

2016

HONORING OUR PAST,
BUILDING THE FUTURE.

1856



**2016 WATER QUALITY
REPORT**

COMMITMENT TO QUALITY

Cleveland Water is committed to providing all of our 1.4 million customers with a virtually unlimited supply of safe, quality potable water. This commitment is our pledge as members of the Partnership for Safe Water Program. The Partnership is a voluntary cooperative effort between the U.S. Environmental Protection Agency (USEPA), drinking water professional organizations, and over 200 drinking water utilities across the country. All water utilities in the Partnership agree to adopt stringent performance standards in order to optimize treatment and to protect the water supply against microbiological contamination.



Joining the Partnership requires a significant investment of time and resources aimed at evaluating treatment and optimizing performance to provide you, our customers, with great tasting water with an even higher degree of protection against microbiological contaminants. We are proud that each of our four treatment plants has attained Level 3 in the Partnership for years. Additionally, we are honored that our Crown Water Treatment Plant in Westlake has attained Level 4, an honor of excellence that only 14 other water plants in the entire country have achieved!



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HIGH STANDARD

The health of our customers and community is of vital importance to us. Cleveland Water works hard to ensure that our customers receive the highest quality water at all times. Cleveland Water holds itself to higher water quality standards than those required by the USEPA. We perform self-assessments of our water treatment operations, identify performance limiting factors, and take corrective actions to improve water quality. We have completed the required self-assessment and optimization programs at each of our four water treatment plants. This large effort ensures that our customers receive great-tasting water with a higher degree of protection.



INVESTMENTS

Because you count on us for your water needs, we have invested more than \$1.6 billion over the past 30 years to modernize our treatment plants and distribution system. Cleveland Water maintains and restores our treatment plants and distribution system through our Capital Improvement Program (CIP). Cleveland Water uses the CIP to identify its infrastructure needs, prioritize projects, and schedule them for funding and implementation through a multi-year plan.

WHAT TO EXPECT FROM YOUR DRINKING WATER

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.

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 USEPA's Safe Drinking Water Hotline at 1-800-426-4791.



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 stormwater runoff, 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, urban stormwater runoff, and residential uses.

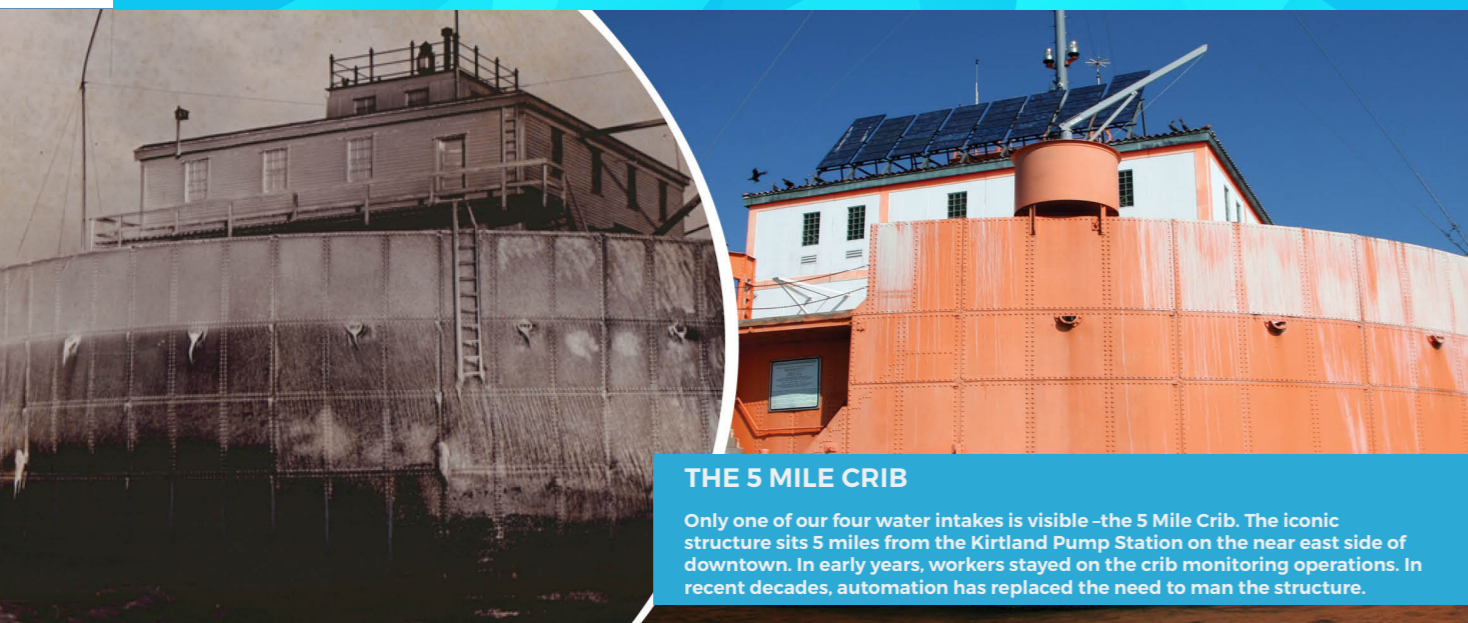
Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.

Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, the USEPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which shall provide the same protection for public health.

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.

USEPA/Center for Disease Control guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available by calling the Safe Drinking Water Hotline at 1-800-426-4791.



THE 5 MILE CRIB

Only one of our four water intakes is visible –the 5 Mile Crib. The iconic structure sits 5 miles from the Kirtland Pump Station on the near east side of downtown. In early years, workers stayed on the crib monitoring operations. In recent decades, automation has replaced the need to man the structure.

KEY WAYS THAT YOU CAN HELP PROTECT LAKE ERIE.



Remove trash and debris from sewers and storm sewers.



Dispose of household wastes such as fertilizers, pesticides, paints, paint thinners and motor oil properly.



Prevent soil erosion by planting trees, grass or shrubs along streams and rivers.



Support local watershed groups as well as other organizations.

CLEVELAND'S SOURCE WATER

We are fortunate because 20% of the world's freshwater is in the Great Lakes watershed which includes Lake Erie. Cleveland Water uses surface water drawn from four intakes in Lake Erie as the source of our drinking water. Ninety percent of the water entering Lake Erie comes from the upstream Great Lakes – Superior, Michigan and Huron – as well as all of the rivers and streams that flow into these Lakes. The remaining 10% comes from rain and snow in the Lake Erie drainage basin which includes the various streams and rivers that flow into Lake Erie.

By their nature, surface waters, such as lakes and rivers, are accessible and can be contaminated by chemicals and disease causing organisms. Since our intake systems are located a considerable distance offshore (built in the early 1900s and again in the – 1940s and 1950s), potential contamination from rivers, streams and other nearby sources is greatly minimized.

Since no single treatment process can address all possible contaminants, we use a multiple barrier process to treat Lake Erie water in order to meet drinking water quality standards. Additionally, implementing measures to protect Lake Erie may improve our water quality.

The State of Ohio performed an assessment of our source water in the late 1990s. For more information about potential pollution sources, contact our Risk Management Section at 216-664-2444 x75838 and ask for our Drinking Water Source Assessment Report.

CLEVELAND WATER COMPLIANCE WITH DRINKING WATER REGULATIONS

Cleveland Water is in compliance with all Maximum Contaminant Levels and Treatment Techniques for drinking water. We had no Safe Drinking Water Act violations in 2016. Based upon our excellent compliance record, Cleveland Water has a current, unconditioned license to operate our water system. This license is issued by the Ohio Environmental Protection Agency. We are proud to provide you, our customer, with the highest quality water possible.

Coliform Monitoring

We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. We collect over 350 bacteria tests every month (4,200 samples per year). On March 14, 2016, two of these samples, collected within minutes of each other, were tested to be E. coli positive. Immediate repeat samples were found to be safe. It is highly likely the E. coli results were due to sample collection error since there was chlorine residual present in the sample and dozens of results taken before and after these two samples were safe.

Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects such as diarrhea, cramps, nausea, headaches or other symptoms. They may pose a special health risk for infants, young children, and people with severely compromised immune systems. On March 14, 2016, two routine compliance samples were collected within 7 minutes of each other and were found to be E. coli positive. Repeat samples collected the following day were found to be safe, confirming the water was in fact safe and met all regulatory requirements. Samples collected before and after the two routine samples on March 14th were also found to be safe. Chlorine residual was present in all sample results, thereby making the E. coli positive results suspect. It is likely the results were due to sample collection error. Even though no violations were incurred, Cleveland Water promotes transparency and believes customers should be aware of these results.

Unregulated Contaminants

Unregulated contaminants are substances for which USEPA has no established drinking water standard. USEPA requires monitoring for these substances to assist USEPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulation is warranted. One of these substances, Cryptosporidium, was detected in a raw water sample from the Garrett A. Morgan Water Treatment Plant in June 2016. Specifically, two oocysts (organisms) of Cryptosporidium were detected in a 100 liter sample of raw water from the plant. It was not detected in the plant's finished water.

Cryptosporidium is a microbial pathogen found in surface water throughout the U.S. Although filtration removes Cryptosporidium, the most common filtration methods cannot guarantee 100% removal. Monitoring of source water indicates the presence of these organisms. Current test methods cannot determine if these organisms are dead or are capable of causing disease. Symptoms include nausea, diarrhea and abdominal cramps. Most healthy individuals can overcome the disease. However, immunocompromised people are at greater risk; these individuals should consult their doctor regarding appropriate precautions to avoid infection. Cryptosporidium must be ingested to cause disease and it may be spread through means other than drinking water. Cleveland Water has been monitoring raw and finished water every month for Cryptosporidium for many years at each of our four plants. This was the only detection ever found.



CHEMISTRY LAB

Testing requirements are far more stringent today than in years past. Technology has made increased frequency and accuracy possible. As a result contaminants can now be detected in the parts per million and parts per billion range.

CLEVELAND WATER TABLE OF DETECTED CONTAMINANTS

| Inorganic Contaminants | MCLG | MCL | Level Found | Range of Detections | Typical Source in Drinking Water |
|------------------------------|------|-----|-------------|---------------------|--|
| Fluoride (mg/L) | 4 | 4 | 1.0 | 0.8-1.3 | Water additive which promotes strong teeth. |
| Nitrate [as Nitrogen] (mg/L) | 10 | 10 | 0.95 | <0.01-0.95 | Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits. |

| Lead & Copper | AL | Individual Results over AL | 90% of Test Levels were less than | Violation | Year | Typical Source in Drinking Water |
|--|-----|----------------------------|-----------------------------------|---|------|--|
| Copper (mg/L) *** | 1.3 | N/A | 0.07 | No 0 out of 51 samples greater than 1.3 mg/L | 2015 | Corrosion of household plumbing systems. |
| Lead (ug/L) *** | 15 | 46 | ND | No 1 out of 51 samples greater than 15 ug/L | 2015 | Corrosion of household plumbing systems. |
| Lead (ug/L), Special Purpose in 2016, not for compliance | 15 | 0 | ND | N/A 0 out of 13 samples greater than 15 ug/L | 2016 | Corrosion of household plumbing systems. |

| Organic Contaminants | MCLG | MCL | Level Found | Range of Detections | Typical Source in Drinking Water |
|--------------------------------------|------|-----|-------------|---------------------|--|
| TTHMs [Total Trihalomethanes] (ug/L) | N/A | 80 | 36.5 | 4.8-32.2 | By-product of drinking water chlorination. |
| HAA5 [Haloacetic Acids] (ug/L) | N/A | 60 | 30.3 | 6.4-42.6 | By-product of drinking water chlorination. |
| Total Organic Carbon* | N/A | TT | 1.18 | 1.1-1.51 | Naturally present in the environment. |

| Disinfectant | MCLG | MRDL | Level Found | Range of Detections | Typical Source in Drinking Water |
|-----------------------|------|------|-------------|---------------------|--|
| Total Chlorine (mg/L) | 4 | 4 | 0.98 | 0.9-1.3 | Water additive used to control microbes. |

| Microbiological Contaminants | MCLG | MCL | Level Found | Range of Detections | Typical Source in Drinking Water |
|----------------------------------|------|--|-------------|---------------------|---------------------------------------|
| Turbidity (NTU)** | N/A | TT=95% of samples must be less than or = 0.3 NTU | 0.09 | 0.02-0.09 | Soil runoff. |
| Total Coliform Bacteria (TC) | 0 | Greater than 5% are positive per month | 0.54% | 0%-0.54% | Naturally present in the environment. |
| E. coli distribution samples**** | N/A | TT | 2 | 0%-0.006% | Human and animal fecal waste. |

* The value reported under "Level Found" for Total Organic Carbon (TOC) is the lowest running annual average ratio between the percent of TOC actually removed to the percentage of TOC required to be removed. A value of 1 or greater under "Level Found" indicates compliance with TOC removal requirements. A value less than 1 indicates a violation of the TOC removal requirements. The value reported under the "Range" of TOC is the lowest monthly ratio to the highest monthly ratio.
 ** A measure of the cloudiness of the water that serves as a good indicator of the effectiveness of the water treatment process.
 *** Samples collected June - September 2015. Next round of compliance samples will be summer of 2018.
 **** Two routine compliance samples, collected within 7 minutes of each other on March 14, 2016, were found to be E. coli positive. Repeat samples collected the following day were found to be safe, confirming the water was in fact safe and met all regulatory requirements. The E. coli positive results are most certainly due to sample collection error since samples collected before and after these two samples were found to be safe. There was no violation incurred. However, Cleveland Water is identifying this occurrence to ensure transparency in reporting to our customers.

CLEVELAND WATER UNREGULATED CONTAMINANTS

Unregulated contaminants are substances for which EPA has no established drinking water standard. EPA requires monitoring to determine where certain substances occur and whether it needs to regulate those substances in the future.

| Organic Contaminants | Level Found | Range of Detections |
|----------------------|-------------|---------------------|
| Chlorate (ug/L) | 60.0 | 22.0-120.0 |
| Chromium-6 (ug/L) | 0.10 | 0.03-0.20 |
| Molybdenum (ug/L) | 1.3 | 1.0-1.5 |
| Strontium (ug/L) | 168.5 | 150-210 |
| Testosterone (ug/L) | 0.00016 | ND-0.00016 |
| Vanadium (ug/L) | 0.4 | ND-0.7 |

DEFINITIONS

Maximum Contaminant Level Goal (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 (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.

Treatment Technique (TT): A required process intended to reduce the level of a contaminant in drinking water.

Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Maximum Residual Disinfectant Level (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.

Maximum Residual Disinfectant Level Goal (MRDLG): The level of 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.

KEY TO TABLE OF DETECTED CONTAMINANTS

- AL = Action Level
- MCL = Maximum Contaminant Level
- MCLG = Maximum Contaminant Level Goal
- NTU = Nephelometric Turbidity Units
- mg/L = milligrams per liter, or parts per million
- ug/L = micrograms per liter, or parts per billion
- TT = Treatment Technique
- MRDL = Maximum Residual Disinfectant Level
- MRDLG = Maximum Residual Disinfectant Level Goal
- N/A = Not Applicable
- ND = Not Detected

< : a symbol which means less than. A result of "<5" means that the lowest level that can be detected is 5 and the contaminant in that sample was not detected.

pCi/L = Picocuries per liter, a common measure of radioactivity.



WATER PIPES

Cleveland Water services over 80 communities and pumps millions of gallons of water daily through more than 5,300 miles of water mains necessary to deliver water to over 420,000 account holders.

IS YOUR HOME AT RISK?

Like many older water systems across the country, the Cleveland Water System does contain some lead service connections and lines. Lead service connections and lines were commonly used in the Greater Cleveland area prior to 1954. In general, if your home was built after 1954, it is unlikely that you have a lead service connection or line. The vast majority of these lead service lines are on the cityside connection (the pipe leading from the main in the street to the shut-off valve at the property line.)

If your home was built before 1954, below is a simple test you can do to determine if your customer side service line (the pipe leading from the shut-off valve into your home) is made of lead. Take a penny and gently scrape the pipe that comes out of the wall or basement floor before the water meter. There are typically three types of pipe material you will see: lead, copper or galvanized steel. Here is what each type looks like when scratched.



Lead Pipe
If the scraped area is shiny and silver, your service line is lead. A magnet will not stick to a lead pipe.



Galvanized Steel Pipe
The scraped area remains dull and gray.



Copper Pipe
If the scraped area is copper in color, like a penny, your service line is copper. A magnet will not stick to a copper pipe.



Galvanized Steel Pipe
At times it can be difficult to distinguish between galvanized steel and lead pipes. If a magnet sticks to the surface, your service line is galvanized steel.

WHAT YOU CAN DO AT HOME

Cleveland Water utilizes orthophosphate in our treatment process, and our test results indicate it is very successful in protecting customers from risks associated with lead found in cityside connections, customer-owned service lines and at-home plumbing.

For more information about lead in drinking water and our water treatment process, please visit www.ClevelandWater.com/Lead-Treatment or call our Lead Hotline at 216-664-2882.

Elevated lead levels can cause serious health problems, especially for children and pregnant women. Lead in drinking water comes primarily from service lines that connect your home to the water main and home plumbing and fixtures. While Cleveland Water is responsible for delivering high quality drinking water, we cannot control the variety of material used in your home plumbing and fixtures. Lead was a common material used prior to 1954 to connect new homes to the water system. Lead-based solder, often used to join copper pipes, was used in homes up until 1998.



Faucet Aerators
Faucet aerators (the wire screen where water comes out of your faucet) that are not cleaned regularly may also increase lead exposure. Periodically remove debris from faucet strainers – we recommend twice a year. Remove the strainers/screens from the faucets you use for consumption, rinse off the strainer, and run the water for 3 to 5 minutes.



Lead In Pipes
Some lead may dissolve into water when water sits in your pipes overnight or when it is unused for several hours during the day. As a precaution, let the cold tap water run until you feel a change in water temperature to make sure you're getting water from the main in your street. This usually takes 30 seconds to 2 minutes. This can minimize the potential for lead exposure in water used for drinking or cooking.



Cold Water
Always use cold water for cooking, drinking, brushing teeth, or making baby formula since hot water dissolves lead more quickly than cold water. Run cold water until it becomes as cold as it can get before using it for these purposes. Heat water instead on the stove, in the microwave, or using a bottle warmer.

WANT TO HAVE YOUR TAP WATER TESTED FOR LEAD LEVELS?

If you want to have your tap water tested for lead levels, go to <http://www.epa.ohio.gov/Portals/28/documents/labcert/Chemical%20Labs.pdf> to locate an Ohio EPA-certified laboratory. You can also call Ohio EPA at 614-644-2752 to obtain a list of certified laboratories. The Safe Drinking Water Hotline, 1-800-426-4791, or its website, <http://www.epa.gov/safewater/lead> is another valuable resource for additional information for minimizing your exposure to lead

CLEVELAND HEIGHTS COMPLIANCE WITH DRINKING WATER REGULATIONS

Throughout 2016, the City of Cleveland Heights operated as a consecutive water system and purchased water as a Master Meter community with Cleveland Water. As such, the City of Cleveland Heights did not treat water. Rather, the City purchased bulk treated water from Cleveland Water for redistribution into a piping network owned, maintained and operated by the City of Cleveland Heights.

In January 2017, the City of Cleveland Heights transitioned to Direct Service with Cleveland Water. This means that Cleveland Water would now be responsible for all drinking water operations, infrastructure and services for Cleveland Heights customers; and, the City of Cleveland Heights would no longer operate as a community public water system.

All monitoring in 2016 was conducted by the City of Cleveland Heights as a water system under Ohio EPA regulation. As part of the transition however, the Ohio EPA required Cleveland Water to provide consumer confidence report information to the residents of Cleveland Heights via our 2016 Water Quality Report. This page and the following tables are intended to meet Ohio EPA's requirements. At the time of the transition, the City of Cleveland Heights had an unconditioned license to operate their water system. Most information required in the City of Cleveland Heights' consumer confidence reports was previously provided by Cleveland Water. Some information however, including violation information, was specific to Cleveland Heights. Additional compliance information and sample results are shown in the following tables.



DISTRIBUTION SYSTEM

Cleveland Water's distribution system allows us to ensure an ample supply of clean, great-tasting water is available at all times. The distribution system is how we deliver water to homes and businesses throughout our 640-square-mile service area.

WELCOME CLEVELAND HEIGHTS

Please share this information with all the other people who drink this water, especially those who may not have received this Water Quality Report directly (for example, people in apartments, nursing homes, schools and businesses). You can do this by posting this report in a public place or distributing copies by hand or mail.

CLEVELAND HEIGHTS TABLE OF DETECTED CONTAMINANTS

| Lead & Copper | AL | Individual Results over AL | 90% of Test Levels were less than | Violation | Year | Typical Source in Drinking Water |
|-------------------|-----|----------------------------|-----------------------------------|---|------|--|
| Copper (mg/L) *** | 1.3 | N/A | 0.082 | No 0 out of 30 samples greater than 1.3 mg/L | 2015 | Corrosion of household plumbing systems. |
| Lead (ug/L) *** | 15 | N/A | 1.11 | No 0 out of 30 samples greater than 15 ug/L | 2015 | Corrosion of household plumbing systems. |

| Organic Contaminants | MCLG | MCL | Level Found | Range of Detections | Typical Source in Drinking Water |
|---|------|-----|-------------|---------------------|--|
| TTHMs [Total Trihalomethanes] (ug/L) | N/A | 80 | 31.2 | 8.6-25.2 | By-product of drinking water chlorination. |
| HAA5 [Haloacetic Acids] (ug/L) | N/A | 60 | 23.0 | 9.8-30.9 | By-product of drinking water chlorination. |

| Disinfectant | MRDLG | MRDL | Level Found | Range of Detections | Typical Source in Drinking Water |
|-----------------------|-------|------|-------------|---------------------|--|
| Total Chlorine (mg/L) | 4 | 4 | 1.3 | 0.9-1.2 | Water additive used to control microbes. |

| Microbiological Contaminants | MCLG | MCL | Level Found | Range of Detections | Typical Source in Drinking Water |
|------------------------------|------|--|-------------|---------------------|---------------------------------------|
| Total Coliform Bacteria (TC) | 0 | Greater than 5% are positive per month | 0% | 0% | Naturally present in the environment. |

*** Samples collected September 2015.

UNREGULATED CONTAMINANTS

Unregulated contaminants are substances for which EPA has no established drinking water standard. EPA requires monitoring to determine where certain substances occur and whether it needs to regulate those substances in the future.

| Contaminant | Level Found | Range of Detections |
|--|-------------|---------------------|
| Chlorate (ug/L) | 31.5 | 22.0-120.0 |
| Chromium-6 (ug/L) | 0.08 | 0.03-0.20 |
| Molybdenum (ug/L) | 0.25 | 1.0-1.5 |
| Strontium (ug/L) | 144 | 150-210 |
| Testosterone (ug/L) | 0.00016 | ND-0.00016 |
| Total Chromium (ug/L) | 0.07 | ND-0.28 |
| Perfluorooctanesulfonic acid (PFOS) (ug/L) | 0.4 | ND-0.4 |

Cleveland Heights violated Ohio Revised Code 6109.121(C)(1) and 6109.121(D) for lead samples collected on November 8, 2016. The violations were for failure to issue lead consumer notice within two (2) business days of receipt of the tap monitoring results and for failing to submit the appropriate verification form to Ohio EPA within five days, respectively.

PLEASE SHARE THIS INFORMATION

Please share this information with all the other people who drink this water, especially those who may not have received this Water Quality Report directly (for example, people in apartments, nursing homes, schools and businesses). You can do this by posting this report in a public place or distributing copies by hand or mail.

QUESTIONS

To ask questions about information contained in this report, please contact our **Water Quality Line at 216-664-2639**.

To ask questions about lead in drinking water, please contact our **Lead Inquiry Line at 216-664-2882**.

To learn more about our drinking water or our Speakers Bureau Program, contact the **Office of Public Education and Outreach at 216-664-3173**.



Cleveland Water

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