

A large, artistic photograph of water splashing from a chrome faucet. The water is captured in mid-air, creating a dynamic and refreshing scene. The background is a soft-focus green landscape. The image is framed by a large, stylized blue and white graphic element that curves across the top and right sides of the page.

ANNUAL WATER QUALITY REPORT

WATER TESTING
PERFORMED IN 2015



Presented By
Portsmouth Water Division

Meeting the Challenge

The following annual drinking water report covers all drinking water testing performed between January 1 and December 31, 2015. We continually strive to adopt new methods for delivering the best-quality drinking water to your homes and businesses. As new challenges to drinking water safety emerge, we remain vigilant in meeting the goals of source water protection, water conservation, and community education while continuing to serve the needs of all of our water users.

Additional information and water supply updates are posted at the www.CityofPortsmouth.com Web site. Please let us know if you ever have any questions or concerns about your water.

For more information about this report, or for any questions relating to your drinking water, please call Albert Pratt, P.E. Water Resource Manager, at (603) 520-0622. New Castle Water Works customers, please call Steve Tabbutt at (603) 431-6710.

Water Supply Status Report

The Portsmouth Water Division routinely evaluates the conditions of our water sources, water demands, and system capacity. This information is summarized and reported at least monthly in our Water Supply Status Report, which is posted on www.cityofportsmouth.com/publicworks/index.htm under the heading water/water supply status.

Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as those with cancer undergoing chemotherapy, those 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 <http://water.epa.gov/drink/hotline>.



Community Participation

Please share with us your thoughts about the information in this report. After all, well-informed customers are our best allies. You are invited to voice your concerns at any regularly scheduled City Council meeting. Meetings are usually scheduled twice each month on Monday evenings starting at 7:00 p.m. at Portsmouth City Hall, 1 Junkins Avenue, Portsmouth, NH. Meeting dates can be found on our Web site at www.cityofportsmouth.com or by calling (603) 431-2000 for the date of the next meeting. New Castle Water Works customers, please call (603) 431-6710 for meeting dates and times.

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 that 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.

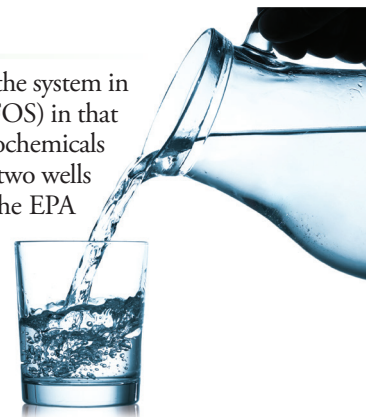
How Is My Water Treated and Purified?

The treatment process consists of a series of steps. First, source water is drawn from the Bellamy Reservoir. Prior to mixing, coagulation chemicals are added. The addition of these substances cause small particles to adhere to one another (called floc), making them easier to float to the surface in the Dissolved Air Flotation (DAF) system, where they are skimmed off and sent to a drying bed. The water is then filtered through layers of anthracite to remove smaller suspended particles and turbidity (which is a measure of the cloudiness of the water). Sodium hypochlorite (bleach) is added at this point for disinfection. We carefully monitor the amount of sodium hypochlorite, adding the lowest quantity necessary to protect the safety of your water without compromising taste. Finally, sodium hydroxide (to adjust the final pH and alkalinity), fluoride (to prevent tooth decay), and a corrosion inhibitor (to protect distribution system pipes) are added before the water is pumped to water storage tanks and into your home or business.

As noted, your public water supply is fluoridated. According to the Centers for Disease Control and Prevention, if your child under the age of 6 months is exclusively consuming infant formula reconstituted with fluoridated water, there may be an increased chance of dental fluorosis. Consult your child's health care provider for more information.

Pease Tradeport System Improvements

Customers of the Pease Tradeport Water System should note that the Haven Well was disconnected from the system in May 2014 in response to the detection of the unregulated contaminant perfluorooctane sulfonic acid (PFOS) in that well at levels that exceeded the EPA's provisional health advisory. PFOS is one chemical in the class of perfluorochemicals referred to as PFCs. The Pease International Tradeport at Pease has since been supplied water from the other two wells at the Tradeport, the Smith and Harrison Wells, and water that is pumped from the Portsmouth System. The EPA has issued a long-term health advisory level for PFOS and PFOA (perfluorooctanoic acid) at a combined concentration of 0.070 parts per billion. PFOS and PFOA have been measured in the Smith and Harrison Wells at levels that are consistently below this concentration. The City of Portsmouth is currently installing a system to treat water from the Smith and Harrison Wells to ensure that PFC concentrations do not exceed health advisory levels. Installation of a treatment system for Haven Well water will follow the installation and performance testing of the system for Smith and Harrison Wells.



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. We are 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 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 www.epa.gov/lead. Additional information is available on www.cityofportsmouth.com/publicworks/index.htm under the water/water quality heading.

Where Does My Water Come From?

The main source of Portsmouth water is the Bellamy Reservoir located in Madbury and Dover. The water is piped to a water treatment plant in Madbury, where it is treated, filtered, and disinfected. This location is also the site of the City's Madbury Wells 2, 3 and 4. From this site, water is pumped under pressure to consumers in Madbury, Dover, and Durham and then to a booster pumping station in Newington. From there, it is pumped to consumers in Newington, Portsmouth, Greenland, Rye, and the New Castle Water Works. Many consumers are also served by the City's groundwater well sources. These wells include the Collins and Portsmouth Wells in Portsmouth and the Greenland Well in Greenland. The Pease International Tradeport is served by the Smith and Harrison Wells, supplemented by Portsmouth water sources. All systems are monitored continuously by our certified water operations staff, and sampled and tested in accordance with regulatory requirements.

Source Water Assessment

The Portsmouth Water Division routinely updates inventories of potential contaminant threats and is actively pursuing opportunities to increase the protection of our groundwater supplies and the Bellamy Reservoir. The New Hampshire Department of Environmental Services (NHDES) has conducted a source water assessment of our water system which includes a map of each source water protection area, a list of potential and known contamination sources, and a summary of available protection options. Risk factors, such as proximity of highways and proximity of known contamination, are ranked and compiled as follows:

PORTSMOUTH	HIGH	MEDIUM	LOW
Greenland Well - GPW 003	4	3	5
Portsmouth Well - GPW 004	5	4	3
Madbury Well 2 - GPW 006	2	4	6
Madbury Well 3 - GPW 007	0	5	7
Madbury Well 4 - GPW 008	2	4	6
Bellamy Reservoir - GPW 009	1	6	5
Collins Well - GPW 010	4	1	7
PEASE	HIGH	MEDIUM	LOW
Smith Well - GPW 001	4	3	5

A copy of this report is available for viewing at the Portsmouth Water Division's office at 680 Peverly Hill Road. Please call (603) 427-1530 for an appointment to view the report. You may also visit the Drinking Water Source Assessment Reports Web site at <http://des.nh.gov/organization/divisions/water/dwgb/dwspp/reports/documents/portsmouth.pdf>.

Sampling Results

During the past year, we have taken hundreds of water samples in order to determine the presence of any radioactive, biological, inorganic, volatile organic, or synthetic organic contaminants. The tables below show only those contaminants that were detected in the water. The state requires us to monitor for certain substances less often 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.

Water samples for the analysis of lead and copper in the New Castle Water District were not collected during the second quarter of 2015 (April - June) as required by the NHDES under the Lead and Copper Rule. This omission resulted in a monitoring violation. This violation did not pose any health risk to consumers. Samples for lead and copper were collected on August 25, 2015, and tested below their respective drinking water Action Levels.

We participated in the 3rd stage of the EPA's Unregulated Contaminant Monitoring Rule (UCMR3) program by performing additional tests on our drinking water. UCMR3 benefits the environment and public health by providing the EPA with data on the occurrence of contaminants suspected to be in drinking water, in order to determine if the EPA needs to introduce new regulatory standards to improve drinking water quality. Contact us for more information on this program.

REGULATED SUBSTANCES											
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	Portsmouth Water Division		New Castle		Pease Tradeport		VIOLATION	TYPICAL SOURCE
				AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH		
Arsenic (ppb)	2013	10	0	1.4	ND–1.4	NA	NA	NA	NA	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Barium (ppm)	2013	2	2	0.0178	0.0082–0.0178	NA	NA	0.0110 ¹	0.0076–0.0110 ¹	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chlorine (ppm)	2015	[4]	[4]	1.18	0.58–1.92	NA	NA	NA	NA	No	Water additive used to control microbes
Chromium (ppb)	2015	100	100	0.56	0.22–0.56	NA	NA	NA	NA	No	Discharge from steel and pulp mills; Erosion of natural deposits
Fluoride (ppm)	2015	4	4	0.67	0–1.15	NA	NA	0.60	0–2.12	No	Erosion of natural deposits; Water additive that promotes strong teeth; Discharge from fertilizer and aluminum factories
Haloacetic Acids [HAAs]–Stage 1 (ppb)	2015	60	NA	NA	NA	NA	NA	3.7	3.4–3.7	No	By-product of drinking water disinfection
Haloacetic Acids [HAAs]–Stage 2 (ppb)	2015	60	NA	32	18–48	30	7–48	NA	NA	No	By-product of drinking water disinfection
Nitrate (ppm)	2015	10	10	4.3	ND–4.3	NA	NA	1.7	1.4–1.7	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
TTHMs [Total Trihalomethanes]–Stage 1 (ppb)	2015	80	NA	NA	NA	NA	NA	13	11–13	No	By-product of drinking water disinfection
TTHMs [Total Trihalomethanes]–Stage 2 (ppb)	2015	80	NA	78	30–104	79	34–110	NA	NA	No	By-product of drinking water disinfection
Total Organic Carbon (% removal)	2015	TT (minimum removal 45%–50%)	NA	65	54–71	NA	NA	NA	NA	No	Naturally present in the environment
Turbidity² (NTU)	2015	TT	NA	0.32	0.02–0.32	NA	NA	NA	NA	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2015	TT = 95% of samples < or = 0.3 NTU	NA	100	NA	NA	NA	NA	NA	No	Soil runoff
Uranium (ppb)	2014	30	0	2	ND–2	NA	NA	NA	NA	No	Erosion of natural deposits

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

				Portsmouth Water Division		New Castle		Pease Tradeport			
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE AL/ TOTAL SITES	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE AL/ TOTAL SITES	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE AL/ TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2013	1.3	1.3	0.11	0/30	0.054 ¹	0/10 ¹	0.6	0/10	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2013	15	0	0	2/30	1 ¹	0/10 ¹	1	0/10	No	Corrosion of household plumbing systems; Erosion of natural deposits

OTHER UNREGULATED SUBSTANCES

			Portsmouth Water Division		Pease Tradeport			
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE		
Chlorate (ppb)	2015	110	NA	NA	NA	Agricultural defoliant or desiccant; Disinfection by-product; Used in production of chlorine dioxide		
Chromium-6 (ppb)	2015	0.25	0.06–0.46	NA	NA	Naturally occurring element; Used in making steel and other alloys; Chromium-3 or -6 forms used for chrome plating, dyes and pigments, leather tanning, and wood preservation		
Perfluorooctane Sulfonic Acid (PFOS) (ppb) ³	2015	0.006	ND–0.008	0.016	0.006–0.038	Surfactant or emulsifier; Used in fire-fighting foam, circuit board etching acids, alkaline cleaners, floor polish, active ingredient in insect bait traps; U.S. manufacture of PFOS phased out in 2002 although PFOS still generated incidentally		
Perfluorooctanoic Acid (PFOA) (ppb) ³	2015	0.006	ND–0.008	0.007	ND–0.011	Perfluorinated aliphatic carboxylic acid; Used for its emulsifier and surfactant properties in or as fluoropolymers (such as Teflon), fire-fighting foams, cleaners, cosmetics, greases and lubricants, paints, polishes, adhesives, and photographic films		
Strontium (ppb)	2015	150.7	34.4–379.0	NA	NA	Naturally occurring element; Historically used commercially in the faceplate glass of cathode-ray tube televisions to block X-ray emissions		

¹ Sampled in 2015.

² Turbidity is a measure of the cloudiness of the water. It is monitored by surface water systems because it is a good indicator of water quality and thus helps measure the effectiveness of the treatment process. High turbidity can hinder the effectiveness of disinfectants.

³ Average PFOS and PFOA were calculated with measured concentrations only; levels below detection are not included in this calculation. PFOS and PFOA data provided by U.S. Air Force. Detailed data and monitoring information is available at <http://www.cityofportsmouth.com/publicworks/index.htm>.

Definitions

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

LRAA (Locational Running Annual Average): The average of sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters. Amount Detected values for Stage 2 TTHMs and HAAs are reported as LRAAs.

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

ND (Not detected): Indicates that the substance was not found by laboratory analysis.

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).

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