



February 3, 2025

**Benita Best-Wong**  
Acting Assistant Administrator  
Office of Water  
Environmental Protection Agency  
1200 Pennsylvania Avenue, N.W.  
Washington, DC 20460

**SUBMITTED ELECTRONICALLY**

RE: EPA-HQ-OW-2020-0486, AMWA Letter of Recommendations of Opportunities for Revision of the Microbial and Disinfection Byproduct (MDBP) Rules

Dear Assistant Administrator Best-Wong,

The Association of Metropolitan Water Agencies (AMWA) is pleased to offer comments on the Federalism consultation for the upcoming *Microbial and Disinfection Byproducts Rule* revisions. AMWA is an organization of the largest publicly owned drinking water systems in the United States. Our members provide water, both directly and through wholesale distribution, to more than 160 million Americans.

AMWA expresses its concerns that, while the National Drinking Water Advisory Council (NDWAC) offered specific areas for revision to this rule, many of these have not been characterized adequately in the body of research since the last rule revisions. As such, AMWA respectfully encourages EPA to limit the rule revision to the areas outlined in the joint letter offered by AMWA, ASDWA, and AWWA (“Associations”). These focused areas support improvements to public health while minimizing accompanying risks.

AMWA recommends that the rulemaking narrowly include the recommendations provided in the Associations’ letter, and do the following:

- Require a minimum disinfectant residual of 0.2 mg/L for free chlorine and total chlorine in distribution systems;
- Retain HPC as an alternative compliance method;

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- Define finished water storage as being after the point of entry to the distribution system;
- Re-evaluate finished water storage tank inspection and cleaning costs; and
- Afford primacy agency discretion and flexibility in the regulation of consecutive systems.

AMWA recognizes that the settlement agreement with Waterkeepers Alliance provides EPA with several legal avenues to pursue, and encourages the agency to provide a proposal for rule revisions this summer, without delay, to address the following targeted areas.

#### Establish a Minimum Disinfectant Residual of 0.2 mg/L

The NDWAC recommended the adoption of a national positive numeric minimum disinfectant residual requirement. The Associations agree, and recommend that this value be set at 0.2 mg/L for free chlorine and total chlorine disinfectant residuals. Minimums in excess of 0.2 mg/L will be impractical to achieve and will further create difficulty in managing disinfection byproducts (DBPs). AMWA strongly discourages EPA's alternative proposal of a numeric minimum requirement of 0.5 mg/L for free chlorine and 0.7 mg/L for total chlorine as a national standard.

AMWA members often function as wholesalers, providing water to far-reaching areas that may not otherwise have access to a safe and reliable water supply. As a result, systems can have upwards of 5,000 miles of water lines that they manage, including miles of unlined cast iron mains. Even with low residuals in some areas, it is uncommon for systems to identify *Legionella* within their distribution networks. In the event EPA recommends a residual level greater than 0.2 mg/L, it would likely force replacement of thousands of miles of these unlined cast iron mains, at a cost to systems upwards of \$3 billion over multiple decades. This effort would be strictly for regulatory compliance, rather than to achieve a defined health benefit, and additionally would shift the risk-risk tradeoffs towards an unnecessary increase of DBP formation while posing new burdens on ratepayers across the income scale.

Simultaneous compliance would also create a challenge. At EPA's alternative recommendation level of 0.5 mg/L minimum residual, systems may struggle with DBP formation and would have to adjust other aspects of treatment accordingly, impacting corrosion control or coagulant levels.

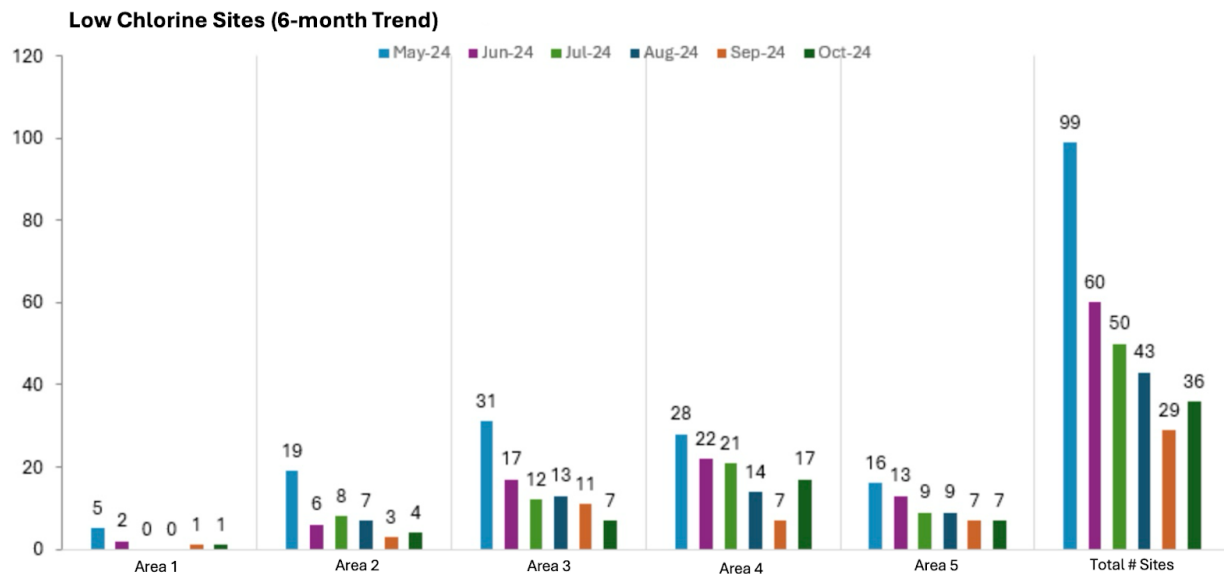
A minimum disinfection residual should aim to address existing problems, rather than creating new opportunities for noncompliance absent a corresponding public health benefit. As such, EPA should establish 0.2 mg/L for chlorine and total chlorine disinfectant residuals.

#### Retain HPC as an alternative compliance method

Under current regulations, water systems are in violation if fewer than 95% of disinfectant residual samples are detectable in a month, for two consecutive months. Under the existing compliance framework, any system that does not have a detectable disinfectant residual is considered in compliance if the Heterotrophic Plate Count (HPC) is below 500 CFU/mL.

Several AMWA member systems rely on the use of HPC to validate a lack of bacterial regrowth for respiratory pathogens like *Legionella pneumophila*. Systems that rely on the use of free chlorine may have areas of the distribution network that experience a seasonal reduction in residual levels, or may have long-water-age areas. When these areas experience low residual, this is managed operationally to reduce water age such as through flushing and the alteration of flow directions and patterns; the lack of risk to human health is verified with the HPC test.

AMWA members using HPC track chlorine levels  $\leq 0.2$  mg/L monthly and trend this data both on an ongoing basis (**Fig. 1**) and year-over-year to ensure consistency in water quality. These values typically account for less than 5% of the total sites sampled, and are often attributed to seasonal changes. And again, any variations can be managed with flushing protocols if warranted.



**Fig. 1 6-month trends of low chlorine levels for a system serving >1M population.**

Removing HPC as an alternate compliance criterion would only serve to facilitate repeated and excessive public notifications. This would undermine public trust and confidence in their water supplies while affording no further benefit to water quality. In the event disinfection residual falls below the recommended amount of 0.2 mg/L, HPC should be retained as a compliance method to serve the noted function of validating the lack of bacterial risk and any concomitant risks to public health.

#### Finished water storage inspection and maintenance

Systems subject to the Surface Water Treatment Rule (SWTR) should be required to ensure that *“finished water storage facilities be operated free of sanitary defects.”* The following definition targets facilities with risks associated with elevated and ground storage tanks. The definition of finished water storage facilities subject to the inspection and maintenance requirement could read as simply as:

*“A finished water storage facility is a structure used to store finished water for distribution to consumers. Such structures may include tanks, basins, and reservoirs. Structures receiving water prior to primary disinfection and all hydropneumatic tanks are excluded from this definition.”*

Water storage prior to primary disinfection is not related to the formation of DBPs and growth of opportunistic pathogens as discussed by the NDWAC, and as such, should be *explicitly excluded* from the definition of tanks subject to inspection and cleaning requirements.

Any tank inspection and cleaning requirements should afford ample discretion to the primacy agency in relation to the timeline and methods of inspection and maintenance of finished water storage, to ensure that adequate backup supplies are available.

AMWA reiterates that the definition of a finished water tank or reservoir should clarify its applicability to storage *only* after the distribution entry point and expressly exclude water storage prior to primary disinfection.

#### Costs finished water storage inspection and cleaning

EPA's cost estimates associated with potential storage tank inspection and cleaning underestimate current rates. Several AMWA members note that their tank costs are 2.5 times higher than the proposed values, and reservoir costs are 8-9 times higher (**Appendix A**). AMWA invites EPA to consider other avenues for estimating cost, beyond just the system size given the amount of variability in finished water storage inspection and cleaning.

#### Consecutive Systems

AMWA members provide water through both direct and wholesale avenues, often with significant numbers of consecutive systems and provide a regional benefit of increased resiliency. Water supplied through these relationships is complex, offering flows that can be bidirectional or offer other intricacies. One-size-fits-all solutions to consecutive systems is not feasible, and offers an opportunity for guidance and primacy agency discretion.

The Safe Drinking Water Act holds each system independently accountable for their water quality, with both the wholesaler and purchaser individually permitted, and subject to appropriate enforcement action. Utilities' wholesaler/customer relationships are governed by detailed contractual agreements, and are carried out in the spirit of collaborative partnerships. However, wholesalers willingly offer support to the systems they serve through a variety of means, by their own choice:

- Partner with consecutive systems by regarding compliance as a regional approach;
- Offer training, financial, and technical support;
- Provide a communications plan on any changes in water quality;
- Align monitoring schedules; and
- Ensure customer input and involvement in decision making via their contracts.

As such, AMWA has concerns that creating new regulatory mandates for these activities could pose new complications in already well-functioning relationships. Water wholesalers and customers already address these issues through their cooperative relationships, and each are accountable to state and federal regulators. It is not necessary for the rulemaking to uniformly dictate how these relationships operate throughout the country.

EPA proposes monitoring of disinfectant residual and DBPs at points of connection. AMWA cautions that requiring monitoring at *all* interconnections is not a practical solution, especially given that some large systems have upwards of 150 interconnections. What's more, some large

water systems have interconnections that are not currently in use, which negates the need to carry out monitoring at those sites. Existing monitoring locations can be at varied proximities to the interconnections, frequently only 50 feet away. In the event monitoring is necessary, the definition should afford enough flexibility to allow monitoring at locations representative of the water quality of the interconnection, and only following noted deficiencies.

AMWA encourages collaboration to be fostered through local solutions. Interfering unnecessarily in contractual relationships would have the unfortunate side effect of creating friction where collaboration and partnership already exists.

### Conclusion

AMWA's members look forward to EPA proposing its revisions to the MDBP rule this summer, in alignment with the required timeline, and to proposed revisions that are supported by the best available science. While the NDWAC offered an expansive menu of areas of the rule to potentially revise, AMWA recommends that EPA focus on the aforementioned areas for targeted improvement.

In developing the revisions to the *Microbial and Disinfection Byproduct Rules*, AMWA encourages EPA to recognize that all systems are different, and especially that the needs of large systems differ significantly from those of many smaller systems also subject to this rulemaking. But while AMWA members and others that supply water through consecutive systems are often motivated by a sense of community and a desire to support regional solutions whenever feasible, regulatory flexibility is critical to maintain these partnerships. If regulations began to impose too many impractical hurdles on water suppliers, more systems could begin to question the value of supplying water through consecutive systems, which could lead to negative outcomes for water supply access across the country.

Thank you for your consideration of our request and support for an appeal. For more information, please contact Kaline Gabriel, AMWA's Manager of Regulatory and Scientific Affairs, at [gabriel@amwa.net](mailto:gabriel@amwa.net).

Sincerely,



Thomas Dobbins  
Chief Executive Officer  
Association of Metropolitan Water Agencies

CC: Jennifer McLain, Director, Office of Ground Water and Drinking Water

**Appendix A: System-specific Costs of Tank/Reservoir Inspection and Cleaning**

**New York City Department of Environmental Protection**, sediment removal for Hillview Reservoir (900 million gallon capacity, 90-acre facility)

1999 sediment removal cost was \$18,093,301.

2026 sediment removal estimates are \$53,275,585, and the process would take more than 2 years to complete.

<b>TOTAL AMOUNT PAYABLE UNDER CONTRACT(LINE'a)FORM 214E</b>	<u>\$ 18,093,301.54 ✓</u>
<b>AMOUNT TO BE RETAINED UNDER GUARANTEE</b>	<u>\$ 0.00 ✓</u>
<b>DATE SET FOR COMMENCEMENT OF WORK</b>	<u>10/10/97 ✓</u>
<b>TIME SPECIFIED FOR COMPLETION</b>	<u>731.ccd</u>

**Massachusetts Water Resources Authority**, inspection and cleaning costs:  
Periodic inspection -

April-June 2022 regulatory inspections: \$50,544 (13 concrete tanks total); Average cost per tank/cell: \$3,888.

- Arlington Covered Reservoir (one 2MG cell)
- Bear Hill Tank (one 6MG cell)
- Spot Pond Covered Storage (two 10MG cells)
- Blue Hills Covered Storage (two 10MG cells)
- Nash Hill Covered Storage (two 12.5MG cells)
- Fells Covered Storage (three differently-sized cells, 5MG, 6MG, 9MG)
- Loring Road Covered Storage (two 10MG cells)

Cleaning of distribution system reservoir (Norumbega Cover Storage Tanks), three cells with a total storage volume of 115 MG, in service in 2003 -

One cell was cleaned per year, over the past three winters.

2022 - \$2,600,000  
2023 - \$2,876,482  
2024 - \$3,086,200

Cleaning includes: draining, dechlorination of water prior to discharge to a surface water, dewatering, cleaning, handling dewatering and disposal of any solids, disinfection of the clean tank, clearance testing, and refilling.

**Greater Cincinnati Water Works, tank and reservoir inspection costs (currently underway):**

The total contract amount for 17 elevated tank inspections is \$165,761.21 (which would be an average of about \$9750/tank, in excess of EPA’s estimate of \$3,400). For 11 finished water reservoirs, the inspection total is \$288,202.00 (average of \$26,200/reservoir).

Most of these inspections were wet inspections using ROVs due to the operational challenges with taking tanks out of service. The exterior of some of the above-ground reservoirs were also inspected with a drone. The elevated tank costs are only for interior inspections; exterior inspections not included. The reservoir sizes vary from 0.5 MG to 80 MG and the elevated tank sizes vary from 0.115 MG to 3 MG.

**Greater Cincinnati Water Works 2024-25 Tanks and Reservoirs Inspections**

**Cost of reservoirs inspections**

External inspections performed with a drone on all above ground reservoirs, 8 of 11 inspected reservoirs were inspected using the drone.

<b>Cost of drone inspections</b>	<b>\$ 52,515</b>
Number of reservoirs	8
Cost per reservoir	\$ 6,564.38

**Cost of reservoir inspections (without the drone inspection cost)**

Reservoir size (MG)	Inspection type	Inspection equipment exterior	Inspection equipment interior	# of days	Total cost inspection (without the drone cost)
0.5	Dry	Drone	Human	1	\$ 11,784.35
2	Wet	Drone	ROV	2	\$ 23,568.70
1.1	Wet	Drone	ROV	1	\$ 11,784.35
4.9	Wet	None	ROV	2	\$ 23,568.70
2.85	Wet	Drone	ROV	1	\$ 11,784.35
0.5	Wet	Drone	ROV	1	\$ 11,784.35
2	Wet	Drone	ROV	1	\$ 11,784.35
6	Wet	None	ROV	2	\$ 23,568.70
34.6	Wet	Drone	ROV	3	\$ 35,353.05
0.5	Wet	Drone	ROV	2	\$ 23,568.70
80	Wet	None	ROV	4	\$ 47,137.40

**Cost of Drone and ROV inspections total \$288,202**

**Greater Cincinnati Water Works 2024-25 Tanks and Reservoirs Inspections**

**Cost of steel tank inspections (these were done without a drone inspection)**

Reservoir size (MG)	Inspection type	Inspection equipment exterior	Inspection equipment interior	Shape	# of days	Total cost inspection
1	Wet	None	ROV	Spheroidal	1	\$ 7,114.00
0.75	Wet	None	ROV	Toro Spheroid	1	\$ 7,114.00
2	Wet	None	ROV	Fluted Pedestal	1	\$ 8,096.00
0.5	Wet	None	ROV	Spheroidal	1	\$ 7,114.00
1	Wet	None	ROV	Toro Spheroid	1	\$ 7,114.00
1	Wet	None	ROV	Toro Spheroid	1	\$ 7,114.00
2	Wet	None	ROV	GST	1	\$ 6,657.00
2	Wet	None	ROV	Toro Spheroid	1	\$ 8,096.00
3	Wet	None	ROV	Fluted Pedestal	1	\$ 9,190.00
2	Wet	None	ROV	Toro Spheroid	1	\$ 9,086.00
0.55	Wet	None	ROV	Standpipe	1	\$ 5,180.00
2	Wet	None	ROV	Fluted Pedestal	1	\$ 8,096.00
1.2	Wet	None	ROV	Standpipe	1	\$ 7,114.00
2	Wet	None	ROV	Fluted Pedestal	1	\$ 8,096.00
2	Wet	None	ROV	Toro Spheroid	1	\$ 8,096.00
0.115	Wet	None	ROV	Standpipe	1	\$ 5,180.00
2.5	Wet	None	ROV	Toropillar	1	\$ 8,096.00
0.5	Dry	None	Human	Fluted Pedestal	1	\$ 6,814.00

In addition to these values, the steel tanks inspection contract included raft evaluation, technical meetings, and the final report.

The total contract value with these items is \$165,761.21

**Newport News Waterworks, tank cleaning costs:**

		Proposal			Invoiced		
		Inspection & Report	Clean & Disinfect	Total Estimate	Inspection & Report	Clean & Disinfect	Total
2016	Mercury LaSalle	\$ 15,000.00	\$ 5,500.00	\$ 20,500.00	\$ 11,629.66	\$ 5,500.00	\$ 17,129.66
2018	Langley View	\$ 15,000.00	\$ 4,900.00	\$ 19,900.00	\$ 15,000.00	\$ 4,900.00	\$ 19,900.00
2019	Kingsmill	\$ 15,000.00	\$ 23,900.00	\$ 38,900.00	\$ 7,770.36	\$ 23,900.00	\$ 31,670.36
2019	Upper York	\$ 15,000.00	\$ 7,200.00	\$ 22,200.00	\$ 13,010.62	\$ 7,200.00	\$ 20,210.62
2020	Lightfoot 5 GST & Hydro	\$ 15,000.00	\$ 5,800.00	\$ 20,800.00	\$ 13,534.83	\$ 5,800.00	\$ 19,334.83
2020	Buckroe	\$ 15,000.00	\$ 5,300.00	\$ 20,300.00	\$ 13,058.61	\$ 5,300.00	\$ 18,358.61
2021	Copeland Park	\$ 15,000.00	\$ 8,900.00	\$ 23,900.00	\$ 6,073.71	\$ 8,900.00	\$ 14,973.71
2021	Mercury LaSalle	\$ 11,056.00	\$ 10,800.00	\$ 21,856.00	\$ 10,899.23	\$ 10,800.00	\$ 21,699.23
2022	Lightfoot 1 Hydro and Bulk Storage Tanks	\$ 14,051.00	\$ 12,549.00	\$ 26,600.00	\$ 13,529.35	\$ 12,155.65	\$ 25,685.00
2023	Langley View	\$ 15,257.00	\$ 5,600.00	\$ 20,857.00			

**East Bay Municipal Utility District, reservoir internal inspection, cleaning, and minor repair costs:**

2024: Cleaning and repair cost per reservoir was \$50,316. Minor repairs are sometimes discovered during reservoir cleaning and are performed concurrently.

2024: Internal inspection cost per reservoir was \$15,300, involving a diver or an ROV. There are approximately 150 reservoirs in total, and each is inspected on either a five-year frequency or a ten-year frequency depending on its history and its water quality data. External inspections of each reservoir are completed twice each month, along with collection of water samples, and those costs are not included.

Category	Value of Work in Calendar Year 2024	Reservoir name	capacity, gallons
Cleanings and Repairs	\$ 25,169.70	Road 24 Reservoir	5,000,000
	\$ 9,583.05	Shawn Reservoir	753,000
	\$ 56,066.18	Argyle No. 2 Reservoir	7,170,000
	\$ 140,325.82	Watson Reservoir	10,190,000
	\$ 20,436.86	Moraga Reservoir	11,777,000
Inspections, internal		Welle	300,000
		39th Ave	10,200,000
		Schapiro	1,000,000
		Berkeley Hills	400,000
		Emmons	5,600,000
		Derby	300,000
		Laguna No. 1	510,000
		Country Club	2,500,000
		Siesta	1,000,000
		Camanche South Shore	220,000
		Camanche North Shore	140,000
		Pardee Rec Area	150,000
		Pardee Center	10,000
		Berryman North	620,000
	\$ 83,783.14	Inspections - District labor, Org 778	
	\$ 115,115.47	Inspections - District labor, Org 773	
	\$ 198,898.61	Total	
		14 No. of Reservoirs Inspected by District Staff in 2024	
	\$ 14,207.04	Inspection Cost per Reservoir	

**Louisville Water Company, Costs for inspection and cleaning of finished water storage tanks:**

Elevated and Ground-Supported Tanks (0.1 MG to 3 MG)

Louisville Water employs two regional contractors under a Master Service Agreement for inspecting and cleaning finished water storage tanks. Over the past two years, the cost for inspection and cleaning by one contractor has ranged from **\$5,300 to \$6,500 per tank**. The other contractor, last used in 2018, charged **\$5,000 to \$10,000 per tank**.

Costs vary based on factors such as the tank's size/design, the comprehensiveness of the inspection and engineering report (varies between contractors), and whether a standard "washout" cleaning or a chemical cleaning with Floran is required. Additional charges may apply for tanks with significant sediment accumulation, though this has not been an issue for Louisville Water.

Concrete Reservoirs and Clearwells (2 MG to 30 MG)

Inspections for larger concrete reservoirs and clearwells are typically performed by our engineer of record or their subcontractor. Inspection and reporting costs range from **\$10,000 to \$30,000**, depending on facility size and the level of detail required in the evaluation and reporting.

For sediment removal and cleaning, Louisville Water has historically relied on in-house water quality staff and union laborers. This approach ensures adherence to project timelines, minimizes operational risks, and maintains the quality of work to meet our standards. For example, cleaning our largest reservoir (30 MG) required approximately **10–12 staff members over 8-10 days**, totaling **~800 man-hours** to clean and disinfect the facility.