



Agenda for the Water and Sewer Committee Meeting November 29, 2023 7:00 PM

Old Business

- Minutes from previous meeting
- PFAS PFOS – All Town wells and springs have been sampled and submitted for analysis. **Results have been received and tabulated. Attachment**
- Water and Sewer Capacity Update – Report will be filed at the end of 2023.
- **ENR PER Update –RK and K has submitted cost proposal change for approval. Staff has submitted to MDE.**
- I and I CB Basin update – **Draft report has been received (545 pages as well as all pipe inspection video) staff will review and provide comment for the committee.**
- Memar Appropriation Application – Staff directed the hydrogeologist to amend the application to request 130 gpd/unit. Testing for PFAS tort suit results indicated non detect. MDE will advise testing 2x during the 60 day long term pumping test. No update
- SERCAP Rate Study and Fees- no update.
- Springline Replacement Project & RMC Grant Application- discussion of the history and feasibility of the replacement project. **Board has agreed to move forward with phase one design and construction with conditions.**
- Outside meter vault -relocations – see new SHA project new business.
- Lead and Copper Sampling June 2023 – no action from MDE.
- Middletown Water Conservation Public Alert System – rewrite is attached.

New Business

- Monthly Water and Sewer Operating Report
- SHA Route 17 project. New curb gutter and sidewalk. Existing curb stops are located in the project limits and will be replaced to the proposed grade of the new ADA sidewalks. Does the Town wish to replace the curb boxes with New Outside Meter pits? The SHA project construction budget is expected for FY25 and the Town would need to request this work be included with the scope or perform the work ahead of the SHA project. Staff would NOT recommend including with SHA work.
- Water Conservation Rewrite and Town Ordinance change. Attachment. Discussion: Commercial conservation, watering of gardens in code red
- School Complex Historic Water Usage and projected usage. Grey water or Treated Effluent Usage. Water usage for High, Middle and Elementary will be provided.
- Drought Update: Springs steady at 25 gpm or 36,000 gpd. Information from MDE for stream flow and rainfall. Town well depths.



DRAFT

Water Conservation Public Alert System **Updated 8/2023**

Middletown's water supply is from ground water sources that are sensitive to drought conditions. "Droughts are periods of time when natural or managed water systems do not provide enough water to meet established human and environmental uses because of natural shortfalls in precipitation or stream flow." To keep Middletown residents informed of our drinking water supply status during drought conditions, the Burgess and Commissioners developed the following Public Alert System:

Public Notification of Code Status:

- Color coded water drop signs will be hung from a bracket attached to the welcome pillars on both ends of Town when drought conditions are present.

- The code status will be posted on the town web page and distributed electronically via the web page list serve **and via the Town's alert system.**
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CODE BLUE (blue water drop) Watering of lawns is *prohibited* between 9am. - 6pm. Ground water conditions are in the normal range.

Critical Factors: Spring flows range between 60,000 -130,000 gpd., and/or water table levels in wells are at normal historical levels, and/or the U.S. Drought Monitor for Frederick County, Maryland indicate a drought condition of NONE or ABNORMALLY DRY

CODE YELLOW (yellow water drop): A reduction goal of 5 to 10% of the average daily use will be monitored. Watering of lawns is *prohibited*. Additional voluntary water conservation is requested. Ground water conditions are decreasing at a rapid rate. Residents are requested to follow water conservation practices as outlined in 20 Tips to Prevent Water Waste found on the town's website. Water levels in the wells are monitored biweekly.

Critical Factors: Any of the following factors may trigger **CODE YELLOW:** MDE issues a drought declaration watch, spring flows range between 43,000--59,000 gpd, water table levels in wells are below historic levels and dropping, the U.S. Drought Monitor for Frederick County, Maryland indicate a drought condition of MODERATE.

CODE ORANGE (Orange water drop): A reduction goal of 10% - 15% of the daily use will be monitored. Mandatory water restrictions are instituted by the Burgess & Commissioners per Section 13.04.010. Severe drought conditions are present. Violation of these restrictions will result in a \$100 fine and immediate disconnection of water service. No warning will be issued. Water levels in wells are monitored bi-weekly.

- Watering of grass is prohibited. This includes athletic and/or playing fields.
- Washing paved surfaces such as streets, roads, sidewalks, driveways, garages, parking areas, tennis courts, and patios is prohibited.
- No vehicle washing, including automobiles, trucks, trailers and boats. Except cleaning of emergency vehicles, if necessary, to preserve the proper functioning and safe operation of the vehicle.
- Golf courses must have a water conservation plan in effect that shows a 10% reduction in usage, even if they do not use town water. No restriction on effluent usage
- No flushing of water lines, fire hydrants or distribution equipment.
- Any additional restrictions the Burgess and Commissioners deem necessary per section 13.04.010
- **Use of rain barrels and gray water (i.e., used bath water) is permitted and encouraged.

Critical Factors: Any of the following factors may trigger **CODE ORANGE:** MDE issues a declaration of a drought warning and/or spring flows are below 43,000 gpd and/or the water table levels in wells are far below historic levels and are dropping. U.S. Drought Monitor for Fredrick County, Maryland indicates a drought condition of SEVERE.

CODE RED, (red water drop): A reduction goal of 15% - 20% of the daily use will be monitored. Code Red, mandatory water restrictions plus building restrictions and commercial water

use restrictions. Violation of these restrictions will result in a \$200 fine and immediate disconnection of water service. No warning will be issued. Water levels in wells are monitored weekly.

- All outside water use of any kind is prohibited.
- Use of water for the operation of ornamental fountains, artificial waterfalls, misting machines, and reflecting pools is prohibited.
- Private (homeowners) pools and exterior hot tubs may not be filled or topped off.
- Golf courses must have a water conservation plan in effect that shows a 10% reduction in usage, even if they do not use town water. No restriction on effluent usage in accordance with the permit.
- Connecting to town fire hydrants is prohibited, except for emergency purposes.
- Any additional restrictions the Burgess and Commissioners deem necessary per section 13.04.010
- All businesses and residents are required to reduce potable water consumption by 10%
- No issuance of building permits
- **Use of rain barrels and gray water (i.e., used bath water) is permitted and encouraged.

Critical Factors: The Governor of Maryland declares a drought emergency by executive order, and/or spring flows are below 29,000 gpd and/or the water table levels in wells are far below historic levels and are dropping. U.S. Drought Monitor for Frederick County, Maryland indicates a drought condition of EXTREME The raw water reservoirs cannot be kept full on a daily basis.

13.04.010 - Restrictions on water use.

A. The burgess and commissioners may impose reasonable restrictions on the use of water from the municipal water system during periods of short supply, protracted drought, excessive demand or other scarcity of water. Such restrictions may include, but are not limited to, limitations on or prohibitions against the use of water from the municipal water system as determined by the burgess and commissioners. The town administrator may, with the approval of the burgess and commissioners, develop and establish a **Water Conservation Public Alert System.** ~~or other system of codes to announce to the public differing levels of water restrictions.~~

B. Any water use restriction imposed pursuant to this section shall be determined and announced at a regular or special meeting of the burgess and commissioners and shall be published ~~in a newspaper of general circulation in the town.~~ on the Town's website, distributed electronically via the web page list serve and the Town's alert system. Additionally, color coded water drop signs will be hung from a bracket attached to the welcome pillars on both ends of Town when drought conditions are present.

C. The Water Conservation Public Alert System will be published on the Town's website and will spell out the conditions and restrictions for each of following code status colors: Code Blue (least restrictive), Code Yellow, Code Orange, and Code Red (most restrictive).

~~The watering of lawns or grassy areas of property is prohibited at any time between the hours of 9:00 a.m. and 6:00 p.m. during the least restrictive periods of water use under the water conservation public alert system (currently "Code Blue"), and upon written application to the town administrator, the watering of lawns or grassy areas during these hours shall be permitted for the purpose of watering newly seeded or sodded lawns for up to seven days after such seeding or after the installation of sod.~~

D. Penalties for violating water restrictions:

1. Any person detected connecting to a town fire hydrant for any nonemergency purpose will be subject to a one thousand dollar (\$1,000.00) fine for each offense.
2. Any landlord, tenant, or other individual in possession of real property violating the terms and conditions of any water restriction shall be subject to the following:
 - a. Filling or topping off of pools or outdoor hot tubs during a water restriction period established pursuant to subsection A of this section will constitute a municipal infraction punishable by a fine of five hundred dollars (\$500.00) and disconnection of water service.
 - b. For all other violations of this section, a written warning and notification to refrain from any further violation will be issued for a first offense. Each subsequent offense will constitute a municipal infraction punishable by a fine of one hundred dollars (\$100.00) and **immediate** disconnection of water service. **For violations during a "Code Red" restriction the fine will be two hundred dollars (\$200.00) and the immediate disconnection of water service.**

E. Any landowner, tenant or individual in possession who has had service disconnected to his or her property pursuant to this section shall not have such service reconnected until the current reconnection fee established by the town is paid. Any further violation of the water restriction by that individual after reconnection of water service shall result in water service again being disconnected to such property, and service shall not be reconnected until the currently established reconnection fee is paid to the town.

(Ord. 06-04-01 § 1, 2006; Ord. 02-04-01 § 1, 2002; Ord. 97-09-02 § 2: prior code § 4-2203)

Stream Flow Status Based on Thirty Day Average for 2023 November 07					
Region	Stream Gage Location	Notes	Status Based on 30 Day Average		
			30 Day Average (cfs)	Percentage	Status
Western	Youghiogheny (near Oakland)		140	60%-65%	Normal
Western	Savage River (near Barton)		12.9	40%-45%	Normal
Western	Wills Creek (near Cumberland)		37	25%-30%	Normal
Western	Marsh Run (at Grimes)		4.4	35%-40%	Normal
Central	Catoctin Creek (near Middletown)		4.5	0%-5%	Emergency
Central	Monocacy (Jug Bridge near Frederick)		105	5%-10%	Warning
Central	Patuxent (near Unity)		8.3	5%-10%	Warning
Central	Deer Cr (at Rocks)		44.2	10%-15%	Watch
Eastern	Choptank (near Greensboro)		40.2	45%-50%	Normal
Eastern	Nassawango Creek (near Snow Hill)		9.5	40%-45%	Normal
	Susquehanna (at Marietta)		20,571	60%-65%	Normal
	Potomac (at Little Falls)(Adjusted)		1,835	5%-10%	Warning

Precipitation in Maryland Counties as of 07 November 2023 (WY 2024)																	
		Normal Rainfall, Actual Rainfall and Rainfall Departure from Normal in Inches															
		WY ¹ To Date (Since September 30, 2023)				11.25 Months (Since November 30, 2022)				2.25 Months (Since August 31, 2023)				5.25 Months (Since May 31, 2023)			
		Normal	Actual	Depart	%	Normal	Actual	Depart	%	Normal	Actual	Depart	%	Normal	Actual	Depart	%
WESTERN REGION	COUNTY																
	ALLEGANY	5.6	3.3	-2.3	59%	39.7	33.0	-6.7	83%	9.1	7.8	-1.3	86%	19.6	17.5	-2.1	89%
	GARRETT	6.1	6.1	0.0	100%	45.7	41.4	-4.3	91%	9.8	9.9	0.1	101%	23.0	22.7	-0.3	99%
	WASHINGTON	6.2	2.6	-3.6	42%	40.4	30.9	-9.5	76%	10.0	7.0	-3.0	70%	20.5	15.8	-4.7	77%
	Regional Average	6.0	4.0	-2.0	67%	41.9	35.1	-6.8	84%	9.6	8.2	-1.4	85%	21.0	18.7	-2.4	89%
CENTRAL REGION	BALTIMORE COUNT	7.7	2.5	-5.2	32%	45.6	38.1	-7.5	84%	12.1	8.6	-3.5	71%	23.4	21.6	-1.8	92%
	CARROLL	7.1	2.2	-4.9	31%	43.8	32.1	-11.7	73%	11.4	6.8	-4.6	60%	22.5	15.4	-7.1	68%
	CECIL	7.1	2.4	-4.7	34%	44.8	40.9	-3.9	91%	11.5	8.2	-3.3	71%	23.4	23.7	0.3	101%
	FREDERICK	6.8	2.4	-4.4	35%	42.6	32.2	-10.4	76%	10.9	7.1	-3.8	65%	21.6	15.5	-6.1	72%
	HARFORD	7.7	2.8	-4.9	36%	46.2	40.1	-6.1	87%	12.1	8.4	-3.7	69%	24.2	23.2	-1.0	96%
	HOWARD	7.3	2.1	-5.2	29%	44.5	35.3	-9.2	79%	11.4	7.7	-3.7	68%	22.6	18.6	-4.0	82%
	MONTGOMERY	6.9	1.8	-5.1	26%	42.9	35.2	-7.7	82%	11.0	7.9	-3.1	72%	22.1	19.0	-3.1	86%
		Regional Average	7.2	2.3	-4.9	32%	44.3	36.3	-8.1	82%	11.5	7.8	-3.7	68%	22.8	19.6	-3.3



		JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER	
Well	Well ID #	Water Depth BTOC (Feet)	Well Running Yes/No	Water Depth BTOC (Feet)	Well Running Yes/No	Water Depth BTOC (Feet)	Well Running Yes/No	Water Depth BTOC (Feet)	Well Running Yes/No	Water Depth BTOC (Feet)	Well Running Yes/No	Water Depth BTOC (Feet)	Well Running Yes/No
# 1	FR-73-8007	18	No	77	Yes	76	yes	91	Yes	83	Yes		
# 2	FR-73-8006	22	No	31	No	48	no	116	No	26	No		
# 3	FR-73-6400	105	No	109	No	123	no	117	No	121	No		
# 4	FR-73-6399	86	No	89	No	101	no	104	No	83	No		
# 5	FR-73-6398	99	No	104	No	143	no	109	No	93	No		
# 6	FR-73-6397	56	Yes	48	Yes	78	yes	51	Yes	45	Yes		
# 7	FR-65-0491	43	Yes	37	Yes	38	yes	46	Yes	12	No		
# 8	FR-73-1944	63	Yes	56	Yes	58	yes	91	Yes	60	Yes		
# 9	FR-04-8794	58	No	54	No	61	yes	46	Yes	44	No		
# 10	FR-73-1943	58	No	68	No	84	no	95	No	30	No		
# 11	FR-73-1706	70	No	69	No	161	no	88	No	53	No		
# 12	FR-73-1602	74	No	71	No	150	no	99	No	56	No		
# 13	FR-94-1466	66	No	68	No	75	no	74	No	60	No		
# 14	FR-94-1467	112	Yes	84	Yes	87	yes	128	Yes	88	Yes		
# 15	FR-94-1544	92.6	No	73	Yes	68	yes	71	Yes	74	Yes		
# 16	FR-94-3317	13	No	18	No	14	no	77	Yes	71	No		
# 17	FR-94-4362												
# 18	FR-94-4332												
# 19	FR-94-4331	34	No	64	No	112	yes	78	No	63	No		
# 22	FR-94-3217			12	Yes	58	yes	52	Yes				
# 23	FR-88-0471	85	Yes	59	Yes	86	yes	82	Yes	80	Yes		

Mandatory Water Use Restrictions

Prohibited

Exceptions

Watering of lawns

- To establish and maintain newly seeded and sodded grass areas, water may be applied on the day of installation and for 21 days following installation by any means designed and operated to assure effective water conservation. Irrigation must be personally supervised at all times to eliminate run-off or excessive watering.
- To maintain athletic fields when a 50% water reduction plan is in effect.
- Wastewater effluent or storm water treatment systems utilizing spray irrigation may apply water in designated areas according to permit conditions.

Use of Watering for irrigation and watering of gardens, landscaped areas, trees, shrubs and other outdoor plants

- For agricultural irrigation for the production of food and fiber, the maintenance of livestock and poultry or the production of nursery stock.
- By means of a hand-held container, hand-held hose equipped with an automatic shut-off nozzle, or drip irrigation system when applied between the hours of 8 p.m. and 8 a.m.
- When used by commercial nurseries at the minimum rate necessary to maintain stock.
- Water may be used by arboretums and public gardens of National, State, or regional significance at the minimum rate necessary to preserve specimens.

Irrigation and watering of golf courses

- To water tees and greens between the hours of 8 p.m. and 8 a.m.
- To water localized areas with a handheld hose at the minimum rate necessary.
- To water fairways when irrigation is reduced by at least 30%.
- As part of a necessary overseeding or resodding operation during the months of September and October at the minimum rate necessary.
- Sources of water other than potable water should be used when available.
- Irrigation of rough areas is not allowed.

<p><i>Washing paved surfaces such as streets, roads, sidewalks, driveways, garages, parking areas, tennis courts, and patios</i></p>	<ul style="list-style-type: none"> • For prewashing in preparation of asphalt street or driveway recoating and sealing. • At the minimum rate necessary for the maintenance of tennis courts composed of clay or similar materials by means of a hand-held hose equipped with an automatic shutoff nozzle. • At the minimum rate necessary for sanitation or public health purposes, such as eating and drinking areas. • At the minimum rate necessary to maintain effective dust control during the construction of highways and roads.
<p><i>Use of water for the operation of ornamental fountains, artificial waterfalls, misting machines, and reflecting pools</i></p>	<ul style="list-style-type: none"> • None
<p><i>Use of water for washing or cleaning of mobile equipment including automobiles, trucks, trailers and boats</i></p>	<ul style="list-style-type: none"> • Commercial car washes that recycle 45% of their wash water or reduce total water consumption by at least 10%. • Cleaning of construction, emergency or public transportation vehicles if necessary to preserve the proper functioning and safe operation of the vehicle. • Cleaning of new and used vehicles which are part of a dealer's sales inventory only under the following provisions: a) a vehicle is being prepared for sale at the time the vehicle is received from the manufacturer or prior owner, b) a vehicle shall be washed no more than once every 7 days, and c) a vehicle may be washed following sale immediately prior to delivery to the purchaser. Vehicles may be washed only by a means of a bucket or hand-held hose equipped with an automatic shut-off nozzle.
<p><i>Use of water to fill and top off swimming pools</i></p>	<ul style="list-style-type: none"> • Public or residential swimming pools serving 25 or more dwelling units, if the pools have filtration equipment allowing for continued use and recycling of water over the swimming season. • Swimming pools operated by health care facilities used in relation to patient care and rehabilitation. • Filling of newly constructed pools or following pool repair.
<p><i>Homeowner power-washing of buildings, fences, decks or other structures</i></p>	<ul style="list-style-type: none"> • None
<p><i>Serving of water in restaurants, clubs, or eating places, unless specifically requested by the customer</i></p>	<ul style="list-style-type: none"> • None
<p><i>All other businesses and industries implement plans to reduce water consumption by 10%</i></p>	



Agenda for the Water and Sewer Committee Meeting Minutes October 25, 2023 7:00 PM

Old Business

- Minutes from previous meeting approved.
- PFAS PFOS – All Town wells and springs have been sampled and submitted for analysis.
- Water and Sewer Capacity Update – 2 taps sold to West Green St
- ENR PER Update – meeting with consultant to review of Draft PER. Will revise. Need presentation to Town Board and WS Committee before MDE submittal. RK and K will submit additional cost request.
- I and I CB Basin update – No updated report from Consultant.
- Memar Appropriation Application – Staff directed the hydrogeologist to amend the application to request 130 gpd/unit. Testing for PFAS tort suit results indicated non detect. MDE will advise testing 2x during the 60 day long term pumping test.
- SERCAP Rate Study and Fees- update
- Springline Replacement Project & RMC Grant Application- discussion of the history and feasibility of the replacement project. Exhibit attached.
- Outside meter vault -relocations –
- Lead and Copper Sampling June 2023 – Results sent to MDE
- Middletown Water Conservation Public Alert System – review, original document and 2019 revised document attached.

New Business

- Monthly Water and Sewer Operating Report

Minutes

- A discussion regarding the possibility of looking for water outside of Town and piping it in was had. **MDE regulations require source water to be within the aquifers that the Town serves and can only use the amount of water within the aquifer recharge boundaries that is in the Town limits.** Dave Lake suggested the sources in AC Jets area available, Paul Mantello discussed the purchase of land like the springs and piping it in. The Harris property was also discussed, and Paul will reach out to Ms. Harris for information on the well. The well is 40 feet deep but yield is unknown.
- Well 13 cannot be tested for PFAS as it is not connected electrically.

- The ENR project was discussed, specifically the future of the West Plant and permit renewal and meeting future limits. MDE provided a letter stating the plant would not meet future limits and it is attached. After reviewing this October 19, 2023 letter the Town will face significant requirements and expenses to be able to meet the permit with the existing plant.
- Nov 17, 2024 Town will meet with Chairman Feldman and MDE regarding new legislation or additional funding for ENR and existing lagoons.
- The MEMAR annexation was discussed regarding the Active Adult (AA) definition and the number of bedrooms that should be permitted in an AA residence. The MEMAR models show options for 3,4 5 and 6 bedrooms.
- The SERCAP report has identified that 95% of the water customers use 75% of the water and 5% use 25% of the water. This generalizes that there are fewer tiers needed due to the majority of use within certain tiers. Fixed expenses should be covered by fixed use and variable costs should be associated with the tiers. This suggests the base rates should cover the fixed costs.
- Bob Smart is not receiving emailed agendas please check the email address.
- The spring line capital improvement project was discussed. The project is estimated at 8 million dollars. W and S recommendation to the Board is there is no other reliable source that has been established for 120+ years like the springs and to move ahead. The project will need to be planned in phases, the Town cannot afford not to preserve the source. Dave Lake suggested a study to look at what the W and S needs are from a tax standpoint – a financial plan. The PFAS sampling has indicated the springs generally are the best source we have regarding the minimal amount of these compounds found.
- Regarding outside meter replacements the Town has secured insurance coverage for interior leaks. The committee generally agreed to consider out meter installation on a case by case basis with proposed construction projects.
- The committee will review rewritten Water Conservation Public Alert notice next month.

VIA ELECTRONIC MAIL

October 19, 2023

Paul Mantello, Town Administrator
Town of Middletown
31 West Main Street
Middletown, MD 21769

Re: Facility Planning Limitations for the Upgrade and Expansion of the Middletown East Wastewater Treatment Plant (WWTP), Discharge Permit Number: 13-DP-3182, NPDES No. MD0067628

Dear Mr. Mantello,

This letter is in response to an electronic request regarding the future compliance status and permit renewal eligibility of the Middletown West (MTW) WWTP, with respect to the upcoming upgrade and expansion of the Middletown East (MTE) WWTP. We have the following suggestions for your consideration:

1. As we discussed in our meeting on October 12, 2023, the plant performance data indicates that the existing facility may not be able to meet the newly adopted ammonia criteria (see table below for comparison). Therefore, a treatment process upgrade will be necessary to stay in compliance with the ammonia effluent requirements in the future permit.

Effluent Characteristics	<u>Current Ammonia Limits</u>	<u>Effluent Limits for Ammonia, based on Newly Adopted Criteria</u>	<u>Current Performance</u>
Facility Design Capacity	0.250 mgd	0.250 mgd	0.250 mgd
Total Ammonia Nitrogen as N (5/1 to 10/31)	3.8 mg/L max monthly ave. 11.5 mg/L daily max.	1.5 mg/L max monthly ave. 4.3 mg/L daily max.	3.2 mg/L max monthly ave. 3.1 mg/L daily max.
(11/1 to 4/30)	N/A	7.6 mg/L max monthly ave.	11.8 mg/L max monthly ave.

2. Furthermore, the lagoons situated at the MTW WWTP are positioned within a 100-year floodplain, heightening the risk of contaminating the nearby receiving stream in the event of

Mr. Mantello

an overflow during severe weather conditions. To mitigate this concern, the forthcoming discharge permit will incorporate a Climate Change Resiliency requirement, outlined below, obligating the facility to proactively address and minimize potential disruptions to its operations and compliance stemming from this factor. As a result, we recommend that the facility begin preparation to address this upcoming requirement.

Climate Change Resiliency Requirements

The effects of climate change are projected to be more pronounced in the coming decades. As a result, the intensity and frequency of extreme weather events may quickly overload the wastewater facility hydraulically, disrupt the operation in the treatment works, and cause the potential endangerment of aquatic life and public health. The permittee shall enhance the climate change resiliency of the facility through the following measures:

- 1. The permittee shall conduct annual assessment and maintenance, as needed, of the facilities at the treatment works to confirm they are adequate to address the potential inflow surges during the extreme weather events. The assessment shall be based on the history of storms and their corresponding peak flows and waste loads recorded at the facility. The records of evaluations and maintenance shall be documented and made available to the Department upon request. See Special Condition II.C "Wastewater Capacity Management" of the discharge permit for details.*
- 2. The permittee shall plan for impacts to power supplies during extreme weather events based on the history of storms and the demand from critical operations at the facility. Please refer to General Conditions III.B.4 "Adverse Impact" and III.B.8 "Power Failure" of the discharge permit for further details.*

No later than six months from the effective date of this permit, the permittee shall develop and submit a report to the Department that explains the permittee's plan for addressing potential impacts on power supplies during extreme weather events.

Should you have any questions in this matter, please feel free to contact me at (410) 537-3363 or Colleen O'Donnell at (410) 537-3698.

Sincerely,

A handwritten signature in black ink, appearing to be the initials 'Y' or 'J'.

Yen-Der Cheng, Chief
Municipal Surface Discharge Permits Division

cc: Robin Pellicano, Chief, Water Resources Planning Division (MDE)
Walid Saffouri, P.E., Director, Engineering & Capital Projects
Program (MDE) Kelly Duffy, P.E., Wastewater Treatment (RK&K)
Bob Andryszak, P.E., Wastewater
Treatment (RK&K) Kelly Ferguson, P.E.,
Project Engineer (RK&K)
Bruce Carbaugh, Director of Public Works,
Town of Middletown, MD

Middletown Maryland PFOS / PFAS Treatment November 15, 2023

Typically, either GAC (Granular Activated Carbon) or Ion Exchange is used for removal. Membrane treatment will work, but unless there are significantly many other (and small) contaminants, the power cost really does not favor membrane treatment. Ion Exchange has much more expensive resin than the GAC, however because the empty bed contact time required is much lower than GAC, the vessels are slimmer and less media is required. Costs between the two technologies are driven by size between the larger vessel/cheaper media for GAC and the smaller vessel/expensive resin for IOX.

The first step for determining treatment is pilot testing. Attached is a picture of a **small-scale** pilot that is used onsite to test best GAC/Resin to use and get an idea of the replacement frequency required. Once the pilot is complete, the media is chosen and the design performed. Duration of the pilots vary, but the longer the test runs the better the data for predicting the life of the media. Suggested minimum is 6 months. A pilot protocol is submitted to MDE for approval and typically a pilot report at the conclusion with the results.

The EPA set the required MCL for PFOA and PFOS at 4.0 parts per trillion each. The EPA is regulating the other four PFAS using a hazard index. A hazard index attempts to account for various combinations of PFAS contamination. Using this index, water utilities will monitor for all four PFAS and perform a calculation to determine if such a combination poses a health threat. This is the first time the EPA has used a hazard index to monitor drinking water. The EPA's proposed MCL is 4.0 ppt for PFOA, PFOS and each individual Hazard Index compound.

EPA's Proposed Action for the PFAS NPDWR

Compound	Proposed MCLG	Proposed MCL (enforceable levels)
PFOA	0 ppt*	4.0 ppt*
PFOS	0 ppt*	4.0 ppt*
PFNA		
PFHxS	1.0 (unitless)	1.0 (unitless)
PFBS	Hazard Index	Hazard Index
HFPO-DA (commonly referred to as GenX Chemicals)		

The Hazard Index is a tool used to evaluate potential health risks from exposure to chemical mixtures.

*ppt = parts per trillion (also expressed as ng/L)

TOWN SOURCES and Detection Levels

Levels noted with the treatment plants are from MDE testing that is over 1 year old. The levels noted in the spreadsheet are from October 2023 sampling and the latest. The springs generally have non detect levels of contaminants and it could be said this may be due to their isolated location and elevation.

WTP 1 Wells and Springs PFOS , PFOS = ND (Non Detect)

WTP 3 Brookridge Well House (wells 22 and 23) PFOA = 2.87, 2.83 PFOS= 5.96,5.49

(25gpm) will require a 30" diameter vessel that is 5' – 6' tall. These are available as turn-key systems in a **sea container** type enclosure that would be about 20' x 15' and about 10' high.

25gpm Treatment system

1. Piloting
 1. Engineering: \$25K
 2. Equipment: \$25K
2. Design/Construction (assume turn-key system in **sea container**)
 1. Engineering \$100K
 2. Construction \$600K
3. **Total: \$750K**

WTP 2 Well 15 and 16 PFOA= 1.95, 1.39 PFOS= 2.41, 2.59 <4.0 (No treatment required)

Currently the combined flow levels at WTP 2 are below the 4.0 threshold although Well 16 if run alone has a content above 4.0 ppt. If the plant was to need treatment in the future (60 – 75gpm), could require 6' diameter vessels that could run about 16' tall overall. Attached is a 75gpm.

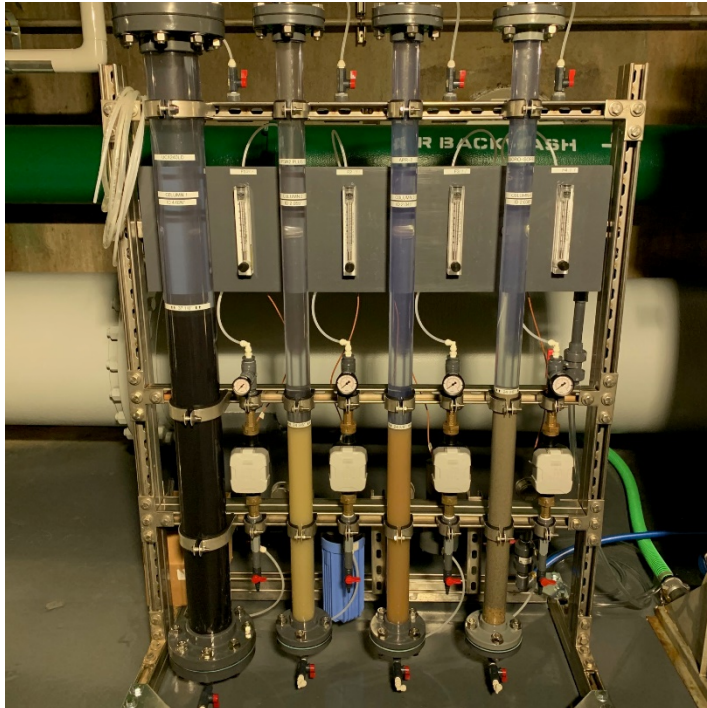
65gpm Treatment system

4. Piloting
 1. Engineering: \$25K
 2. Equipment: \$25K
5. Design/Construction (assume new building)
 1. Engineering \$250K
 2. Construction \$3M
6. **Total: \$3.3M**

There is funding currently available through MDE for PFAS treatment. MDE has stated they intend to provide loan forgiveness for the funding.

EPA has released the anticipated regulatory levels for PFAS at 4ppt. It is expected for this to go into effect by the end of the year. Typically there is a 2 year period for compliance.

As of now there are no regulations for PFAS in the waste stream. Most projects either send the backwash to the sewer or bring a frac truck on site if there is no sewer. It is also important to remember that a vast majority of the PFAS will stay in the media and thus be removed when the media is changed out. For good quality well water, the GAC is only backwashed when it is replaced and brand new in order to condition it before putting it in operations.



Small Scale Pilot



Full Size Pilot

TOWN OF MIDDLETOWN

PUBLIC DRINKING WATER WELLS

PUBLIC DRINKING WATER WELLS																Regulated individual MCL = 4 ppt		Hazard Index Components <1						Other unregulated Compounds							
Old #	Current Well #	GPS Height	Well ID #	Depth (Ft.)	Diameter	Casing	Date Drilled	Blown Yield (GPM)	X-Coord.	Y-Coord.	Status	Max Flow	PFAS method	Sample location	WTP Plant	PFOA	PFOS	HFPO-DA	PFBS	PFNA	PFHxS	AA HI	PFPeA	PFHxA	PFBA	PFHpA					
	Well #1	594.294	FR-73-8007	475.000	6.000	64.000	11/14/1980	40.000	-77.51643	39.44204	online	30			1	0	0	0	2.7	0		0.00									
	Well #2	589.759	FR-73-8006	400.000	6.000	85.000	11/14/1980	40.000	-77.51633	39.44242	online	26			1	0	1.2	0	3.6	0		0.00									
	Well #3	689.610	FR-73-6400	300.000	6.000	80.000	1/1/1978	12.000	-77.51711	39.44392	OFFLINE				1																
	Well #4	677.586	FR-73-6399	425.000	6.000	86.000	10/3/1978	12.000	-77.51745	39.44489	OFFLINE				1																
	Well #5	689.796	FR-73-6398	450.000	6.000	80.000	10/7/1978	15.000	-77.51678	39.44479	OFFLINE				1																
# 3	Well #6	619.319	FR-73-6397	160.000	6.000	44.000	1/1/1965	60.000	-77.51420	39.44716	online	31			1	1.5	1.1	0	1.9	0	1.2	0.13	1.9	1.7							
# 2	Well #7	624.182	FR-65-0491	160.000	6.000	32.000	1/1/1965	40.000	-77.51435	39.44722	online	44			1	1.4	0	0	1.9	0	1	0.11	1.7	1.6							
# 7	Well #8	631.384	FR-73-1944	500.000	6.000	55.000	3/25/1974	30.000	-77.51418	39.44751	online	37			1	1.4	0	0	4.5	0	1.1	0.12	1.9	1.7							
# 1	Well #9	630.982	FR-04-8794	465.000	6.000	42.000	1/1/1962	60.000	-77.51437	39.44744	online	35			1	1.6	0	0	7.1	0	0	0.00	2.7	2.1	2.4						
# 4	Well #10	628.408	FR-73-1943	265.000	6.000	38.000	3/20/1974	75.000	-77.51466	39.44740	OFFLINE				1																
# 5	Well #11	632.243	FR-73-1706	215.000	6.000	33.000	3/19/1974	60.000	-77.51495	39.44753	OFFLINE				1																
# 6	Well #12	633.417	FR-73-1602	304.000	6.000	31.000	2/12/1974	22.000	-77.51537	39.44754	OFFLINE				1																
	Well #13	658.203	FR-94-1466	1000.000	6.000	56.000	6/22/1999	10.000	-77.51838	39.44506	OFFLINE				1																
	Well #14	678.635	FR-94-1467	500.000	6.000	60.000	6/22/1999	35.000	-77.52155	39.44582	online	12			1	0	0	0	1.1	0	0	0.00									
	Well #15	0.000	FR-94-1544	500.000	8.000	60.000	8/2/1999	75.000	-77.53502	39.43133	online	60	533	com/fin	2	1.7	3.5	0	2.2	0	0.91	0.10	2.4	1.6	2.3	0.91					
	Well #16	0.000	FR-94-3317	500.000	8.000	100.000	12/1/2002	60.000	-77.54427	39.43513	online	12	533	com/fin	2	6.1	3.6	0	1.7	0	1.3	0.15	6	4.2	2.5	2.8					
	Well #17	709.547	FR-94-4362	500.000	8.000	60.000	11/22/2004	50.000	-77.52198	39.44808	online				1	2.7		0	24	0	0	0.01	3.4	3.3	3.9	1.7					
	Well #18	628.841	FR-94-4332	500.000	6.000	60.000	12/8/2004	10.000	-77.51709	39.44196	OFFLINE				1																
	Well #19	623.629	FR-94-4331	600.000	8.000	75.000	12/8/2004	40.000	-77.51685	39.44180	online	22			1	0	0	0	2	0	0	0.00									
	Well #22	0.000	FR-94-3217	500.000	8.000	40.000	9/9/2002	30.000	-77.55917	39.44166	online	5	537.1	raw	3	1.2	2.7	0	5	0	1.1	0.12			2.3						
	Well #23	0.000	FR-88-0471	300.000	6.000	60.000	4/29/1989	30.000	-77.56115	39.44316	online	23	537.1	raw	3	3.5	7.4	0	4.7	0	3.7	0.41	5.3	4.1	3.4	1.8					
Developer Proposed																															
	Memar Well		FR-94-3449	600.000	6.000	49.000	4/1/2005	15.000			ob				4																
	Memar Well		FR-94-3450	500.000	6.000	51.000	4/1/2005	30.000			proposed		533	raw	4	0	0	0	0	0	0	0.00									
	Memar Well		FR-94-3451	500.000	6.000	59.000	4/15/2005	18.000			ob				4																
	Memar Well		FR-94-3452	500.000	6.000	59.000	4/15/2005	40.000			proposed		533	raw	4	0	0	0	0	0	0	0.00									
	Memar Well		FR-94-5112	600.000	8.000	80.000	4/4/2006	30.000			proposed		533	raw	4	0	0	0	0	0	0	0.00									
	Memar Well		FR-94-5129	500.000	8.000	63.000	4/4/2006	60.000			proposed		533	raw	4	0	0	0	0	0	0	0.00	1.8	1.2	0	0					

Date	High School	Middle School	Elementary School						
9/13/23	691000	290000	284500						
6/13/23	435000	207000	164300						
3/15/23	436000	160000	144800						
12/14/22	525000	212000	166300						
9/14/22	748000	354000	330000						
6/14/22	535000	288000	164600						
3/16/22	364000	153000	123600						
12/20/21	560000	197000	167600						
9/21/21	774000	280000	174500						
2 yr usage	5068000	2141000	1720200						
AVD	6942	2933	2356						