



ANNUAL
WATER
QUALITY
REPORT

Water testing performed in 2007



PORTSMOUTH
WATER DIVISION

WWW.CITYOFPORTSMOUTH.COM

PWS ID#: 1951010

Meeting the Challenge

This annual water quality report covers all testing completed from January 1, 2007 through December 31, 2007. The City is committed to producing drinking water that meets all state and federal drinking water standards. We continually strive to adopt new and better methods for delivering the best-quality drinking water to you. As new challenges to drinking water safety emerge, we remain vigilant in meeting the challenges of source water protection, water conservation, and community education while continuing to serve the needs of all our water users.

Important Health Information

The U.S. EPA requires the following standard language in our annual report: Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised 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 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.

Source Water Assessment

The New Hampshire Department of Environmental Services (NHDES) has conducted a source water assessment of our water system. A copy is available for viewing at the Portsmouth Water Division's office at 680 Peverly Hill Road. Please call 766-1413 for an appointment to view the report. You may also visit the Drinking Water Source Water Assessment Program Web site at www.des.state.nh.us/dwspp.

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 where the pressure is boosted. It is then 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 Haven, Smith, and Harrison wells.

Lead and Drinking Water

The U.S. EPA requires the following standard language in our annual report: 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 your home's plumbing. The Portsmouth Water Division 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 two minutes before using the 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 at www.epa.gov/safewater/lead.

Additional Information

The City of Portsmouth is in the final phase of the design for a new water treatment plant. The new plant will incorporate Dissolved Air Flootation (DAF) technology, which was tested and found to be very successful at treating the water from the Bellamy Reservoir. The new plant is designed to provide better and more reliable treatment and to ensure that the finished water meets current Safe Drinking Water Act standards. The design also allows the City the flexibility to make additions to the treatment process in order to meet future regulatory changes. Construction is expected to begin in 2008.

Substances That Could Be in Water

The U.S. EPA requires the following standard language in our annual report: 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.

How Is My Water Treated?

The treatment process consists of a series of steps. First, raw water is drawn from the Bellamy Reservoir. The water then goes to a mixing tank where polyaluminumchloride and sodium hydroxide are added. The addition of these substances causes small particles to adhere to one another (called "floc"), making them heavy enough to settle to the bottom of the basin and out of the water. Powdered activated carbon is added (seasonally) to control taste and odor. The water is then filtered through layers of fine sand. As smaller suspended particles are removed, turbidity disappears and clear water emerges. Sodium hypochlorite (bleach) is added at this point for disinfection. (We carefully monitor the amount of sodium hypochlorite, adding the smallest quantity necessary to protect the safety of your water without compromising taste.) Finally, sodium hydroxide (used to adjust the final pH and alkalinity), fluoride (used to prevent tooth decay), and a corrosion inhibitor (used to protect distribution system pipes) are added before the water is pumped to sanitized water towers and into your home or business.

Community Participation

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, New Hampshire. Meeting dates can be found on our Web site at www.cityofportsmouth.com or by calling (603) 431-2000. New Castle Water Works customers should call (603) 431-6710 for meeting dates and times.

Questions?

For more information about this report, or for any questions relating to your drinking water, please call Peter Rice, P.E. City Engineer for the Water/Sewer Divisions, at (603) 427-1530. New Castle customers should call Brad Meade at (603) 431-6710.

Violations

Turbidity

The water treatment facility experienced a power outage on March 7, 2007, which caused an upset in the facility's automatic controls for its filtration system. As a result of this equipment failure, water flow to the plant's filters surged overloading the filter's capacity for three minutes. The City is addressing this issue by upgrading the Madbury Water Treatment Plant. The City is currently in the process of designing those upgrades.

Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

Lead - New Castle

In the first round of sampling in New Castle in 2007, one home tested 29 ppb for lead, which is above the action level of 15 ppb (the action level is a conservative limit.) The Water Division re-tested the home and the second result was below the action level.

To help control the corrosiveness of the water, the Portsmouth Water Division installed and is operating a corrosion control chemical-feed system. This system is monitored within the Portsmouth water system and additional samples have been taken in the New Castle water system to ensure the optimum dosage of corrosion inhibitor is added to the water.

Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.

Is It Safe to Drink Water from a Garden Hose?

Substances used in vinyl garden hoses to keep them flexible can get into the water as it passes through the hose. These chemicals are not good for you, nor are they good for your pets. Allow the water to run for a short time



in order to flush the hose before drinking or filling your pet's drinking containers. Hoses made with food-grade plastic will not contaminate the water. Check your local hardware store for this type of hose.



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.

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 table below shows only those contaminants that were detected in the water. Although all of the substances listed here are under the Maximum Contaminant Level (MCL), we feel it is important that you know exactly what was detected and how much of the substance was present in the water.

The state requires us to monitor 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				Portsmouth Water Division		New Castle		Pease Tradeport			
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Alpha Emitters (pCi/L)	2006	15	0	1.2 ⁴	ND–2.78	NA	NA	NA	NA	No	Erosion of natural deposits
Arsenic (ppb)	2007	10	0	2.1	ND–2.1	NA	NA	0.0011	ND–0.0011	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Barium (ppm)	2007	2	2	0.0194	ND–0.0194	NA	NA	0.0148	0.0139–0.0148	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Combined Radium (pCi/L)	2006	5	0	1.73 ⁴	0.57–2.8	NA	NA	NA	NA	No	Erosion of natural deposits
Fluoride (ppm)	2007	4	4	1.2	ND–1.2	NA	NA	NA	NA	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Haloacetic Acids [HAA] (ppb)	2007	60	NA	37 ⁴	7.4–71	52 ⁴	22–64	4.8 ⁴	4.8–4.8	No	By-product of drinking water disinfection
MtBE ¹ (ppb)	2007	13	13	0.5	ND–0.5	NA	NA	NA	NA	No	Gasoline additive
Nitrate (ppm)	2007	10	10	2.1	ND–2.1	NA	NA	2.75	ND–3.0	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
TTHMs [Total Trihalomethanes] (ppb)	2007	80	NA	43 ⁴	6.4–106	60 ⁴	36–86.9	10.1 ⁴	10.1–10.1	No	By-product of drinking water chlorination
Turbidity ² (NTU)	2007	TT	NA	1.59	0.03–1.59	NA	NA	NA	NA	Yes	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2007	TT	NA	99.89	NA	NA	NA	NA	NA	No	Soil runoff
Uranium (pCi/L)	2006	30	0	2.37 ⁴	ND–2.47	NA	NA	NA	NA	No	Erosion of natural deposits
Tap water samples were collected			Portsmouth Water Division		New Castle		Pease Tradeport				
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	ACTION LEVEL	MCLG	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE ACTION LEVEL	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE ACTION LEVEL	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE ACTION LEVEL	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2007	1.3	1.3	0.185	0	0.136	0	0.624	0	No	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
Lead ³ (ppb)	2007	15	0	5	0	17	1	5	0	Yes	Corrosion of household plumbing systems; Erosion of natural deposits

UNREGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Bromodichloromethane (ppb)	2007	2.5	ND–2.5	Disinfection by-products
Chloroform (ppb)	2007	16	ND–16	Disinfection by-products

¹The Portsmouth Water Division detected MtBE at only one of its drinking water sources and the amount detected did not exceed the State of New Hampshire standard of 13 ppb.

²Turbidity 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.

³In the second round of samples in New Castle, 11 samples were collected and none exceeded the lead action level of 15 ppb. The lead 90th percentile was 5 ppb. This violation was for the New Castle water system only.

⁴This amount is the annual rolling average of the amounts detected. It is the averages of the samples collected that are compared against the MCL.

Definitions

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.

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.

pCi/L (picocuries per liter): A measure of radioactivity.

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.