



# Annual Water Quality Report

*Reporting Year 2016*

*Presented by* \_\_\_\_\_

**Otis Air National Guard Base**



## Continued Commitment

**W**e are once again proud to present our annual water quality report covering all testing performed between January 1 and December 31, 2016. Over the year, we have dedicated ourselves to producing drinking water that meets all state and federal standards. We continually strive to adopt new methods for delivering the best-quality drinking water to you. 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 our water users. Please remember that we are always available to assist you should you ever have any questions or concerns about your water.

## Important Health Information

**S**ome 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 or <http://water.epa.gov/drink/hotline>

## Lead in Drinking Water

**I**f 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 you with 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/safewater/lead](http://www.epa.gov/safewater/lead).

## Where Does My Water Come From?

**O**ur drinking water supply is provided entirely by groundwater. J-Well (4096001-01G), which is located on Herbert Road, is our primary pumping station. We are also connected to the Upper Cape Regional Water Supply Cooperative. The Cooperative's water sources come from three wells located in the northeastern corner of Joint Base Cape Cod. On average, we provide up to 300,000 gallons of high-quality water every day. All of the Otis public water supply is drawn from the Sagamore Lens of the Cape Cod single-source aquifer. This lens runs from the Cape Cod Canal eastward into the town of Yarmouth. To learn more about our watershed on the Internet, go to the U.S. EPA's Surf Your Watershed Web site at <http://cfpub.epa.gov/surf/locate/index.cfm>.

## How is My Water Treated and Purified?

**O**ur drinking water is treated with potassium carbonate, sodium fluoride, and sodium hypochlorite. The water in this geographic area is naturally acidic, with an average pH of 5.9 (7.0 is neutral). Acidic water can be harmful to the distribution system. Potassium carbonate is used to buffer the water to as close to a neutral pH as possible. At the request of the U.S. Coast Guard, which is the owner and operator of the family housing area, sodium fluoride is added to the water. This compound has proven effective in strengthening teeth. Finally, sodium hypochlorite is used to disinfect the water supply by killing bacteria.

## Source Water Assessment and Protection

### SWAP Explanation

The Source Water Assessment and Protection (SWAP) program, established under the federal Safe Drinking Water Act, requires every state to inventory land uses within the recharge areas of all public water supply sources; to assess the susceptibility of drinking water sources to contamination from these land uses; and to publicize the results to provide support for improved protection.

### What is my system's ranking?

A susceptibility ranking of high was assigned to this system due to the absence hydrogeological barriers (i.e., clay) that can prevent contaminant migration.

### Where can I see the SWAP report?

Information on obtaining the complete SWAP report is available by contacting the water supply superintendent at (508) 968-4102. The report is also available online at <http://mass.gov/eea/docs/dep/water/drinking/swap/sero/4096001.pdf>

### Potential Sources of Contamination

Being a military facility, Otis ANG Base, has the potential of having fuel, chemicals, and other material(s) as possible sources of contamination.

## Brown, Red, Orange, or Yellow Water

**B**rown, red, orange, or yellow water is usually caused by rust. The different colors can be attributed to varying chemical oxidation states of the iron (rust) and by varying concentrations of the rust in the water. There are two major sources that can cause water to be rusty:

- The water mains, or
- The water pipes in your building.

Rusty water occurs from sediment or rust from the inside walls of the water mains. The rust can be disturbed and temporarily suspended in water with unusual water flows from water main breaks or maintenance or by flushing of a hydrant.

**This discolored water is not a health threat.**

When the water is discolored it is recommended to either not wash laundry or to use a rust stain remover or regular detergent but not chlorine bleach as it will react with the iron to form a permanent stain.

The other major cause of brown, red, orange or yellow water is rusty water pipes in your building.

**Water that is being discolored by rusty pipes is not a health hazard.**

## Tap Water vs. Bottled Water

**T**hanks in part to aggressive marketing, the bottled water industry has successfully convinced us all that water purchased in bottles is a healthier alternative to tap water. However, according to a four-year study conducted by the Natural Resources Defense Council, bottled water is not necessarily cleaner or safer than most tap water. In fact, about **25 percent of bottled water is actually just bottled tap water** (40 percent according to government estimates).

The Food and Drug Administration is responsible for regulating bottled water, but these rules allow for less rigorous testing and purity standards than those required by the U.S. EPA for community tap water. For instance, the high mineral content of some bottled waters makes them unsuitable for babies and young children. Further, the FDA completely exempts bottled water that's packaged and sold within the same state, which accounts for about **70 percent** of all bottled water sold in the United States.

People spend **10,000 times** more per gallon for bottled water than they typically do for tap water. If you get your recommended eight glasses a day from bottled water, you could spend up to **\$1,400 annually**. The same amount of tap water would cost about 49 cents. Even if you installed a filter device on your tap, your annual expenditure would be far less than what you'd pay for bottled water.

For a detailed discussion on the NRDC study results, check out their Web site at:  
[www.nrdc.org/water/drinking/qbw.asp](http://www.nrdc.org/water/drinking/qbw.asp)

## What Are PPCPs?

**W**hen cleaning out your medicine cabinet, what do you do with your expired pills? Many people flush them down the toilet or toss them into the trash. Although this seems convenient, these actions could threaten our water supply.

Recent studies are generating a growing concern over pharmaceuticals and personal care products (PPCPs) entering water supplies. PPCPs include human and veterinary drugs (prescription or over-the-counter) and consumer products, such as cosmetics, fragrances, lotions, sunscreens, and household cleaning products.

Over the past five years, the number of U.S. prescriptions increased 12 percent to a record 3.7 billion, while nonprescription drug purchases held steady around 3.3 billion. Many of these drugs and personal care products do not biodegrade and may persist in the environment for years.

The best and most cost-effective way to ensure safe water at the tap is to keep our source waters clean. Never flush unused medications down the toilet or sink. Instead, check to see if the pharmacy where you made your purchase accepts medications for disposal, or contact your local health department for information on proper disposal methods and drop-off locations.

You can also go on the Web at [www.Earth911.com](http://www.Earth911.com) to find more information about disposal locations in your area.

## Stormwater Pollution Prevention

**S**tormwater discharges have been identified as a significant source of water pollution in numerous nationwide studies of water quality. Each area operated by the 102d Intelligence Wing has been evaluated and categorized, and Best Management Practices (BMP) have been implemented at industrial areas to ensure that processes do not adversely impact any stormwater runoff. BMPs include good housekeeping practices, minimization of exposure, spill prevention measures, construction of secondary containment structures, management of stormwater runoff, and employee training. For the 102d, mandatory quarterly visual monitoring is conducted at each outfall area. The results of these examinations have not shown any detrimental effects on the quality of stormwater from the activities conducted by the 102d.

## Cross Connection Control and Backflow Prevention

Otis ANGB makes every effort to ensure that the water delivered to your home and business is clean, safe, and free of contamination. Our staff works very hard to protect the quality of the water delivered to our customers throughout the entire treatment and distribution system. But what happens when the water reaches your home or business? There is still a need to protect the water quality from contamination caused by a cross-connection.

### What is a Cross-Connection?

A cross-connection occurs whenever the drinking water supply is or could be in contact with potential sources of pollution or contamination. Cross-connections exist in piping arrangements or equipment that allow the drinking water to come in contact with non-potable liquids, solids, or gases (hazardous to humans) in event of a backflow.

### What is Backflow?

Backflow is the undesired reverse of the water flow in the drinking water distribution lines. This backward flow of water can occur when the pressure created by equipment or a system, such as a boiler or air-conditioning, is higher than the water pressure inside the water distribution line (backpressure), or when the pressure in the distribution line drops due to routine occurrences such as water main breaks or heavy water demand causing the water to flow backward inside the water distribution system (backsiphonage). Backflow is a problem that many water consumers are unaware of. And every water customer has a responsibility to help prevent them.

### What Can I Do to Help Prevent a Cross Connection?

Without the proper protection something as simple as a garden hose has the potential to contaminate or pollute the drinking water lines in your house. In fact, over half of the country's cross-connection incidents involve unprotected garden hoses. There are very simple steps that you, as a drinking water user, can take to prevent such hazards:

- Never** submerge a hose in soapy water buckets, pet watering containers, pool, tubs, sinks, drains, or chemicals.
- Never** attached a hose to a garden sprayer without the proper backflow preventer.
- Buy** and install a hose bib vacuum breaker on every threaded water fixture. The installation can be as easy as attaching a garden hose to a spigot. This inexpensive device is available at most hardware stores and home-improvement centers.
- Identify** and be aware of potential cross-connections to your water line.
- Buy** appliances and equipment with a backflow preventer.
- Buy** and install backflow prevention devices or assemblies for all high and moderate hazard connections.

## The Benefits of Fluoridation

**F**luoride is a naturally occurring element in many water supplies in trace amounts. In our system, the fluoride level is adjusted to an optimal level averaging one part per million (ppm) to improve oral health in children. At this level, it is safe, odorless, colorless, and tasteless. There are over 3.9 million people in 140 Massachusetts water systems and 184 million people in the U.S. who receive the health and economic benefits of fluoridation.

## Substances That Could Be in Water

To ensure that tap water is safe to drink, the Department of Environmental Protection (MassDEP) and the U.S. Environmental Protection Agency (U.S. EPA) prescribe regulations limiting the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) and Massachusetts Department of Public Health (DPH) 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 and, in some cases, radioactive material, and can pick up 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 which 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.

More information about contaminants and potential health effects can be obtained by calling the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

## Water Conservation Tips

As a single-source aquifer, water conservation is important in protecting our water supply. Tips to conserve water include:

- Fix leaking pipes, faucets, toilets, etc.
- Run laundry machines and dishwashers only when full
- Take shorter showers and don't let water run when shaving or washing face
- Water lawns and gardens in the early morning or evening
- Use mulch around plants and shrubbery
- Use water from a bucket to wash cars, save the hose only for rinsing.

## QUESTIONS?

For more information about this report, or for any questions relating to your drinking water, please call the water supply superintendent, Mr. Richard Souza, at (508) 968-4102.



## REGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Asbestos (MFL)	2013	7	7	ND	NA	No	Decay of asbestos cement watermain; Erosion of natural deposits
Chlorine (ppm)	2016	[4]	[4]	1.56	0.01-1.56	No	Water additive used to control microbes
Fluoride <sup>1</sup> (ppm)	2016	2	2	0.78	0.12-0.78	No	Water additive that promotes strong teeth
Haloacetic Acids [HAAs] (ppb)	2016	60	NA	4.38	ND-2.14	No	By-product of drinking water disinfection
TTHMs [Total Trihalomethanes] (ppb)	2016	80	NA	7.44	0.80-2.56	No	By-product of drinking water disinfection
Perchlorate (ppb)	2016	2	NA	ND	NA	No	Rocket propellants, munitions, flares, fireworks, blasting agents
Nitrate (ppm)	2016	10	10	0.07	NA	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Nitrite (ppm)	2014	1.0	1.0	ND	NA	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Barium (ppm)	2015	2	0.002	0.002	NA	No	Natural erosion; drilling wastes
Gross Alpha (pCi/L)	2012	15	NA	1.07	NA	No	Natural erosion
Combined Radium (pCi/L)	2015	5	0	1.10	0.623-1.10	No	Natural erosion
Total Coliform Bacteria	2016	1	0	0	NA	No	Naturally present in the environment

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	SITES	EXCEEDANCE	TYPICAL SOURCE
				DETECTED (90TH PERCENTILE)	ABOVE AL/ TOTAL SITES		
Copper (ppm)	2015	1.3	1.3	0.600 (Q2) 0.295 (Q4)	1/40 (Q2) 0/40 (Q4)	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2015	15	0	0.00 (Q2) 1.00 (Q4)	1/40 (Q2) 1/40 (Q4)	No	Corrosion of household plumbing systems; Erosion of natural deposits

## UNREGULATED SUBSTANCES<sup>2</sup>

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	TYPICAL SOURCE
Methyl Tertiary Butyl Ether (ppb)	2016	0.63	Fuel additive; leaks and spills from gasoline storage tanks
Sodium (ppm)	2015	19.6	Some sodium is always expected to be present in groundwater
Chloroform (ppb)	2016	2.52	Trihalomethane; by-product of drinking water chlorination
Bromodichloromethane (ppb)	2015	2.70	Trihalomethane; by-product of drinking water chlorination
Dibromochloromethane (ppb)	2015	3.40	Trihalomethane; by-product of drinking water chlorination
Manganese (ppm)	2014	0.01	Erosion of natural deposits
Strontium (ppb)	2014	22	Milling processes, coal burning, and phosphate fertilizers
Chromium (ppb)	2015	510	Discharge from pulp mills; erosion of natural deposits
Hexavalent Chromium (ppb)	2015	.29	Industrial activities or from naturally occurring sources

<sup>1</sup>EPA set 4 ppm as the MCL. Our state has a secondary contaminant level (SMCL) of 2 ppm for fluoride to better protect human health

<sup>2</sup>Unregulated contaminants are those for which the U.S. EPA has not established drinking water standards. The purpose of monitoring unregulated contaminants is to assist the U.S. EPA in determining their occurrence in drinking water and whether future regulation is warranted.

### Definitions

**90th Percentile:** Out of every 10 homes sampled, 9 were at or below this level.

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

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

**NA:** Not applicable

**MFL:** Million Fibers per Liter

**pCi/L:** picocuries per liter (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).

**NTU:** Nephelometric Turbidity Units