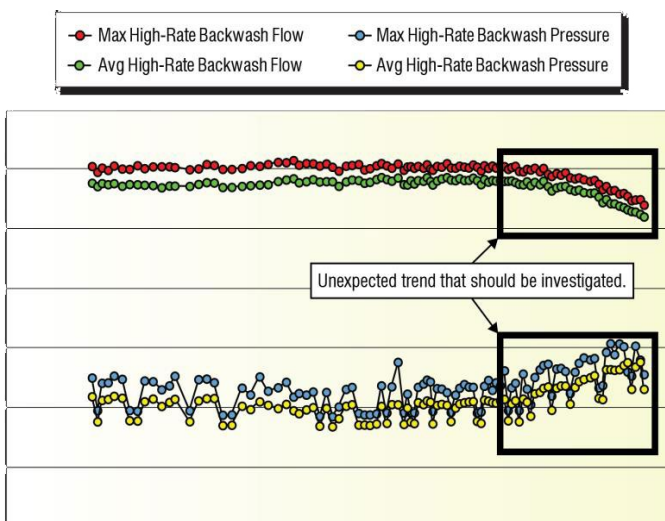


Figure 3. Monitoring backwash pressure and flow can help facility staff identify and mitigate underdrain/filter clogging.

Effluent turbidity profiles are recommended for regular operational monitoring (Figure 4). Elevated turbidity levels during a filter run can be due to factors such as suboptimal backwash procedures, short-circuiting (mudballs), changes in loading rate, or high unit filter run volume. Initial spikes during filter maturation (as shown in the example) are common and can be managed by optimizing backwash protocol and filter-to-waste cycle.

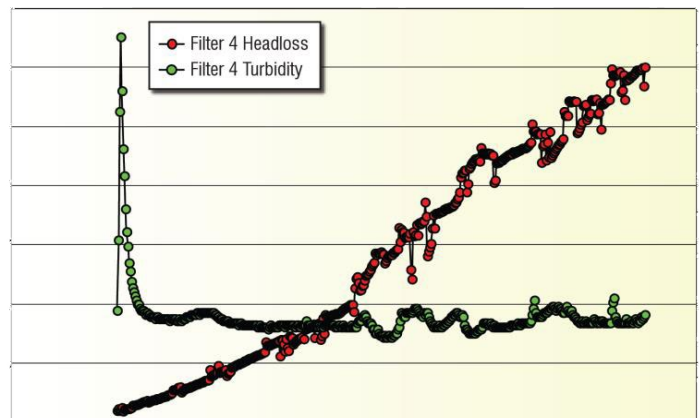


Figure 4. Example effluent turbidity profile shows an initial spike during filter maturation.

Enhancement strategies designed to optimize the hydraulic and/or treatment performance of a filter can be evaluated using the outputs generated by the tracking tool. Filter performance, as indicated by various parameters (e.g., headloss, unit filter run volume, DOC removal), can be compared among filters to assess the impact of strategies applied to selected filters. Baseline data, collected prior to the initiation of an enhancement strategy, can be used to quantify the effects of background conditions (e.g., variable solids loading).

CONCLUSION

The Biofiltration Performance-Tracking Tool is a user-friendly Excel-based tool that allows utilities to easily organize and interpret monitoring data to understand biofilter performance, assess control changes or enhancement strategies, and monitor for changes indicative of potential problems. The development of this tool is a step towards the overall goal of supporting utilities practicing biofiltration to implement comprehensive monitoring strategies and tools. Final publication of the tracking tool and guidance document is anticipated in 2016.

FWEA Manasota Chapter Steering Committee Officers

<p>Chair Lindsay Marten: 941.225.6178</p> <p>Vice Chair Mike Knowles: 941.378.3579</p> <p>Treasurer/Membership Mike Jankowski: 813.281.7322</p> <p>Secretary Linda Maudlin: 941.378.3579</p>	<p>Chapter Relations Samantha Nehme: 941.921.4183</p> <p>Young Professionals and Outreach Coordinator Kyle Kellogg: 941.225.4823</p> <p>Communications Rachel Cantor: 813.286.2075</p> <p>Special Events Coordinator Mike Nixon: 941.379.3404</p>	<p>Director at Large Kristiana Dragash: 941.371.9832</p> <p>At-Large Chuck Hlavach: 941.915.4861 Jeff Goodwin: 941.792.8811 Julie Karleskint: 941.378.2862 Laura Bamberger: 941.371.9832</p>
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If you are interested in joining the Steering Committee, please contact us.

We are currently seeking Utility Liaisons and additional At-Large Members.



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Joint Luncheon Meeting with AWWA Region X - March 16, 2016

Manatee County Water Treatment Plant Filter Upgrade Project

by Katie Gilmore, Manatee County Water Treatment Plant Superintendent

The Manatee County Water Treatment Plant is an 84 MGD facility that treats both ground and surface water. The plant has begun a project to retrofit its existing surface water granular media filters with a submerged ultrafiltration (UF) membrane system. The plant's existing multi-media filters are nearing the end of their useful life and need to be replaced or refurbished. The County previously evaluated a variety of options and selected a submerged UF membrane system to retrofit within the footprint of the existing multi-media filters. A UF membrane system will address the need for filter rehabilitation and the filtration challenges associated with variable raw water quality in Lake Manatee. This presentation will give an overview of the project, including the choice of the submerged UF membrane technology, the selection and evaluation of the membrane system supplier, construction phasing considerations and testing, preliminary design work to date, and the expected timeline of the project.



Katie Gilmore, Manatee County

Ms. Gilmore is the superintendent at the Manatee County Water Treatment Plant in Bradenton, FL. She started at the facility in 2004 as the Senior Chemist in their Quality Control Laboratory and became Laboratory Supervisor in 2008, a position she held until becoming the plant superintendent in September 2015. During her time at the plant, Katie has been involved with their research into biological filtration of raw surface water for the removal of taste and odor causing compounds. Prior to working for Manatee County, she worked for private environmental testing laboratories. Katie was raised in Sarasota and received B.S. and M.S. degrees in Chemistry from Stetson University and Indiana University, respectively.



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JOINT FWEA MANASOTA & AWWA REGION X CHAPTER LUNCHEON MEETING

Sarasota County Operations Center (BOB Building) Conference Room 1

1001 Sarasota Center Blvd., Sarasota, FL 34240
Registration - 11:30 • Lunch and Program - 12:15

Menu: 1) Market Salad, 2) Pulled BBQ Chicken, 3) Meat Loaf with Gravy, 4) Mom's Mac & Cheese, 5) Buttered Peas & Carrots, 6) Cookie Platter

Please register by Wednesday, March 9th

Pre-registered Members: \$15 • Pre-registered Non-members: \$20 • Walk-in: \$25

You can register online at www.fwea.org or register by phone, fax, or e-mail to Linda Maudlin
2601 Cattlemen Road, Suite 100, Sarasota, FL 34232

Ph: 941-378-3579 • Fax: 941-378-9489 • E-mail: lmaudlin@greeley-hansen.com

The Manasota Chapter is in search of Project Spotlight articles for future newsletter editions. Chapter sponsors are encouraged to submit an article highlighting a local project. Please contact Samantha Nehme at samantha.nehme@stantec.com or 941-921-4183 for more information.