



Annual Water Consumer Confidence Report

McGuire Drinking Water System on Joint Base McGuire-Dix-Lakehurst

Public Water System ID No. NJ0326006

**Monitoring Period:
January 1, 2018 – December 31, 2018**

Is my water safe?

Yes. Last year, as in years past, the tap water in the McGuire water system met all U.S. Environmental Protection Agency (EPA) and New Jersey Department of Environmental Protection (NJDEP) drinking water health standards. Members of the 87th Air Base Wing, 87th Medical Group and 87th Civil Engineer Group vigilantly safeguard water supplies and once again we are proud to report that our system is in full compliance with primary water quality standards. This report is being distributed to consumers to provide information, enabling consumers to make personal health-based decisions regarding drinking water consumption. This report provides sampling data for the water system and discusses health concerns for any contaminants detected in the system. The report also provides definitions so consumers are clear on the terminology discussed.

Monitoring and Reporting of Compliance Data Violations

We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards.

During the 2018 compliance period, a Monitoring and Reporting violation to the Stage 1 Disinfectants and Disinfection Rule was issued by NJDEP for source water reporting of chlorine. JBMDL takes chlorine readings, gives them to JR Henderson Labs, and the lab transcribes it into the State's database. Transcription was not completed in a timely manner. Bioenvironmental Engineering and Civil Engineering rectified the issue with the lab and NJDEP, and the State returned the water system to compliant.

Where does my water come from?

McGuire draws water from the Potomac-Raritan-Magothy (PRM) aquifer, a groundwater source. Wells tap into the PRM aquifer at approximately 800-900 feet below the surface. Three wells (Wells B-2, C-1, and D) are maintained by Civil Engineering Utilities. In December 2012 JB MDL requested that Well A be placed in inactive status by NJDEP. The well water is treated (filtered for iron and chlorinated) before entering the system and then distributed across the base, including housing areas. McGuire's drinking water is monitored by two base agencies. The 87th Civil Engineer Squadron services the drinking water supply and distribution system, while the 87th Aerospace Medicine Squadron's Bioenvironmental Engineering (BE) checks the quality of the drinking water provided to consumers and addresses any related health concerns. All monitoring follows EPA-approved methods for sampling and laboratory analyses. BE personnel and State-certified laboratories collect samples from the wells and water distribution system. Samples are then delivered to a State-certified laboratory where water quality analyses are performed. To ensure your drinking water is of the highest quality, BE samples for approximately 100 possible contaminants. NJDEP has directed compliance sampling schedule

requirements in two categories: point of entry to the distribution system and distribution system monitoring requirements. The points of entry samples are collected at the individual wells and represent the quality of the source water. Distribution system samples represent the quality of the water in the pipes of the system. Samples are taken from different locations across the distribution system every week.

Source Water Assessments

The NJDEP has completed and issued the Source Water Assessment Report for this public water system. Further information on the Source Water Assessment Program can be viewed on NJDEP’s source water assessment web site at www.nj.gov/dep/watersupply/swap/index.html or by contacting NJDEP’s Bureau of Safe Drinking Water at (609) 292-5550. You may also contact the personnel in charge of the public water system through the Joint Base Public Affairs office at (609) 754-2104.

Source Water Assessment Summary

The results of the source water assessment performed on our three (3) sources (all groundwater wells) are presented in Table 1. The table illustrates the susceptibility ratings for the seven contaminant categories and radon for each well in the system. The table provides the rating for each well: high, medium, and low for each contaminant category. The McGuire system does not have any sources that are classified as ground water under the direct influence of surface water, (GUDI) or surface water and it does not purchase water from other public water systems. The seven contaminant categories are defined in Table 1.

Table 1 - Source Water Assessment Summary

Contaminant	Well B	Well C	Well D
Pathogens	Low	Low	Low
Nutrients	Low	Low	Low
Pesticides	Low	Low	Low
Volatile Organic Compounds (VOCs)	Low	Low	Low
Inorganics	Low	Low	Low
Radionuclides	Low	Medium	Medium
Radon	Low	Low	Low
Disinfection Byproducts Precursors (DBPs)	Low	Low	Low

Pathogens: Disease causing organisms such as bacteria and viruses. Common sources are animal and human fecal wastes.

Nutrients: Compounds, minerals and elements that aid growth, that are both naturally occurring and man-made. Examples include nitrogen and phosphorous.

VOCs: Man-made chemicals used as solvents, degreasers and gasoline components. Examples include benzene, methyl tertiary butyl ether (MTBE) and vinyl chloride.

Pesticides: Man-made chemicals used to control pests, weeds and fungus. Common sources include land application and manufacturing of pesticides. Examples include herbicides such as atrazine and insecticides such as chlordane.

Inorganics: Mineral based compounds that are both naturally occurring and man-made. Examples include arsenic, asbestos, copper, lead and nitrate.

Radionuclides: Radioactive substances are both naturally occurring and man-made. Examples include radium and uranium.

Radon: Colorless, odorless, cancer causing gas that occurs naturally in the environment.

DBPs: A common source is naturally occurring organic matter in surface water. Disinfection byproducts are formed when the disinfectant (usually chlorine) used to kill pathogens reacts with dissolved organic material (for example leaves) present in surface water.

If a system is rated highly susceptible for a contamination category, it does not mean a customer is or will be consuming contaminated water. The rating reflects the potential for contamination of source water, not the existence of contamination. Public water systems are required to monitor for regulated contaminants and to install treatment if any are detected at frequencies and concentrations above allowable levels.

NJDEP found the following potential contaminant sources within the source water assessment areas for our sources. All potential contaminant sources are on the base.

1. Solid and hazardous waste handling and transfer facilities.
2. Closed solid waste landfill.
3. Septic tanks.
4. Urban, commercial and industrial land use.
5. Distance of the wells to wetlands.
6. The Golf Course.
7. Population density.
8. Density of known contaminated sites, and NJDEP permitted surface water discharges.

Source Water Protection Tips

Protection of drinking water is everyone's responsibility. You can help protect your community's drinking water source in several ways:

- Eliminate excess use of lawn and garden fertilizers and pesticides – they contain hazardous chemicals that can reach your drinking water source.
- Pick up after your pets.
- If you have your own septic system, properly maintain your system to reduce leaching to water sources or consider connecting to a public water system.
- Dispose of chemicals properly; take used motor oil to a recycling center.
- Volunteer in your community. Find a watershed or wellhead protection organization in your community and volunteer to help. If there are no active groups, consider starting one. Use EPA's "Adopt Your Watershed" to locate groups in your community, or visit the Watershed Information Network's "How to Start a Watershed Team."
- Organize a storm drain stenciling project with your local government or water supplier. Stencil a message next to the street drain reminding people "Dump No Waste - Drains to River" or "Protect Your Water." Produce and distribute a flyer for households to remind residents that storm drains dump directly into your local water body.

Sources of Drinking Water Contamination

Sources of drinking water (both tap water and bottled water) may 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. Regulated 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, and wildlife

- Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban storm water 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 storm water runoff, and residential uses
- Organic chemical compounds, including synthetic and volatile organic compounds (VOC's), which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems
- Radioactive contaminants, which can be naturally-occurring or the result of oil/gas production and mining activities
- Perfluorinated Compounds (PFCs) have been used to make carpets, clothing, fabrics for furniture, paper packaging for food and other materials (e.g., cookware) that are resistant to water, grease or stains. They are also used in aircraft firefighting foam and in a number of industrial processes. In 1970, the Department of Defense (DOD) began using Aqueous Film Forming Foam (AFFF), a firefighting agent containing PFCs, to extinguish petroleum fires and protect people and property. AFFF has also been used for firefighting training and in some aircraft hangar fire suppression systems. Perfluorooctane sulfonate (PFOS) is a component of AFFF and Perfluorooctanoic acid (PFOA) is a stable end product resulting from the degradation of precursor substances. Firefighting training as well as inadvertent releases from hangars resulted in AFFF being released directly onto the ground where it has seeped in to groundwater where it has the potential to affect drinking water supplies. (See Page 5 of this report for additional information.)

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water which must provide the same protection for public health. Table 2 summarizes the regulated analyses and monitoring frequencies for the wells (points of entry) and distribution system servicing the McGuire area.

Table 2 - Regulated Substances and Monitoring Frequencies

Regulated Substance	Frequency
Total Coliform, Free Available Chlorine, pH	Monthly
Nitrates	Annually
Trihalomethanes (TTHM)	Quarterly
Haloacetic Acids (HAA5)	Quarterly
Inorganics	Every 3 years
Secondary Standards	Every 3 years
VOCs (Well B-2, C-1, D)	Every 3 years
Radiologicals (Well B-2, C-1, D)	Every 9 years
Lead and Copper	Every 3 years
Asbestos	Within first 3-years of 9-year cycle
Iron, Manganese	Annually

The NJDEP allows reduced monitoring requirements for radiologicals and VOCs. **Current sample results for all VOCs were below analytical detection limits.** Our system received a monitoring waiver for synthetic organic compounds because prior sampling events have demonstrated that these substances were not detected in our source water.

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's Safe Drinking Water Hotline (800-426-4791).

Additional Information for Lead

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. JB MDL 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 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 <http://www.epa.gov/safewater/lead>.

The water supplied to the McGuire system is tested for lead triennially and has a consistent history of low concentrations. Lead testing in 2018 showed results of <1.0 parts per billion (ppb). This is almost 15 times lower than the action level of 15 ppb. Testing for Lead and Copper is scheduled to occur again in 2021.

Additional Information for PFOS/PFOA

PFCs are a subset of man-made compounds containing approximately 6,000 chemicals formed from carbon chains with fluorine attached to these chains. PFCs are part of a group of the most extensively produced and studied chemicals and are currently classified as unregulated or "emerging" contaminants. They have no Safe Drinking Water Act (SDWA) regulatory standards or routine water quality testing MCL requirements.

PFCs are being studied by the EPA to determine if regulation is needed. On 19 May 2016, the EPA's Office of Water issued new health advisory levels (HALs) for two PFCs (1) perfluorooctane sulfonate (PFOS) – Publication EPA 822-R-16-004 and (2) perfluorooctanoic acid (PFOA) – EPA 822-R-16-005. The EPA HALs are 70 parts per trillion (ppt) for both PFOS and PFOA, individually or as the sum of the two. **PFOS/PFOA were below the detection limit in the McGuire water system when sampled in 2016.**

The HALs are calculated based on the average consumption of breastfeeding mothers (who tend to drink a higher volume of water) and household use of drinking water during food preparation (e.g., cooking or to prepare coffee, tea or soup). The HALs apply to both short-term (i.e., weeks to months) scenarios, as well as to lifetime-exposure scenarios.

The Air Force is committed to the safety and well-being of its personnel. Based upon the potential for PFC contamination from past releases of AFFF, drinking water provided at AF installations has been sampled by AF/SG personnel to assess risk to on-base consumers.

Parts per billion (ppb) and parts per trillion (ppt) are the most commonly used terms to describe very small amounts or trace levels of chemicals of concern in our drinking water.

- One ppb is the equivalent of one drop of impurity in 500 barrels of water or 1 cent out of \$10 million.
- One ppt is the equivalent of one drop of impurity in 500,000 barrels of water or traveling 6 inches out of a 93 million-mile journey toward the sun.

For more information on how EPA manages the unregulated or "emerging" contaminants, refer to: UCMR - <https://www.epa.gov/dwucmr/learn-about-unregulated-contaminant-monitoring-rule>

For more information on drinking water health advisories for PFOS and PFOA, refer to: <https://www.epa.gov/ground-water-and-drinking-water/drinking-water-health-advisories-pfoa-and-pfos>

Water Quality Data Tables

To ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of contaminants in water provided by public water systems. The table below lists all of the drinking water contaminants that we detected during the calendar year of this report. Although many more contaminants were tested, only those substances listed below were found in the McGuire water system. All sources of drinking water contain some naturally occurring contaminants. At low levels, these substances are generally not harmful in our drinking water. Removing all contaminants would be extremely expensive, and in most cases, would not provide increased protection of public health. A few naturally occurring minerals may actually improve the taste of drinking water and have nutritional value at low levels. Unless otherwise noted, the data presented in this table is from testing done in the calendar year of the report. The EPA and the state require monitoring for certain contaminants less than once per year because the concentrations of these contaminants do not vary significantly from year to year, or the system is not considered vulnerable to this type of contamination. As such, some of our data, though representative, may be more than one year old. The results from monitoring can be found in Table 3 and Table 4 below. Table 5 provides a comprehensive listing of abbreviations and definitions for terms found throughout this document which might not be familiar to the average consumer.

Table 3: Water Monitoring Results

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 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 (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).								
<u>Contaminants</u> <u>(Units)</u>	<u>MCLG</u> <u>or</u> <u>MRDLG</u>	<u>MCL, TT,</u> <u>or MRDL</u>	<u>LRAA</u>	<u>Range</u>		<u>Sample</u> <u>Date</u>	<u>Violation</u>	<u>Typical Source</u>
				<u>Low</u>	<u>High</u>			
Disinfection Byproducts								
Chlorine (as, Cl ₂ , ppm)	4	4	N/A	.3	.88	2018	No	Byproduct of drinking water disinfection ¹
TTHMs (ppb) 3333	NA	80	.008	4.4	10.5	2018	No	Byproduct of drinking water disinfection ¹
TTHMs (ppb) 3457	NA	80	.008	3.47	10.46	2018	No	Byproduct of drinking water disinfection ¹
TTHMs (ppb) 4551	NA	80	.006	2.1	12.7	2018	No	Byproduct of drinking water disinfection ¹
TTHMs (ppb) 1507	NA	80	.015	3.25	29.39	2018	No	Byproduct of drinking water disinfection ¹
HAA5 (ppb) 3333	NA	60	.002	0.0	5.20	2018	No	Byproduct of drinking water chlorination ¹
HAA5 (ppb) 3457	NA	60	.003	1.34	6.95	2018	No	Byproduct of drinking water disinfection ¹

HAA5 (ppb) 4551	NA	60	.005	2.53	15.3	2018	No	Byproduct of drinking water disinfection ¹
HAA5 (ppb)1507	NA	60	.007	2.0	19.03	2018	No	Byproduct of drinking water disinfection ¹

1. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Inorganic Compounds

<u>Contaminants (Units)</u>	<u>MCLG or MRDLG</u>	<u>MCL or MRDL</u>	<u>Your Water</u>	<u>Range</u>		<u>Sample Date</u>	<u>Violation</u>	<u>Typical Source</u>
				<u>Low</u>	<u>High</u>			
Fluoride (ppm)	4	4	0.9	<0.1	1.3	2017	No	Erosion of natural deposits; Water additive which promotes strong teeth; discharge from fertilizer and aluminum factories

* All other IOC analyzed during monitoring period were below the detectable limit, and are considered zero

2. Unregulated contaminant monitoring helps EPA to determine where certain contaminants occur and whether the agency should consider regulating those contaminants in the future.

Radioactive Contaminants

Gross Alpha Emitters (pCi/l)	0	15	<3	N/A	<3	2015	No	Erosion of natural deposits
Radium-228 & 226 combined (pCi/l)	0	5	<1	N/A	<1	2015	No	Erosion of natural deposits

Microbiological

Total Coliform (positive samples/month) ^{3,4}	0	0	0	NA	NA	2018	No	Human or animal fecal waste
--	---	---	---	----	----	------	----	-----------------------------

3. A violation occurs when a routine sample and a repeat sample, in any given month, are total coliform positive, and one is also fecal coliform or E. coli positive.

4. If a system collecting fewer than 40 samples per month has two or more positive samples in one month, the system has a MCL violation.

Lead and Copper

<u>Contaminants</u>	<u>MCLG</u>	<u>AL</u>	<u>90th Percentile</u>	<u>Sample Date</u>	<u># Samples Exceeding AL</u>	<u>Exceeds AL</u>	<u>Typical Source</u>
Copper – action level at consumer taps (ppm)	1.3	1.3	0.1	2018	0	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead – action level at consumer taps (ppb)	0	15	0	2018	1	No	Corrosion of household plumbing systems; Erosion of natural deposits

<u>Contaminants</u> <u>(Units)</u>	<u>MCLG</u> <u>or</u> <u>MRDLG</u>	<u>MCL</u> <u>or</u> <u>MRDL</u>	<u>Your</u> <u>Water</u>	<u>Range</u>		<u>Sample</u> <u>Date</u>	<u>Violation</u>	<u>Typical Source</u>
				<u>Low</u>	<u>High</u>			
Nitrate [measured as Nitrogen] (ppm)	10	10	<0.1	N/A	<0.1	2018	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits

Table 4: Secondary and Unregulated Contaminants No MCL Established

<u>Secondary Group</u>				
<u>Unregulated Contaminants</u>	<u>Recommended Upper Limit (RUL)</u>	<u>Range Detected</u>	<u>McGuire System Data</u>	<u>Sample Date</u>
Alkalinity(ppm)	N/A	48-56	52	2017
Aluminum (ppm)	RUL=200	<0.01-0.05	0.02	2017
Chloride (ppm)	RUL=250	5.7-6	5.8	2017
Hardness (ppm) (as CaCO3)	RUL=250	56-72	65.3	2017
Iron (ppm)	RUL=. 3	0	<0.04	2018
Manganese (ppm)	RUL= .05	0	<0.04	2018
Sulfate (ppm)	RUL=250	8.5-10.7	9.3	2017
Sodium (optional)(ppm) ²	RUL = 50	0	<10	2017
Total Dissolved Solids (ppm)	RUL=500	78-84	82	2017

<u>Unregulated Contaminant</u>	<u>Health Advisory Limit (HAL)</u>	<u>Well B</u>	<u>Monitoring Year</u>
PFOS	70 ppt	<4 ppt	2016
PFOA	70 ppt	<2 ppt	2016
<u>Unregulated Contaminant</u>	<u>Health Advisory Limit (HAL)</u>	<u>Well C</u>	<u>Monitoring Year</u>
PFOS	70 ppt	<4 ppt	2016
PFOA	70 ppt	<2 ppt	2016
<u>Unregulated Contaminant</u>	<u>Health Advisory Limit (HAL)</u>	<u>Well D</u>	<u>Monitoring Year</u>
PFOS	70 ppt	<4 ppt	2016
PFOA	70 ppt	<2 ppt	2016

* 2016 data is the most current for JBMDL

Table 5: Unit Descriptions and Definitions

Unit Descriptions	
Term	Definition
ppm	parts per million or milligrams per liter (mg/L)
ppb	parts per billion or micrograms per liter (µg/L)
ppt	parts per trillion or nanograms per liter (ng/L).
positive samples	positive samples/yr: the number of positive samples
MFL	million fibers per liter
NA	not applicable
ND	not detected
NR	monitoring not required but recommended
pCi/L	Pico Curies of contaminant per Liter of water – a Curie is a measurement of how radioactive a material is.

Important Drinking Water Definitions	
Term	Definition
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.
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.
RUL	Recommended Upper Limit: NJDEP
AL	Action Level: The concentration of a contaminant which, if exceeded triggers treatment or other requirements which a water system must follow.
MRDLG	Maximum Residual Disinfection 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
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.
MNR	Monitored Not Regulated
MPL	Maximum Permissible Level: State-assigned
HAL	Health advisory levels (HALs) are not regulatory standards. HALs identify the concentration of a chemical of concern in drinking water at and below which adverse health effects are not anticipated to occur over specific exposure durations (e.g., 1 day, 10 days, a lifetime).
LRAA	Locational Running Annual Average

Water Conservation Tips

The average U.S. household uses approximately 400 gallons of water per day or 100 gallons per person per day. Luckily, there are many low-cost and no-cost ways to conserve water. Small changes can make a big difference – try one today and soon it will become second nature.

- Take short showers - a 5 minute shower uses 4 to 5 gallons of water compared to up to 50 gallons for a bath.
- Shut off water while brushing your teeth, washing your hair and shaving and save up to 500 gallons a month.
- Use a water-efficient showerhead. They're inexpensive, easy to install, and can save you up to 750 gallons a month.
- Run your clothes washer and dishwasher only when they are full. You can save up to 1,000 gallons a month.
- Water plants only when necessary.
- Fix leaky toilets and faucets. Faucet washers are inexpensive and take only a few minutes to replace. To check your toilet for a leak, place a few drops of food coloring in the tank and wait. If it seeps into the toilet bowl without flushing, you have a leak. Fixing it or replacing it with a new, more efficient model can save up to 1,000 gallons a month.
- Adjust sprinklers so only your lawn is watered. Apply water only as fast as the soil can absorb it and during the cooler parts of the day to reduce evaporation.
- Teach your children about water conservation to ensure a future generation that uses water wisely. Make it a family effort to reduce next month's water bill.
- Visit www.epa.gov/watersense for more information.

How can I get involved?

This Consumer Confidence Report was prepared by the Joint Base Water Working Group members from the 87th Medical Group and the 87th Civil Engineer Group. For more information, call the Joint Base Public Affairs office at (609) 754-2104, Bioenvironmental Engineering at (609) 754-9057 or Civil Engineering at (609) 754-6166. Copies of this report are available in the following locations: Base Library, United Communities Housing Office, Warfighter and Family Readiness Center and the Bioenvironmental Engineering and Civil Engineering Offices.

The public website for the JBMDL installation posted links to the reports here:

<https://www.jbmdl.jb.mil/Activity-Feed/About-Us/Environmental-Publications/Consumer-Confidence-Report/>