

# ANNUAL WATER QUALITY REPORT

Reporting Year 2021

*Presented By*





## We've Come a Long Way

We are proud to present our annual water quality report covering the period between January 1 to December 31, 2021. In a matter of only a few decades, drinking water has become exponentially safer and more reliable than at any other point in human history. Our exceptional staff continues to work hard every day—at all hours—to deliver the highest-quality drinking water without interruption. Although the challenges ahead are many, we feel that by relentlessly investing in customer outreach and education, new treatment technologies, system upgrades, and training, the payoff will be reliable; and will give results of high-quality tap water delivered to you and your family.

### Water Main Flushing

Distribution mains (pipes) convey water to homes, businesses, and hydrants in your neighborhood. The water entering distribution mains is of very high quality; however, water quality can deteriorate in areas of the distribution mains over time. Water main flushing is the process of cleaning the interior of water distribution mains by sending a rapid flow of water through the mains.

Flushing maintains water quality in several ways. For example, flushing removes sediments like iron and manganese. Although iron and manganese do not pose health concerns, they can affect the taste, clarity, and color of the water. Additionally, sediments can shield microorganisms from the disinfecting power of chlorine, contributing to the growth of microorganisms within distribution mains. Flushing helps remove stale water and ensures the presence of fresh water with sufficient dissolved oxygen and disinfectant levels and an acceptable taste and smell.

During flushing operations in your neighborhood, some short-term deterioration of water quality, though uncommon, is possible. You should avoid tap water for household uses at that time. If you do use the tap, allow your cold water to run for a few minutes at full velocity before use and avoid using hot water to prevent sediment accumulation in your hot water tank.

Please contact us if you have any questions or if you would like more information on our water main flushing schedule.

### Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. If you are an immunocompromised person 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 may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by *cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791 or online at: <http://water.epa.gov/drink/hotline>.

### Lead in Home Plumbing

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. Lake Kilby Water Treatment Plant is responsible for providing high-quality drinking water, but we 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 two 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 at (800) 426-4791, or online at: [www.epa.gov/safewater/lead](http://www.epa.gov/safewater/lead).

“  
When the well is dry, we  
know the worth of water.

—Benjamin Franklin

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## FOR MORE INFORMATION

At the City of Portsmouth Department of Public Utilities, we value our customers and work hard to ensure your satisfaction. If you have questions or comments about this report or other issues concerning water quality, please call Water Quality Laboratory Chemist or the other sources of water quality information listed below:

City of Portsmouth Lake Kilby Water Treatment Plant,  
Water Quality Laboratory: (757) 539-2201, ext. 235 or 225

Public Utilities Customer Service: (757) 393-8524

Additional sources of information regarding water quality may be found at:

Virginia Department of Health Office of Water Programs:  
(757) 683-2000

U.S. Environmental Protection Agency Safe Drinking Water  
Hotline: (800) 426-4791

This water quality report, as well as other city issues, can be viewed on our website. Please visit us online at [www.portsmouthva.gov](http://www.portsmouthva.gov).

## Source Water Assessment

The Source Water Assessment Plan (SWAP) is an assessment of the delineated area around our listed sources through which contaminants, if present, could migrate and reach our source water. It also includes an inventory of potential sources of contamination within the delineated area and a determination of the water supply's susceptibility to contamination by the identified potential sources.



According to the SWAP, our water system had a susceptibility rating of medium, where the drinking water is potentially most susceptible to agriculture, urban, and forestry runoff. However, we have not detected any contaminants from these sources in our drinking water. If you would like to review the SWAP, please feel free to contact our office during office hours at (757) 539-2201, ext. 222.

## How Long Can I Store Drinking Water?

The disinfectant in drinking water will eventually dissipate even in a closed container. If that container housed bacteria prior to filling up with the tap water the bacteria may continue to grow once the disinfectant has dissipated. Some experts believe that water could be stored up to six months before needing to be replaced. Refrigeration will help slow the bacterial growth.

## Source Water Description

Your tap water comes from four surface lakes - Meade, Cohoon, Speight's Run, and Lake Kilby - and five deep wells. Portsmouth's water treatment facility has the capacity to treat 32 million gallons of water each day and serves over 150,000 customers in Portsmouth, Chesapeake, and Suffolk.

## Substances That Could Be in Water

To ensure that tap water is safe to drink, the U.S. EPA prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that the water poses a health risk.

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, in some cases, radioactive material, and substances resulting from the presence of animals or from human activity. Substances 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, or wildlife;

**Inorganic Contaminants**, such as salts and metals, which can be naturally occurring or may 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 by-products of industrial processes and petroleum production and may also come from gas stations, urban stormwater runoff, and septic systems;

**Radioactive Contaminants**, which can be naturally occurring or may be the result of oil and gas production and mining activities.

For more information about contaminants and potential health effects, call the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

## Test Results

Our water is monitored for many different kinds of substances on a very strict sampling schedule. The water we deliver must meet specific health standards. Here, we only show those substances that were detected in our water (a complete list of all our analytical results is available upon request). Remember that detecting a substance does not mean the water is unsafe to drink; our goal is to keep all detects below their respective maximum allowed levels.

The state recommends monitoring for certain substances less than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data are included, along with the year in which the sample was taken.



### REGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Barium (ppm)	2021	2	2	0.025	NA	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chloramines (ppm)	2021	[4]	[4]	3.5	1.4–4	No	Water additive used to control microbes
Fluoride (ppm)	2021	4	4	0.8	0.45–1.03	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Haloacetic Acids [HAAs]– Stage 2 (ppb)	2021	60	NA	33	8–36	No	By-product of drinking water disinfection
TTHMs [total trihalomethanes]–Stage 2 (ppb)	2021	80	NA	40	20–50	No	By-product of drinking water disinfection
Total Organic Carbon <sup>1</sup> (ppm)	2021	TT	NA	1.93	1.34–2.63	No	Naturally present in the environment
Turbidity <sup>2</sup> (NTU)	2021	TT	NA	0.10	ND–0.10	No	Soil runoff
Turbidity (lowest monthly percent of samples meeting limit)	2021	TT = 95% of samples meet the limit	NA	100	NA	No	Soil runoff

Tap water samples were collected for lead and copper analyses from sample sites throughout the community

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH %ILE)	SITES ABOVE AL/TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2021	1.3	1.3	0.125	0/52	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2021	15	0	<0.001	0/52	No	Corrosion of household plumbing systems; Erosion of natural deposits

## Definitions

**90th %ile:** The levels reported for lead and copper represent the 90th percentile of the total number of sites tested. The 90th percentile is equal to or greater than 90% of our lead and copper detections.

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

**MCL (Maximum Contaminant Level):** 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.

**MCLG (Maximum Contaminant Level Goal):** 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.

**MRDL (Maximum Residual Disinfectant Level):** 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.

**MRDLG (Maximum Residual Disinfectant Level Goal):** 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.

**NA:** Not applicable.

**NTU (Nephelometric Turbidity Units):** Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

**ppb (parts per billion):** One part substance per billion parts water (or micrograms per liter).

**ppm (parts per million):** One part substance per million parts water (or milligrams per liter).

**SMCL (Secondary Maximum Contaminant Level):** These standards are developed to protect aesthetic qualities of drinking water and are not health based.

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

**µS/cm (microsiemens per centimeter):** A unit expressing the amount of electrical conductivity of a solution.

## SECONDARY SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	MCLG	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Aluminum (ppb)	2021	200	NA	0.014	ND – 0.058	No	Erosion of natural deposits; Residual from some surface water treatment processes
Chloride (ppm)	2021	250	NA	15	NA	No	Runoff/leaching from natural deposits
pH (units)	2021	6.5-8.5	NA	7.6	7.3–8	No	Naturally occurring
Sulfate (ppm)	2021	250	NA	57	29–90	No	Runoff/leaching from natural deposits; Industrial wastes
Total Dissolved Solids [TDS] (ppm)	2021	500	NA	220	188–248	No	Runoff/leaching from natural deposits

## OTHER SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Alkalinity (ppm)	2021	80	50–99	Naturally occurring
Calcium Hardness (ppm)	2021	16	12–24	Naturally present in sedimentary rocks
Calcium (ppm)	2021	6.5	4–9.2	Naturally present through the leaching of calcium rocks
Conductivity (µS/cm)	2021	370	281–370	Naturally occurring
Corrosion Index (Langelier) (ppm)	2021	-1.67	-1.47–-0.99	Naturally or industrially influenced balance of hydrogen, carbon, and oxygen in the water affected by temperature and other factors
Hardness (ppm)	2021	20	12–21	Naturally occurring
Magnesium (ppm)	2021	1.6	ND–6	Naturally occurring
Orthophosphate (ppm)	2021	0.10	0.08–0.85	Naturally occurring in rocks and other minerals
Sodium (ppm)	2021	66	55–71	Naturally occurring

## RADIOLOGICAL DATA

SUBSTANCE (UNIT OF MEASURE)	UNITS	YEAR	MCL	RESULTS	VIOLATION	TYPICAL SOURCE
Gross Alpha Particles	pCi/L	2021	15	0.36 +/-0.65	No	Results fell in data range with a minimum detectable activity (MDA95) of 0.74pCi/. Meaning the concentration can be counted with a precision of 100% at the 95% confidence level. Erosion of natural deposit
Gross Beta Particles	pCi/L	2021	4mrem/yr/0	1.4+/-1.3	No	Results fell in data range with a minimum detectable activity (MDA95) of 1.3pCi/. Meaning the concentration can be counted with a precision of 100% at the 95% confidence level. Decay of natural and human made deposits
Radium-226	pCi/L	2021	5	0.4+/-0.41	No	Erosion of natural deposits
Radium-228	pCi/L	2021	5	1.2+/-0.6	No	Erosion of natural deposits
Combined Radium <sup>3</sup>	pCi/L	2021	5	1.67+/-0.73	No	Results fell in data range with a minimum detectable activity (MDA95) of 0.56pCi/. Meaning the concentration can be counted with a precision of 100% at the 95% confidence level. Naturally occurring in the bedrock

## UNREGULATED CONTAMINANTS MONITORING RULE PART 4 (UCMR4) (SAMPLING PERFORMED 2018-2019)

SUBSTANCE (UNIT OF MEASURE)	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
HAA5 (ppb)	27.12	17.44–36.85	By-product of drinking water disinfection
HAA6Br (ppb)	8.87	5.98–12.21	By-product of drinking water disinfection
HAA9 (ppb)	35.71	24.12–47.76	By-product of drinking water disinfection
Manganese (ppb)	0.84	0.562–1.01	Naturally occurring
Quinoline (ppb)	0.0419	NA	Typically found in cocoa, black tea, and certain types of alcohols

<sup>1</sup>The value reported under Amount Detected for TOC is the lowest ratio between percentage of TOC actually removed to the percentage of TOC required to be removed. A value of greater than 1 indicates that the water system is in compliance with TOC removal requirements. A value of less than 1 indicates a violation of the TOC removal requirements.

<sup>2</sup>Turbidity is a measure of the cloudiness of the water. It is monitored because it is a good indicator of the effectiveness of the filtration system.

<sup>3</sup>Combined radium is the combination of radium 226 and radium 228.