

# 2019 Drinking Water Quality



## Message from the Director

CHARLES E. HYLAND, JR.

Mobile Area Water & Sewer System continues to be proactive during this difficult time in dealing with the COVID-19 coronavirus. Please know that Tap Water is NOT impacted by coronavirus and our water is safe.

We have changed some procedures to protect our customers as well as our employees. Our dedicated employees are practicing social distancing, wearing facemasks and following other healthcare guidelines so that we have a healthy workforce that can continue to provide our essential drinking water service to the community.

Our employees are committed to providing essential services during this time of crisis by providing water to protect the health of our community. Thank you for being a part of the MAWSS community.

We will get through this, together.

## Quality Control... Keeping our water safe!

### Where does our water come from?

The source of MAWSS drinking water is Converse Reservoir, also known as Big Creek Lake, which is fed by springs, streams, and rainfall in the Converse Reservoir Watershed.

Converse Reservoir is 3,600 acres in surface area. The reservoir's watershed covers 103 square miles and lies totally within Mobile County. The reservoir provides all the drinking water for MAWSS customers.

### How do contaminants get into the water?

As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and can pick up substances resulting from the presence of animals or human activity. Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.



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- Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from stormwater runoff or farming.
- Pesticides and herbicides, which may come from a variety of sources such as agriculture, stormwater runoff, and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, which can come from gas stations, stormwater runoff, and septic systems.
- Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.

### EPA Advisory Statement

The EPA advises: "All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does

not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791)."

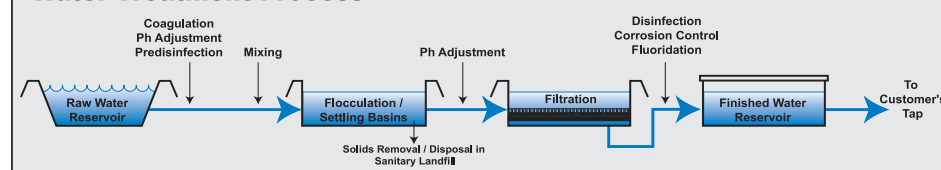
### Lead Specific Statement

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. MAWSS is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have it tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>.

### For people with compromised immune systems

The EPA advises: "Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infections by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791)."

### Water Treatment Process



To ensure that tap water is safe to drink, the Environmental Protection Agency (EPA) prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. MAWSS employs the above treatment process to provide safe drinking water to all customers.

# 2019 Detected Contaminants

## REGULATED SUBSTANCES

SUBSTANCE	MCLG	MCL	HIGHEST DETECT	RANGE	MAJOR SOURCES
Fluoride, ppm	4	4	1.08	0.00 - 1.08	Water additive promoting strong teeth; Erosion of natural deposits; Discharge from fertilizer and aluminum factories
Nitrate, ppm	10	10	0.22	0.11 - 0.22	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Turbidity, NTU	N/A	TT (under filter) - at least 95% of samples < 0.3	0.19 (TT not exceeded)	0.00 - 0.19	Soil Runoff
Total Organic Carbon (TOC)	N/A	TT	Lowest Performance Ratio 1.24	1.24 - 1.86	Naturally present in the environment
Chlorine, ppm	MRDLG= 4	MRDL = 4	1.94	0.66 - 1.94	Water additive used to control microbes
Chlorite, ppm	0.8	1	0.73	0.05 - 0.73	Disinfection By-Product
Chlorine Dioxide, ppb	MRDLG= 800	MRDL = 800	310	0 - 310	Water additive used to control microbes
Barium, ppm	2	2	0.03	0.02 - 0.03	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Lead, ppb	0	AL = 15 at 90th percentile	ND at 90th percentile (AL not exceeded)	<0.001 - 0.002	Corrosion of household plumbing systems; Erosion of natural deposits
Copper, ppm	1.3	AL = 1.3 at the 90th percentile	0.03 at 90th percentile (AL not exceeded)	0.002 - 0.05	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
Total Trihalomethanes, ppb	N/A	80	Highest average = 40.85	12.8 - 47	Disinfection By-Product
Haloacetic Acids (HAA5), ppb	N/A	60	Highest average = 31.30	6.2 - 40.5	Disinfection By-Product
Gross Alpha, pCi/L	0	15	0.96	ND - 0.96	Erosion of natural deposits
Gross Beta, pCi/L	0	50	2.14	ND - 2.14	Erosion of natural deposits
Combined Radium, pCi/L	0	5	2.51	ND - 2.51	Erosion of natural deposits

## SUBSTANCES REGULATED UNDER SECONDARY DRINKING WATER STANDARDS

SUBSTANCE	MCLG	MCL	HIGHEST DETECT	RANGE	MAJOR SOURCES
Aluminum, ppm	N/A	0.2	0.27	0.12 - 0.27	Secondary contaminant. May cause colored water.
Chloride, ppm	N/A	250	7.1	7.1 - 7.1	Secondary contaminant
Total Dissolved Solids, ppm	N/A	500	67	50 - 67	Secondary contaminant
pH	N/A	N/A	8.2	6.50 - 8.20	Special Corrosivity Monitoring (MAWSS has implemented a corrosion control program.)
Alkalinity as CaCO <sub>3</sub> , ppm	N/A	N/A	9.2	6.1 - 9.2	
Sodium, ppm	N/A	N/A	3.4	3.4 - 3.4	
Sulfate as SO <sub>4</sub> , ppm	N/A	250	25.1	19.7 - 25.1	
Calcium, ppm	N/A	N/A	15.5	11.9 - 15.5	
Carbon Dioxide, ppm	N/A	N/A	5.8	ND - 5.8	
Magnesium, ppm	N/A	N/A	1.1	0.92 - 1.1	
Hardness as CaCO <sub>3</sub> , ppm	N/A	N/A	43.2	33.5 - 43.2	
Temperature, C	N/A	N/A	31	13 - 31	
Corrosivity (saturation index)	N/A	N/A	-2.37	-1.56 to -2.37	
Specific Conductance, µmho/cm	N/A	N/A	89.9	71.6 - 89.9	
Orthophosphate as P, ppm	N/A	N/A	0.22	0.15 - 0.22	

## DEFINITIONS AND ABBREVIATIONS

**Maximum contaminant level goal or MCLG** - The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

**Maximum contaminant level or MCL** - The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

**Maximum residual disinfectant level goal or MRDLG** - The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contamination.

**Maximum residual disinfectant level or MRDL** - The highest level of a disinfectant allowed in drinking water.

**Treatment Technique or TT** - A required process intended to reduce the level of a contaminant in drinking water.

**Action level or AL** - The concentration of a contaminant which, if exceeded, triggers a treatment or other requirement which a water system must follow.

**Range** - The lowest to the highest values for all samples tested for each contaminant. If only one sample is tested, no range is listed for that contaminant in the table.

**ppm** - Parts per million, or milligrams per liter (mg/L)

**ppb** - Parts per billion, or micrograms per liter (µg/L)

**ppt** - Parts per trillion, or nanogram per liter (ng/L)

**pCi/l** - picocuries per liter (a measure of radioactivity)

**NTU** - Nephelometric Turbidity Units

**ND** - None detected, or below the detection limit

**N/A** - Not applicable

# Standard List of Primary Drinking Water Contaminants

Contaminant	MCL	Amount Detected
<b>BACTERIOLOGICAL</b>		
Total Coliform Bacteria	< 5 %	< 2%
Turbidity	TT	(See Note 1)
Fecal Coliform and E.coli	0	0
Fecal Indicators (enterococci or coliphage)	TT	(See Note 2)
<b>RADIOLOGICAL</b>		
Beta/photon emitters (pCi/L)	50	2.14 (See Note 3)
Alpha emitters (pCi/L)	15	0.96
Combined Radium (pCi/L)	5	2.51
Uranium	30 ppb	(See Note 4)
<b>INORGANIC CHEMICALS</b>		
Antimony	6 ppb	< 1 ppb
Arsenic	10 ppb	< 1 ppb
Asbestos (MFL)	7	(See Note 5)
Barium	2 ppm	0.03 ppm
Beryllium	4 ppb	< 0.1 ppb
Bromate	10 ppb	(See Note 6)
Cadmium	5 ppb	< 3 ppb
Chloramines	4 ppm	(See Note 6)
Chlorine	4 ppm	1.94 ppm
Chlorine Dioxide	800 ppb	310 ppb
Chlorite	1 ppm	0.73 ppm
Chromium	100 ppb	< 6 ppb
Copper	AL=1.3 ppm	(See Note 7)
Cyanide	200 ppb	< 10 ppb
Fluoride	4 ppm	0.64 ppm
Lead	AL=15 ppb	(See Note 8)
Mercury	2 ppb	< 0.2 ppb
Nitrate	10 ppm	0.22 ppm
Nitrite	1 ppm	< 0.05 ppm
Total Nitrate and Nitrite	10 ppm	0.22 ppm
Selenium	50 ppb	< 1 ppb
Thallium	2 ppb	< 1 ppb
<b>ORGANIC CHEMICALS</b>		
Acrylamide	TT	(See Note 9)
Alachlor	2 ppb	< 0.19 ppb
Atrazine	3 ppb	< 0.1 ppb
Benzene	5 ppb	< 0.5 ppb
Benzo(a)pyrene [PAHs]	200 ppt	< 97 ppt
Carbofuran	40 ppb	< 2 ppb
Carbon tetrachloride	5 ppb	< 0.5 ppb
Chlordane	2 ppb	< 0.19 ppb
Chlorobenzene	100 ppb	< 0.5 ppb
2,4-D	70 ppb	< 0.1 ppb

**Note 1** - See Table of Detected Contaminants For Description of Treatment Technique (TT).

**Note 2** - Fecal Indicators Specifically applies to Ground Water Systems. MAWSS has a Surface Water System and is not applicable.

**Note 3** - ADEM allows compliance with this requirement to be assumed without further analysis if the average annual concentration of gross beta particle activity is less than 50 pCi/L and if the average annual concentrations of tritium and strontium-90 are less than the MCL. Gross beta particle activity was tested for and detected at 2.14 pCi/L. Sources of the man-made tritium and strontium-90 are not known to exist in the watershed.

**Note 4** - A gross alpha particle activity measurement may be substituted for the required Uranium analyses, provided that the measured gross alpha particle activity does not exceed 15 pCi/L. Gross alpha particle activity was tested for and detected at 0.96 pCi/L.

**Note 5** - Based on a study conducted by ADEM with the approval of the EPA a statewide waiver for the monitoring of asbestos and dioxin was issued. Thus, monitoring for these contaminants was not required.

**Note 6** - Chloramines and Bromate are by-products formed from water treatment additives. These additives were not used during the treatment of the drinking water.

**Note 7** - The Action Level (AL) for copper is 1.3 ppm at the 90th percentile. Samples were taken at 50 locations throughout the water distribution system. The concentration of copper at the 90th percentile was 0.03 ppm, which was under the Action Level.

**Note 8** - The Action Level (AL) for lead is 15 ppb at the 90th percentile. Samples were taken at 50 locations throughout the water distribution system. The concentration of lead at the 90th percentile was not detectable, which was under the Action Level.

Contaminant	MCL	Amount Detected
<b>ORGANIC CHEMICALS (CONT'D)</b>		
Dalapon	200 ppb	< 1 ppb
Dibromochloropropane	200 ppt	< 0.02 ppb
o-Dichlorobenzene	600 ppb	< 0.5 ppb
p-Dichlorobenzene	75 ppb	< 0.5 ppb
1,2-Dichloroethane	5 ppb	< 0.5 ppb
1,1-Dichloroethylene	7 ppb	< 0.5 ppb
cis-1,2-Dichloroethylene	70 ppb	< 0.5 ppb
trans-1,2-Dichloroethylene	100 ppb	< 0.5 ppb
Dichloromethane	5 ppb	< 0.5 ppb
1,2-Dichloropropane	5 ppb	< 0.5 ppb
Di (2-ethylhexyl)adipate	400 ppb	< 1.6 ppb
Di (2-ethylhexyl) phthlates	6 ppb	< 2 ppb
Dinoseb	7 ppb	< 0.2 ppb
Dioxin [2,3,7,8-TCDD]	30 ppq	(See Note 5)
Diquat	20 ppb	< 0.4 ppb
Endothall	100 ppb	< 9 ppb
Endrin	2 ppb	< 0.01 ppb
Epichlorohydrin	TT	(See Note 10)
Ethylbenzene	700 ppb	< 0.5 ppb
Ethylene dibromide [EDB]	50 ppt	< 10 ppt
Glyphosate	700 ppb	< 6 ppb
HAA5	60 ppb	(See Note 11)
Heptachlor	400 ppt	< 40 ppt
Heptachlor epoxide	200 ppt	< 20 ppt
Hexachlorobenzene	1 ppb	< 0.1 ppb
Hexachlorocyclopentadiene	50 ppb	< 0.1 ppb
Lindane	200 ppt	< 20 ppt
Methoxychlor	40 ppb	< 0.1 ppb
Oxamyl [Vydate]	200 ppb	< 2 ppb
Pentachlorophenol	1 ppb	< 0.04 ppb
Picloram	500 ppb	< 0.1 ppb
PCBs	500 ppt	< 100 ppt
Simazine	4 ppb	< 0.2 ppb
Styrene	100 ppb	< 0.5 ppb
Tetrachloroethylene	5 ppb	< 0.5 ppb
Toluene	1 ppm	< 0.0005 ppm
TOC	TT	(See Note 1)
TTHM	80 ppb	(See Note 11)
Toxaphene	3 ppb	< 0.97 ppb
2,4,5-TP(Silvex)	50 ppb	< 0.2 ppb
1,2,4-Trichlorobenzene	70 ppb	< 0.5 ppb
1,1,1-Trichloroethane	200 ppb	< 0.5 ppb
1,1,2-Trichloroethane	5 ppb	< 0.5 ppb
Trichloroethylene	5 ppb	< 0.5 ppb
Vinyl Chloride	2 ppb	< 0.5 ppb
Xylene (Total)	10 ppm	< 0.0005 ppm

**Note 9** - Acrylamide, an impurity in polymer-based water treatment additives, was not directly added to the drinking water in the treatment process. A polymer-based flocculant, which is certified in accordance with NSF/ANSI Standard 60 for use in potable water, is used to thicken residual solids from the sedimentation and filtration stages of the water treatment process. The solids from both the Stickney and Myers treatment plants are thickened at the Myers treatment plant for final disposal at a landfill. The water that is separated from the solids is directed to the Myers water treatment plant for treatment as drinking water.

**Note 10** - Epichlorohydrin, an impurity of some water treatment chemicals, was not added to the drinking water.

**Note 11** - See Table of Detected Contaminants For Total Trihalomethanes (TTHMs) and Haloacetic Acids (HAA5) analytical results.



# Contaminants Tested For, But Not Detected

MAWSS tests all primary contaminants which include microbiological contaminants, radionuclides, inorganic chemicals, organic chemicals (synthetic and volatile), and disinfection by-products. In addition, MAWSS tests for secondary contaminants, unregulated synthetic and volatile organic chemicals.

1,1-Dichloroethane	Aldrin	Isopropylbenzene
1,1-Dichloropropene	alpha-Chlordane	Manganese
1,1,2,2-Tetrachloroethane	Bromobenzene	Methyl-tert-butyl ether
trans-1,3-Dichloropropene	Bromochloromethane	Methomyl
1,2,3-Trichlorobenzene	Bromoform	Metolachlor
1,2,3-Trichloropropane	Bromomethane (Methyl bromide)	Metribuzin
1,2,4-Trimethylbenzene	Butachlor	Naphthalene
1,3,5-Trimethylbenzene	Carbaryl	Nickel
1,3-Dichlorobenzene	Chloroethane	n-Butylbenzene
1,3-Dichloropropane	Chloromethane	n-Propylbenzene
cis-1,3-Dichloropropene	trans-1.3 Dichloropropene	p-Isopropyltoluene
2,2-Dichloropropane	Dibromochloromethane	Propachlor
2-Chlorotoluene	Dibromomethane	sec-Butylbenzene
3-Hydroxycarbofuran	Dicamba	Silver
4-Chlorotoluene	Dichlorodifluoromethane	tert-Butylbenzene
Aldicarb	Dieldren	Tetrachloroethene
Aldicarb sulfone	Hexachlorobutadiene	Trichlorofluoromethane
Aldicarb sulfoxide	Iron	Zinc

## Testing for Unregulated Contaminants

### Unregulated Contaminant Monitoring Rule (UCMR4)\*

Contaminant	Units	MRL**	Range Detected	Average Detected
Germanium	ug/L	0.3	< 0.300	< 0.300
Manganese	ug/L	0.4	0.473 - 1.66	0.936
Alpha -hexachlorocyclohexane	ug/L	0.01	< 0.0100	< 0.0100
Chlorpyrifos	ug/L	0.03	< 0.0300	< 0.0300
Dimethipin	ug/L	0.2	< 0.200	< 0.200
Ethoprop	ug/L	0.03	< 0.0300	< 0.0300
Oxyfluorfen	ug/L	0.05	< 0.0500	< 0.0500
Profenofos	ug/L	0.3	< 0.300	< 0.300
Tebuconazole	ug/L	0.2	< 0.200	< 0.200
Total Permethrin (cis- & trans-)	ug/L	0.04	< 0.0400	< 0.0400
Tribufos	ug/L	0.07	< 0.0700	< 0.0700
1-butanol	ug/L	2	< 2.00	< 2.00
2-methoxyethanol	ug/L	0.4	< 0.400	< 0.400
2-propen-1-ol	ug/L	0.5	< 0.500	< 0.500
Butylated hydroxyanisole	ug/L	0.03	< 0.0300	< 0.0300
o-toluidine	ug/L	0.007	< 0.00700	< 0.00700
Quinoline	ug/L	0.02	< 0.0200	< 0.0200
Total Organic Carbon (TOC)	ug/L	1000	3880 - 4270	4075
Bromide	ug/L	20	< 20.0 - 20.2	20.2
HAA5***	ug/L	N/A	16.8 - 28.7	23.3
HAA6Br	ug/L	N/A	4.63 - 6.67	5.7
HAA9	ug/L	N/A	21.6 - 34.9	28.7

\*EPA uses the Unregulated Contaminant Monitoring Rule (UCMR) program to collect nationally representative data for contaminants suspected to be present in drinking water, but that do not have regulatory standards. The 1996 Safe Drinking Water Act (SDWA) amendments require that once every five years EPA issue a new list of no more than 30 unregulated contaminants to be monitored by public water systems (PWS's). The fourth Unregulated Contaminant Monitoring Rule (UCMR 4) was published in the Federal Register on December 20, 2016. UCMR 4 requires monitoring for 30 chemical contaminants between 2018 and 2020 using analytical methods developed by EPA and consensus organizations. This monitoring is used by EPA to understand the frequency and level of occurrence of unregulated contaminants in the nation's public water systems (PWS's) and provides a basis for future regulatory actions to protect public health.

\*\*EPA has established UCMR 4 Minimum Reporting Levels (MRL's) based on the capability of laboratories to perform the analytical method, not based on a level established as "significant" or "harmful". UCMR 4 results reported at or above those MRLs should be interpreted accordingly. The detection of a UCMR 4 contaminant does not represent cause for concern, in and of itself.

\*\*\*HAA5 Contaminants are included in the Detected Contaminants table and have a MCL of 60 ug/L.

**Disinfectant By-products:** Chemicals that may form when disinfectants (such as chlorine), react with plant matter and other naturally occurring materials in the water. These byproducts may pose health risks in drinking water.

**Primary Drinking Water Regulations:** Legally enforceable standards that apply to public water systems. These standards protect drinking water quality limiting the levels of specific contaminants that can adversely affect public health and which are known or anticipated to occur in public water supplies.

**Secondary Drinking Water Standards:** State enforceable standards regarding cosmetic effects (such as tooth or skin discoloration) or aesthetic effects (such as taste, odor, or color) of drinking water.

**Giardia and Cryptosporidium** – There are two types of microscopic organisms that can cause illness in humans. There are many ways to come in contact with these organisms including contaminated foods, swimming pools, recreational water, day care centers, contact with contaminated soil, nursing homes, and drinking water. MAWSS is taking steps to ensure these organisms do not pose a problem in the drinking water. The treatment plants have multiple barriers of protection such as enhanced chemical coagulation, filtration, disinfection, and careful monitoring of turbidity to ensure the optimum removal of these organisms. The water in our system is tested routinely for Cryptosporidium and Giardia. Their presence in raw water is common, and we have discovered an occasional presence in raw water. We have never found Cryptosporidium and Giardia in the treated drinking water.

### Board of Water and Sewer Commissioners of the City of Mobile, Alabama

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#### Board Meeting Dates

Monday, July 13, 2020  
Monday, August 3, 2020  
Monday, September 14, 2020  
Monday, October 12, 2020  
Monday, November 9, 2020  
Monday, December 7, 2020

This report is available at

[www.mawss.com/waterqualityreport.pdf](http://www.mawss.com/waterqualityreport.pdf)

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