Annual Drinking Water Quality Report

GREENHILL WATER & FIRE PROTECTION AUTHORITY

January - December 2019

We're pleased to present to you this year's Annual Quality Water Report. This report is designed to inform you about the quality water and services we deliver to you every day. Our constant goal is to provide you with a safe and dependable supply of drinking water. We want you to understand the efforts we make to continually improve the water treatment process and protect our water resources. We are committed to ensuring the quality of your water. Greenhill's water sources are two groundwater wells which draw from the Tuscumbia/Fort Payne Aquifer and purchased water from Florence Water & Sewer Department (50%**).** Florence water is supplied by surface water from the Tennessee River and the Cypress Creek. In addition, Florence Water Department pumps ground water from two wells in the Killen and Center Star areas in Lauderdale County, which is blended with the treated surface water sources. In the water provided to our customers (**from Greenhill), Chlorine is added** for disinfection purposes, **Caustic Soda** is added to raise pH levels of the water that will prevent it from being corrosive and Aqua Gold to produce a desirable water quality by raising the pH level to reduce corrosion and acidic conditions. In the water provided to our customers (**from Florence), Chlorine** is added for disinfection purposes, **Fluoride** for the prevention of tooth decay, **lime** to produce a desirable water quality by raising the pH level to reduce corrosion and acidic conditions, **Potassium Permanganate** to oxidize iron, and aid in taste and odor control, **Poly Aluminum Chloride** for turbidity removal and **Alum** for coagulation. Also **Florence** has added a new treatment process called the **MIEX** system as a simple solution for meeting U.S. Environmental Protection Agency's (EPA) disinfection by-product (DBP) removal by employing a continuous ion exchange process. The Process removes dissolved organic carbon (DOC) allowing for improved drinking water quality and regulatory compliance. Greenhill Water & FPA and Florence Water & Sewer Department have implemented a **Source Water Protection Plans.** These plans provide more information such as potential sources of contaminations, which may affect our water source.

If you have any questions about this report or concerning your water utility, please contact Greg Thompson, Manager/Operator, (256) 757-2863. We want our valued customers to be informed about their water utility. If you want to learn more, please attend our regularly scheduled meetings held on the second Monday of each month at 1 PM at the water board office on County Road 8.

BOARD OF DIRECTORS

- **Thomas J. Wallace, Chairman**
- **Larry A. Gist, Vice-Chairman**
- **Freddie E. Davis, Secretary/Treasurer**

Greenhill Water & Fire Protection Authority and Florence Water & Sewer Department routinely monitors for contaminants in your drinking water according to Federal and State laws. This table shows the results of our monitoring for the period of January 1st to December 31st, 2019. All drinking water, including bottled drinking water, may be reasonably expected to contain at least small amounts of some contaminants. It's important to remember that the presence of these contaminants does not necessarily pose a health risk.

PLAIN LANGUAGE DEFINITION

- *Not Required* (**NR**) – Laboratory analysis not required due to waiver granted by the Environmental Protection Agency for the State of Alabama.
- *Parts per million (**ppm**) or Milligrams per liter (mg/l)* - one part per million corresponds to one minute in two years or a single penny in $10,000.
- *Parts per billion (**ppb**) or Micrograms per liter* - one part per billion corresponds to one minute in 2,000 years, or a single penny in $10,000,000.
- *Parts per trillion (**ppt**) or Nanograms per liter (nanograms/l)* - one part per trillion corresponds to one minute in 2,000,000 years, or a single penny in $10,000,000,000.
- *Parts per quadrillion (**ppq**) or Picograms per liter (picograms/l)* - one part per quadrillion corresponds to one minute in 2,000,000,000 years or one penny in $10,000,000,000,000.
- *Picocuries per liter (**pCi/L**)* - picocuries per liter is a measure of the radioactivity in water.
- *Millirems per year (**mrem/yr**)* - measure of radiation absorbed by the body.
- *Nephelometric Turbidity Unit (**NTU**)* - nephelometric turbidity unit is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.
- *Variances & Exemptions (**V&E**)* - State or EPA permission not to meet an MCL or a treatment technique under certain conditions.
- *Action Level – (AL)* the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
- *Treatment Technique (**TT**)* - (mandatory language) A treatment technique is a required process intended to reduce the level of a contaminant in drinking water.
- *Maximum Contaminant Level* - (mandatory language) The "Maximum Allowed" (**MCL**) is 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 Contaminant Level Goal* - (mandatory language) The "Goal"(**MCLG**) is 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 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 contaminants.
- Maximum Residual Disinfectant Level or MRDL - The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

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.
- *Inorganic contaminants,* such as salts and metals, which can be naturally-occurring or result from urban storm water run-off, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- *Pesticides and herbicides,* which may come from a variety of sources such as agriculture, storm water run-off, and residential uses.
- *Organic chemical contaminants,* including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water run-off, and septic systems.
- *Radioactive contaminants,* which can be naturally occurring or be the result of oil and gas production and mining activities.

Table of Primary Contaminants

At high levels some primary contaminants are known to pose a health risks to humans. This table provides a quick glance of any primary contaminant detections.

CONTAMINANT	MCL	AMOUNT DETECTED	CONTAMINANT	MCL	AMOUNT DETECTED
Bacteriological			2,4-D	70	ND
Total Coliform Bacteria (Florence)	< 5%	3.9	Dalapon(ppb)	200	ND
Total Coliform Bacteria (Greenhill)	< 5%	ND	Dibromochloropropane(ppt)	200	ND
Turbidity (Florence)	TT	0.28	0-Dichlorobenzene(ppb)	600	ND
Fecal Coliform & E. coli	0	ND	p-Dichlorobenzene(ppb)	75	ND
Fecal Indicators (enterococci or coliohage)	TT	ND	1,2-Dichloroethane(ppb)	5	ND
Radiological			1,1-Dichloroethylene(ppb)	7	ND
Beta/photon emitters (mrem/yr)	4	ND	Cis-1,2-Dichloroethylene(ppb)	70	ND
Alpha emitters (pci/l)	15	ND	trans-1,2-Dichloroethylene(ppb)	100	ND
Combined radium (pci/l)	5	ND	Dichloromethane(ppb)	5	ND
Uranium(pci/l)	30	ND	1,2-Dichloropropane(ppb)	5	ND
Inorganic			Di-(2-ethylhexyl)adipate(ppb)	400	ND
Antimony (ppb)	6	ND	Di(2-ethylhexyl)phthlates(ppb) Greenhill 2010	6	0.04

Arsenic (ppb)	10	ND	Dinoseb(ppb)	7	ND
Asbestos (MFL)	7	ND	Dioxin[2,3,7,8-TCDD](ppq)	30	ND
Barium (ppm)	2	.013	Diquat(ppb)	20	ND
Beryllium (ppb)	4	ND	Endothall(ppb)	100	ND
Bromate(ppb)	10	ND	Endrin(ppb)	2	ND
Cadmium (ppb)	5	ND	Epichlorohydrin	TT	ND
Chloramines(ppm)	4	ND	Ethylbenzene(ppb)	700	ND
Chlorine(ppm) (Florence)	4	2.2	Ethylene dibromide(ppt)	50	ND
Chlorine(ppm) (Greenhill)	4	1.40	Glyphosate(ppb)	700	ND
Chlorine dioxide(ppb)	800	ND	Haloacetic Acids(ppb) Greenhill	60	20.0
Chlotite(ppm)	1	0.62	Heptachlor(ppt)	400	ND
Chromium (ppb)	100	0.68	Heptachlor epoxide(ppt)	200	ND
Copper (ppm) Greenhill	AL=1.3	0.093	Hexachlorobenzene(ppb)	1	ND
Cyanide (ppb)	200	ND	Hexachlorocyclopentadiene(ppm)	50	ND
Fluoride (ppm) Florence	4	.60	Lindane(ppt)	200	ND
Fluoride (ppm) Greenhill	4	0.02	Methoxychlor(ppb)	40	ND
Lead (ppb)	AL=15	ND	Oxamyl [Vydate](ppb)	200	ND
Mercury (ppb)	2	ND	Pentachlorophenol(ppb)	1	ND
Nickel (ppb)	0.01	0.00754	Picloram(ppb)	500	ND
Nitrate (ppm) Florence	10	.53	PCBs(ppt)	500	ND
Nitrate (ppm) Greenhill	10	2.54	Simazine(ppb)	4	ND
Nitrite (ppm)	1	ND	Styrene(ppb)	100	ND
Total Nitrate & Nitrite	10	2.54	Tetrachloroethylene(ppb)	5	ND
Selenium(ppb)	50	ND	Toluene(ppm)	1	ND
Thallium(ppb)	2	ND	TOC (Florence)	TT	1.1
Organic Chemicals			TTHM(ppb) Greenhill	80	40.0
Acrylamide	TT	ND	Toxaphene(ppb)	3	ND
Alachlor(ppb)	2	ND	2,4,5-TP (Silvex)(ppb)	50	ND
Atrazine(ppb)	3	ND	1,2,4-Trichlorobenzene(ppb)	70	ND
Benzene(ppbv)	5	ND	1,1,1-Trichloroethane(ppb)	200	ND
Benzo(a)pyrene[PHAs](ppt)	200	ND	1,1,2-Trichloroethane(ppb)	5	ND
Carbofuran(ppb)	40	ND	Trichloroethylene(ppb)	5	ND
Carbon Tetrachloride(ppb)	5	ND	Vinyl Chloride(ppb)	2	ND
Chlordane(ppb)	2	ND	Xylenes(ppm)	10	ND
Chlorobenzene(ppb)	100	ND			

Table of Detected Drinking Water Contaminants

CONTAMINANT	MCLG	MCL	Range			Amount Detected		Likely Source of Contamination
Bacteriological Contaminants January - December 2019								
Total Coliform Bacteria (Florence)	0	< 5%				5.0	Present or Absent	Naturally present in the environment
Turbidity (Florence)	0	TT				0.14	NTU	Soil runoff
Inorganic Contaminants January - December 2019								
Chlorine (Florence)	MRDLG 4	MRDL 4	0.20	-	2.20	2.20	ppm	Water additive used to control microbes
Chlorine (Greenhill)	MRDLG 4	MRDL 4	1.0	-	1.4	1.4	ppm	Water additive used to control microbes
Chromium	100	100	0.68	-	0.68	0.68	ppb	Discharge from steel and pulp mills erosion of natural deposits
Copper (Greenhill)	1.3	AL=1.3	0.14	-	0.25	0.25	ppm	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Fluoride (Florence)	4	4	ND	-	.51	51	ppm	Water additive which promotes strong teeth; erosion of natural deposits; discharge from fertilizer 4and aluminum factories
Fluoride (Greenhill)	4	4	0.02	-	0.02	0.02	ppm	Water additive which promotes strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories
Nickel	0.01	0.01	0.01	-	0.01	0.01	ppb	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cropland
Nitrate (as N) Florence	10	10	ND	-	1.1	1.1	ppm	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural

								deposits
Nitrate (as N) Greenhill	10	10	2.54	-	2.54	2.54	ppm	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Turbidity (Florence)	N/A	TT		-		0.14	NTU	Soil runoff
Organic Contaminants				**January - December 2019**				
Di(2-ethylhexyl)phthlates (Greenhill 2019)	0	6	0.02	-	0.04	0.04	ppb	Discharge from rubber and chemical factories
Haloacetic Acids (HAA5) Greenhill	N/A	60	11.0	-	20.0	20.0	ppb	By-product of drinking water chlorination
Total Organic Carbon (TOC) Florence	N/A	TT	0.5	-	0.9	0.9	TT	Naturally present in the environment
Total trihalomethanes (TTHM) Greenhill	0	80	23.0	-	40.0	40.0	ppb	By-product of drinking water chlorination
Secondary Contaminants				**January - December 2019**				
Chloride (Florence)	N/A	250	53.3	-	53.3	53.3	ppm	Naturally occurring in the environment or as a result of agricultural runoff
Chloride (Greenhill 2019)	N/A	250	4.11	-	4.11	4.11	ppm	Naturally occurring in the environment or as a result of agricultural runoff
Copper 2019	N/A	1	0.093	-	0.093	0.093	ppm	Erosion of natural deposits; leaching from pipes
Sulfate (Florence)	N/A	250	10.9	-	10.9	10.9	ppm	Naturally occurring in the environment
Sulfate (Greenhill) 2019	N/A	250	0.40	-	0.40	0.40	ppm	Naturally occurring in the environment
Total Dissolved Solids (Florence)	N/A	500	181	-	181	181	ppm	Erosion of natural deposits
Total Dissolved Solids (Greenhill 2019)	N/A	500	124	-	124	124	ppm	Erosion of natural deposits
Zinc 2019	N/A	5	4.35	-	4.35	4.35	ppm	Erosion of natural deposits
Special Contaminants				**January - December 2019**				
Calcium (Florence)	N/A	N/A	23.6	-	23.6	22.5	ppm	Erosion of natural deposits
Calcium (Greenhill 2019)	N/A	N/A	8.58	-	8.58	8.58	ppm	Erosion of natural deposits
Carbon Dioxide (Florence)	N/A	N/A	ND	-	ND	ND	ppm	Erosion of natural deposits
Carbon Dioxide (Greenhill) 2019	N/A	N/A	1.30	-	1.30	1.30	ppm	Erosion of natural deposits
Magnesium (Florence)	N/A	N/A	4.9	-	4.9	4.9	ppm	Erosion of natural deposits
Magnesium (Greenhill 2019)	N/A	N/A	2.08	-	2.08	2.08	ppm	Erosion of natural deposits
pH (Florence) 2019	N/A	N/A	7.8	-	7.8	7.8	SU	Naturally occurring in the environment or as a result of treatment with water additives
pH (Greenhill) 2019	N/A	N/A	8.10	-	8.10	8.10	SU	Naturally occurring in the environment or as a result of treatment with water additives
Sodium (Florence) 2019	N/A	N/A	21.5	-	21.5	21.5	ppm	Naturally occurring in the environment
Sodium (Greenhill 2019)	N/A	N/A	25.5	-	25.5	25.5	ppm	Naturally occurring in the environment
Specific Conductance (Greenhill 2019)	N/A	<500	170.0	-	170.00	170.00	umhos	Naturally occurring in the environment or as a result of treatment with water additives
Specific Conductance (Florence) 2019	N/A	<501	304	-	304	304	umhos	Naturally occurring in the environment or as a result of treatment with water additives
Sulfate (Florence) 2019	N/A	N/A	10.9	-	10.9	10.9	ppm	Naturally occurring in the environment
Sulfate (Greenhill) 2019	N/A	N/A	0.40	-	0.40	0.40	ppm	Naturally occurring in the environment

Total Alkalinity (Florence) 2019	N/A	N/A	79.6	-	79.6	79.6	ppm	Erosion of natural deposits
Total Alkalinity (Greenhill 2019)	N/A	N/A	78.3	-	78.3	78.3	ppm	Erosion of natural deposits
Total Hardness (as CaCO3) (Florence) 2019	N/A	N/A	78.4	-	78.4	78.4	ppm	Naturally occurring in the environment or as a result of treatment with water additives
Total Hardness (as CaCO3) (Greenhill) 2019	N/A	N/A	30.0	-	30.0	30.0	ppm	Naturally occurring in the environment or as a result of treatment with water additives
Unregulated Contaminants January - December 2019								
Bromodichloromethane (Greenhill)	N/A	N/A	4.84	-	6.34	6.34	ppb	Naturally occurring in the environment or as a result of industrial discharge or agricultural runoff; by-product of chlorination
Chloroform (Greenhill)	N/A	N/A	7.28	-	42.4	42.4	ppb	Naturally occurring in the environment or as a result of industrial discharge or agricultural runoff; by-product of chlorination
Dibromochloromethane (Greenhill)	N/A	N/A	0	-	4.90	4.90	ppm	Naturally occurring in the environment
Metolachlor (Greenhill)	N/A	N/A	0.16	-	0.16	0.16	ppm	Runoff/leaching from herbicide use

Cryptosporidium

Cryptosporidium is a microbial pathogen found in surface water throughout the U.S. Although filtration removes Cryptosporidium, the most commonly-used filtration methods cannot guarantee 100 percent removal. Ingestion of Cryptosporidium may cause cryptosporidiosis, an abdominal infection. Symptoms of infection include nausea, diarrhea and abdominal cramps. Most healthy individuals can overcome the disease within a few weeks. However, immune-compromised individuals, infants and small children, and the elderly are at greater risk of developing life-threatening illness. We encourage immune-compromised individuals to consult their doctor regarding appropriate precautions to take to avoid infection. Cryptosporidium must be ingested to cause disease, and it may be spread through means other than drinking water. We currently monitor for Cryptosporidium and have had none detected

Secondary Drinking Water Standards are guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. ADEM has Secondary Drinking Water Standards established in state regulations applicable to water systems required to monitor for the various components.

Violation

Due to a sample collection error not involving water staff, a Synthetic Organic Chemicals (SOCS) non-compliance was incurred for the 2017-2019 monitoring period. SOC samples were correctly collected and analyzed during the first quarter of 2020. Any SOCs above detection levels are listed in this CCR.

GENERAL INFORMATION

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

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 (Environmental Protection Agency)/CDC (Center of Disease Control) guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791). All Drinking water, including bottled drinking water, may be reasonably expected to contain at least small amounts of some constituents. It's important to remember that the presence of these constituents does not necessarily pose a health risk.

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 (1-800-426-4791).**

MCL's are set at very stringent levels. To understand the possible health effects described for many regulated contaminants, a person would have to drink two liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect.

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. The Greenhill water & Fire Protection Authority 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 your water 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.

Unregulated contaminants are those for which EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist EPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulation is warranted.

Based on a study conducted by the 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.

We at the Greenhill Water & Fire Protection Authority work around the clock to provide top quality water to every tap. We ask that all our customers help us protect our water sources which are the heart of our community, way of life and our children's future.