2021 Annual Drinking Water Quality Report

For

MWRA Lexington – Hanscom AFB

(Public Water System Identification (PWSID) Number 3023002)

This report is an annual summary of the drinking water quality provided by Hanscom AFB. Under the "Consumer Confidence Reporting Rule" of the Environmental Protection Agency's Safe Drinking Water Act (SDWA), community water systems are required to report water quality information to the consuming public annually. Presented in this report is information on the source of our drinking water and where it comes from, its chemical composition and treatment, how its quality compares to state and federal standards, and the health risks associated with any contaminants present. If you are interested in opportunities for public participation in decisions that may affect the quality of the drinking water, please contact the personnel listed in section I. Meetings occur on a non-routine and as-needed basis.

I. PUBLIC WATER SYSTEM INFORMATION

Address: Hanscom AFB
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Water System Improvements:
Our water system is routinely inspected by a Massachusetts-certified operator in the 66th Civil Engineering Division (CE) Utilities Section and Bioenvironmental Engineering (BE) in the 66th Medical Squadron. CE and BE inspect our system for its technical, financial, and managerial capacity to provide safe drinking water to you.

II. YOUR DRINKING WATER SOURCE

The water supplied to Hanscom AFB is from the adjacent towns of Lexington and Bedford. Lexington receives its water from the Massachusetts Water Resource Authority (MWRA). In 2021, Bedford received most of its water from MWRA. Prior to 2020, Bedford received a small quantity from the Shawsheen Groundwater Treatment Facility; these wells were shut down indefinitely on October 24, 2019. The MWRA water comes from the Quabbin Reservoir, located approximately 65 miles west of Boston, and the Wachusett Reservoir, located about 35 miles west of Boston. Water is transported from the Quabbin Reservoir through the Wachusett Reservoir to a water treatment plant prior to distribution to MetroWest and Greater Boston communities, including Hanscom AFB.

The Quabbin and Wachusett watersheds are under state-wide protection and governance of MWRA and the Massachusetts Department of Conservation & Recreation (DCR). Over 85 percent of the watersheds are covered in forest and wetlands that help purify water as it flows across the land to the reservoirs. MWRA and DCR control land use and access to the watersheds. DCR patrols watersheds daily and, MWRA scientists make sure the water quality in watersheds, streams, and reservoirs is tested regularly.

III. DRINKING WATER TREATMENT

The source water is treated at the John J. Carroll Treatment Plant in Marlborough, Mass. The facility services 51 communities in the greater Boston and the MetroWest areas and three in Central Massachusetts. The plant averages treatment of up to 275 million gallons of water daily and up to 405 million gallons on a peak day.

Water is treated with ozone to achieve primary disinfection followed by ultraviolet (UV) light used as a secondary disinfectant. Ozone provides better disinfection than chlorine alone and reduces formation of disinfection by-products. UV light is used to supplement ozone treatment to breakdown the DNA of bacteria, viruses and other pathogens. UV light also inactivates chemically resistant parasites such as *Cryptosporidium* and *Giardia*. The water chemistry is adjusted for corrosivity to minimize the leaching of lead and copper in home plumbing systems.

Fluoride is added to promote dental health. Before water enters the MWRA distribution system, chloramines are added as a secondary disinfectant to provide longer-lasting disinfection as water moves through pipes to consumers. Based on the levels of total chlorine leaving the MWRA facility, Hanscom AFB does not supplement the distribution system with any additional disinfectant. In the event of a water quality emergency, the **Hanscom Contingency Response Plan, APPENDIX 4 to Annex H** will be implemented to provide adequate health and safety measures to water consumers.

IV. SUBSTANCES FOUND IN TAP WATER

Sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over land or through the ground, it dissolves naturally occurring minerals present in media, and in some cases, even naturally occurring radioactive material. It can absorb substances both naturally occurring in the environment and derived from animals and/or from human activity. 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 agricultural or 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 can also come from gas stations, urban stormwater runoff, and septic systems.

Radioactive contaminants - 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 U.S. Environmental Protection Agency (EPA) prescribes regulations that limit the amount of certain contaminants in drinking water provided by public water systems. The Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water that must provide the same protection for public health. All 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 EPA Safe Drinking Water Hotline at 800-426-4791.

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 some infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/Centers for Disease Control and Prevention guidelines on appropriate steps to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at 800-426-4791.

V. IMPORTANT DEFINITIONS

Maximum Contaminant Level (MCL) – the highest level of a contaminant in drinking water. MCLs are set as close to the Maximum Contaminant Level Goals (see below) as feasible using the best available treatment technology.

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 Residual Disinfectant Level (MRDL) – The highest level of a disinfectant (chlorine, chloramines, chlorine dioxide) 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 a drinking water disinfectant (chlorine, chloramines, chlorine dioxide) 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.

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

90th Percentile – means that out of every 10 homes, 9 were at or below this level.

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

Variances and Exemptions – State or EPA permission not meeting an MCL or a treatment technique under certain conditions.
Secondary Maximum Contaminant Level (SMCL) – These standards are developed to protect the aesthetic qualities of drinking water and are not health based.

Level 2 Assessment – A very detailed study of the water system to identify potential problems and determine (if possible) why an E. coli MCL violation has occurred and/or why total coliform bacteria have been found in our water system on multiple occasions.

VI. WATER QUALITY TESTING RESULTS

EPA and state regulations require testing of water quality after treatment. MWRA performs necessary testing and even goes beyond federal and state standards with the frequency and sensitivity of tests. The EPA has identified 120+ contaminants which must be tested in drinking water. A complete list can be found at the mwra.com website. During 2021, the MWRA reported finding 7 EPA identified contaminants (listed in the table below) in the Hanscom AFB distribution system. None of the contaminant levels detected exceeded the EPA's MCLs. The link below summarizes water quality testing results for the towns of Lexington and Bedford:

https://www.mwra.com/annual/waterreport/2020results/2020results.htm

Table 1. MWRA – Sampling Results

Test Results After Treatment Compound	Units	(MCL) Highest Level Allowed	(We Found) Detected Level-Average	Range of Detections	(MCLG) Ideal Goal	Violation	How it Gets Into Water
Barium	ppm	2	0.009	0.008-0.01	2	No	Common mineral in nature
Monochloramine	ppm	4 MRDL	1.99	0.0-4.0	4 MRDLG	No	Water disinfectant
Fluoride	ppm	4	0.71	0.24-0.81	4	No	Additive for dental health
Nitrate^	ppm	10	0.83	0.05-0.83	10	No	Atmospheric Deposition
Turbidity	NTU	5	0.29	0.15-0.61	NS		Natural Matter
Total Trihalomethanes	ppb	80	18.6	6.0-34.8	NS	No	Byproduct of water disinfection
Haloacetic Acids-5	ppb	60	16.8	3.7-30.2	NS	No	Byproduct of water disinfection

Hanscom has one system interconnection with Bedford that is used to supply the Fam Camp. Bedford used to derive some of its drinking supply from the groundwater wells prior to 2020; however, since then most of the water is sourced from MWRA and purchased from Lexington. In 2021, the entire system was provided with water by the MWRA.

MWRA also tests reservoir source water for pathogens - such as fecal coliform, bacteria, viruses, and the parasites *Cryptosporidium* and *Giardia*. They can enter the water from animal or human waste. All test results were well within state and federal testing and treatment standards. If detected however, *Cryptosporidium and Giardia* can cause gastrointestinal illness, with symptoms that include diarrhea, nausea, and/or stomach cramps. People with severely weakened immune systems (that is, severely immuno-compromised) are likely to have more severe and more persistent symptoms than healthy individuals. Immuno-compromised individuals should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of

infection by Cryptosporidium and other microbial contaminants are available from the EPA's Safe Drinking Water Hotline (1-800-426-4791).

Hanscom AFB provides quality drinking water by maintaining the local distribution system, flushing the system, and testing regularly. Along with the routine water analysis performed by the MWRA, the base's BE office monitors the temperature, chlorine, and pH levels at the time of samples collection twice monthly at eleven locations on the base and at the Fam Camp, The samples are analyzed by an independent laboratory.

Bacteriological Testing: Hanscom AFB tests the quality of drinking water twice a month. Eleven samples collected across the base are tested for Total Coliform. Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. Testing conducted in the fall of 2021 detected coliforms indicating the need to evaluate potential problems or irregularities in water distribution system. When this occurs, the base is required to conduct regulatory assessments to identify any problems that may have contributed to coliform detection. A Total Coliform positive from the laboratory is an alert to check for E.coli, which is a fecal coliform harmful to human consumption. The MCL (a permissible regulatory limit) for Hanscom AFB is 2 positive coliform samples a month.

Twenty-seven samples tested positive for total coliform, six in September, eight in October, eight in November, and five in December, as shown in Table 2. In addition, there were elevated levels of chlorine in November and December. No disease causing bacteria (i.e. E.coli) was detected.

Table 2: Hanscom AFB Total Coliform Results

Contaminant	Highest # Positive in a Month	Date	MCL	MCLG	Violation (Yes/No)	Possible source of contamination
Total Coliform	8	Sep, Oct, Nov, Dec 21	1	0	Yes	Naturally present in the environment

Lead & Copper: Elevated levels of lead and copper can cause serious health problems, especially for pregnant women and young children. The primary source of lead and copper in drinking water is associated with distribution and home plumbing systems.

MWRA water is lead-free when it leaves the treatment plant. The pipes that carry the water to communities are made mostly of iron and steel and do not contain lead. However, locally aging water pipes and home plumbing service lines may contain lead and copper material that, when corroded, may leach into water and affect water quality at your tap. When water remains stagnant in the system for prolonged period of time due to inactivity, flushing the tap for 30 seconds to 2 minutes is recommended before using water for drinking or cooking. If you are concerned about lead in your water, you may request BE office to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure to lead is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

Hanscom AFB tests for lead and copper triennially. In 2019, testing was conducted at 30 random locations, including schools and child care centers throughout Hanscom AFB and the Fam Camp to determine compliance with established guidelines. The 90th percentile results for both lead and copper were below the EPA established action levels (Table 3). This puts our system in compliance with federal regulation requirements. The next lead and copper compliance sampling period is scheduled for September 2022.

Water samples collected at the Child Development Center (CDC) and Youth Center for lead all tested below the lead action level (AL) of 0.015 mg/L. The EPA requires two potable faucets be tested, while the Department of Defense (DOD) requires all faucets at the CDC and Youth Center be tested.

Table 3: 2019 Hanscom AFB Lead and Copper Sampling Results

Compound	Units	90% Compliance Value	90% Value Detected	Range of Detected Levels	(MCLG) Ideal Goal	Violation (Yes/No)	# homes that exceeded AL/ # homes tested
Lead	ppm	0.015	0.0075	0.00017 - 0.00110	0	No	0/20
Copper	ppm	1.3	0.2420	0.0399 – 0.6610	1.3	No	0/20

*No sampling site exceeded the action level (AL) for lead and copper.

In 2018, eight water samples collected and tested at the School-Age Program (Bldg. 1999) exceeded the action level (AL) of 0.015 mg/L for lead. In 2019 post-completion of building renovations, water samples were collected from seven locations at the School-Age building. One sink was eliminated during renovations dropping the number of sampling locations from eight to seven. All locations tested below the lead AL of 0.015 mg/L are summarized in below Table 4. A bottled water program is still in effect because the EPA recently adopted a goal to reduce lead levels in schools and Childcare Centers to either below 1 ppb (0.001 mg/l), or non-detectable, which has not been met at all locations sampled.

Table 4: 2019 Hanscom AFB School Age Program DOD Lead Sampling Results

Sample Location	Lead Results (mg/L)	AL (mg/L)
Room 1 Left Restroom	0.002	0.015
Room 1 Right Restroom	Non Detectable	0.015
Room 5 Sink	0.009	0.015
Room 6 Left Sink	0.008	0.015
Room 7 Sink	0.006	0.015
Room 7 Kids Restroom	0.001	0.015
Room 7 Staff Restroom	0.001	0.015

VII. COMPLIANCE WITH DRINKING WATER REGULATIONS

Does My Drinking Water Meet Current Health Standards? We are committed to providing you with the best water quality available. All contaminants that were tested last year met all applicable health standards regulated by the state and federal government.

Concerning your drinking water; Hanscom AFB CE and BE are committed to providing you with the best water quality available through regular monitoring and corrective actions. In addition, Hanscom AFB has contingency plans in place to both notify and protect you in the event monitoring results indicate a potential concern.

Water Quality Exceedances during 2021:

Some samples that were tested last year did not meet all applicable standards regulated by the state and federal government. Due to detection of Total Coliform during the period of September through December 2021, base officials took the following corrective actions.

- Additional samples were collected, and all samples were analyzed for E.coli
- The affected system segments were flushed daily

Health Effects Statements

Total Coliform: Coliforms are bacteria that are naturally present in the environment and are used as an indicator of other potentially harmful bacteria that may be present. As noted previously, officials found coliforms in more samples than permissible and this was a warning of potential problems. Upon identifying coliforms, officials analyzed the same samples for harmful bacteria (E.Coli) and no detections were reported. Therefore, there were no potential health effects due to this issue.

VIII. EDUCATIONAL INFORMATION

Frequently asked questions

Q. How would I know about a problem with the water supply?
A. BE and Water Utilities regularly test and inspect the water supply and the distribution system. If a problem was found, all affected people would be notified through leaflets, email, and the base website.
Q. My water tastes and smells funny. Is it safe to drink?
A. According to MWRA, you can safely drink and cook with the water. Algae can cause water to have a "funny" smell and odor. Algae are normal, harmless plants that appear in the reservoirs at certain times of the year. On occasion, customers may also taste or smell the low levels of chlorine compounds added to disinfect the water. Fill a jug with tap water and put it in the refrigerator to get rid of the taste and odor.
Q. My water is cloudy sometimes but then clears up. Can I drink it?
A. You can safely drink and cook with the water. Water travels under pressure throughout the system. Occasionally, air can become trapped in the water in tiny bubbles causing water to look cloudy. This is only temporary and the water clears up in a short time.
Q. My water is discolored. Can I drink it?
A. According to MWRA, you can safely drink and cook with the water. Old iron pipes in your building can cause a red, brown, or yellow color in the water. A yellow color is from iron that is absorbed by water that has been sitting in pipes for a long time. A red or brown color is caused by very small specks of iron. These specks of iron can enter the water if there is quick change in water speed or direction in your local pipes. Such changes can result from valve repair, flushing the system, or the testing & use of fire hydrants.

If you have any questions or concerns about anything contained in this report, please contact one of the following numbers for assistance. Hanscom AFB does not hold regularly scheduled board meetings for public participation in decisions that may affect the quality of the water.

Hanscom AFB Bioenvironmental Engineering	(781) 225-6366
State of Massachusetts Water Resource Authority	(617) 242-5323
Environmental Protection Agency Safe Drinking Water Hotline	(800) 426-4791
Hanscom AFB Public Affairs Office	(781) 225-1686
Town of Bedford Department of Public Works	(781) 275-7605

Additional information can be obtained by viewing the following websites:

http://www.mwra.state.ma.us
http://www.mass.gov/water-supplier-operations
Source water assessment reports for the MWRA: http://www.mwra.com/sourcewater.html