Annual Water Consumer Confidence Report

***Hill Drinking Water System* on**
Joint Base McGuire-Dix-Lakehurst
(JB MDL)

Public Water System ID No. NJ1511010

Monitoring Period:
January 1, 2020 – December 31, 2020

Is my water safe?
Yes. Last year, as in years past, the tap water in the Hill drinking water system on JB MDL - Lakehurst 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 safeguarded water supplies and once again 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. The report provides sampling data for the water system and discusses health concerns for any contaminant detected in the system. The report also provides definitions so consumers are clear on the terminology and material presented in this report. Additional information concerning water consumption anywhere in the United States can be obtained by calling the Safe Drinking Water Hotline, toll free at (800) 426-4791.

Where does my water come from?
The Hill drinking water system obtains groundwater from four wells. The wells are screened in the Cohansey Aquifer and the Potomac-Raritan-Magothy Aquifer. The wells range in depth from 50 feet to 990 feet. Total pumping capacity of the wells is approximately 560 gallons per minute (GPM). Water is treated using lime and soda ash to adjust pH, chlorine for disinfection and a greensand filter for iron removal. The system stores 400,000 gallons of water for use at JB MDL - Lakehurst in two water towers. The Hill system serves the area from Route 547 to Westfield Hangar, excluding the Cathedral of the Air, Freedom Park and Building 42.

Source Water Assessments
NJDEP has prepared Source Water Assessment Reports and Summaries for all public water systems. For more information on the Source Water Assessment Program, visit NJDEP's Source Water Assessment web site at www.state.nj.us/dep/swap or by contacting NJDEP's Bureau of Safe Drinking Water at (609) 292-5550. Consumers 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 four sources (all groundwater wells) are presented in the following table. The table illustrates the susceptibility ratings for each individual source for each contaminant categories and provides the rating for each well: high, medium, and low. The Hill system does not have any sources that are classified as ground water under the direct influence of surface water, or surface water and it does not purchase water from other public water systems. The eight-contaminant categories are defined below Table 1.

Table 1 – Source Water Assessment Summary

Contaminant	Well 5	Well 9A	Well 48	Well 44
Pathogens	Low	Low	Low	Low
Nutrients	High	High	High	High
Pesticides	Medium	Low	Medium	Low
Volatile Organic Compounds (VOCs)	High	High	High	High
Inorganics	High	High	High	High
Radionuclides	High	High	High	High
Radon	Medium	Medium	Medium	Medium
Disinfection Byproducts Precursors (DBPs)	Medium	Medium	Medium	Medium

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. All VOCs analyzed in 2019 were below the minimum detection limit and results are considered zero. **VOCs were not required to be sampled in 2020.**
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, 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 be the result of oil and 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 while Perfluorononanoic acid (PFNA) and Perfluorooctanoic acid (PFOA) are stable end products resulting from the degradation

of precursor substances. The NJDEP has designated these three compounds as "Regulated PFAS." 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 4 of this report for additional information.)

In order to ensure that tap water is safe to drink, EPA prescribes regulations that 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 analytes and monitoring frequencies for the wells (points of entry) and distribution system servicing the Lakehurst area.

Table 2 – Regulated Substances and Monitoring Frequency

Regulated Substance	Frequency
Total Coliform, Free Available Chlorine,	Monthly
Nitrates	Annually
Trihalomethanes (TTHM)	Annually
Haloacetic Acids (HAA5)	Annually
Inorganics	Every 3 years
Secondary	Every 3 years
VOCs	Every 3 years
Radiologicals Sample Point TP001001	Every 3 Years
Radiologicals Sample Point TP002011	Every 6 years
Lead and Copper	Every 3 Years
Regulated PFAS	Quarterly

The Safe Drinking Water Act regulations allow monitoring waivers to reduce or eliminate the monitoring requirements for asbestos, VOCs and synthetic organic compounds (SOCs). The Hill system received a monitoring waiver for asbestos and SOCs 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 2 minutes before using water for drinking or cooking. If you are concerned about lead in your drinking water, you may wish to have your water tested. Information on lead in drinking water is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

Additional Information for PFCs

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. PFCs are being studied by the EPA to determine if regulation is needed.

On 19 May 2016, the EPA's Office of Water issued Lifetime Health Advisory levels (LHAs) 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 LHAs are 70 parts per trillion (ppt) for both PFOS and PFOA, individually or as the sum of the two.

The LHAs are calculated based on how much water lactating women drink because they tend to drink more water than other people and can pass these chemicals along to nursing infants through breastmilk. EPA's LHAs are based on drinking water consumption and household use of drinking water during food preparation (e.g., cooking or to prepare coffee, tea or soup). The LHAs apply to both short-term (i.e., weeks to months) scenarios during pregnancy and lactation, 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.

Detected levels of PFOS/PFOA exceeded the LHA in back-up wells 5 and 9A only in 2016. The primary well which feeds the water system the majority of the time had no detection for PFOS/PFOA. The wells are not in regular use, but were activated from Dec. 2-20, 2016, while service was being conducted on the primary deep well. Wells 5 and 9A are emergency back-up wells only and an ion exchange unit has been installed to remove PFAS. A new deep well and treatment plant is under construction to replace wells 5 and 9A.

In 2018, the NJDEP established health based MCLs for PFNA, PFOA and PFOS and has identified these three analytes as "Regulated PFAS." The MCLs are 0.013 micrograms per liter (µg/L) (or 13 ppt) for PFNA and PFOS, and 0.014 µg/L (or 14 ppt) for PFOA. Lakehurst wells were sampled throughout the year and all results have been below the NJDEP MCLs. Results of sampling are provided in Table 3.

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 tap water is safe to drink, EPA prescribes regulations, which limit the amount of contaminants in water provided by public water systems. All sources of drinking water contain some naturally occurring contaminants. At low levels, these substances are generally not harmful in our drinking water. Table 3 below lists the drinking water monitoring results for the calendar year of this report, unless otherwise noted. Some of our data, though representative, may be more than one year old but still within required sampling frequency. Table 5 and 6, 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. 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 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 Water Drinking Hotline (800-426-4791).

Disinfectant, Disinfectant Precursors and Byproducts									
Contaminants Units	**Location**	**MCLG or MRDLG**	**MCL, TT, or MRDL**	**LRAA**	**Range**		**Sample Date**	**Violation**	**Typical Source**
					Low	**High**			
Chlorine (as Cl_2, ppm) (Monthly Range)	N/A	4.0	4.0	N/A	0	1.00	2020	No	Drinking water disinfectant[1]
TTHMs (ppb)	5	NA	80	4	NA	4.07	2020	No	Byproduct of drinking water disinfection[1]
	307			21	NA	21.2	2020	No	
HAA5 (ppb)	5	NA	60	3	NA	3	2020	No	Byproduct of drinking water disinfection[1]
	307			1	NA	1.42	2020	No	

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

Nitrate							
Contaminants Units	**MCLG or MRDLG**	**MCL, TT, or MRDL**	**Range**		**Sample Date**	**Violation**	**Typical Source**
			Low	**High**			
Nitrate [measured as Nitrogen] (ppm)	1	10	NA	<0.1	2020	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Microbiological							
Contaminants Units	**MCLG or MRDLG**	**MCL, TT, or MRDL**	**Range**		**Sample Date**	**Violation**	**Typical Source**
			Low	**High**			
Total Coliform (positive samples/months)[2,3]	0	0	NA	NA	2020	No	Human or animal fecal waste

2. 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.

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

Volatile Organic and Synthetic Organic Compounds (VOCs/SOCs)							
Contaminants Units	**MCLG or MRDLG**	**MCL, TT, or MRDL**	**Range**		**Sample Date**	**Violation**	**Typical Source**
			Low	**High**			
1,2,3-Trichloropropane (ppb)	0.03	0.03	N/A	<0.0064	2020	No	Discharge of industrial solvents and cleaning/degreasing agent; impurity resulting from the production of soil fumigants
Ethylene dibromide (EDB) (ppb)	0.05	0.05	N/A	<0.0075	2020	No	Used as a fumigant to protect against insects, pests, and nematodes in crops; treatment of felled logs; intermediate for dyes, resins, waxes, and gums
1,2 Dibromo-3-chloropropane (DBCP) (ppb)	0.2	0.2	N/A	<0.006	2020	No	Used a soil fumigant and nematocide; also as an intermediate in the synthesis of organic chemicals

Inorganic Compounds							
Contaminants (Units)	**MCLG or MRDLG**	**MCL, TT, or MRDL**	**Results**		**Sampled**	**Violation**	**Typical Source**
			Low	**High**			
Antimony (ppm)	0.006	0.006	NA	<0.002	2019*	No	Discharge from fire retardants, ceramics, electronics, solder
Arsenic (ppm)	0	0.1	NA	<0.001	2019*	No	Erosion of natural deposits
Barium (ppm)	2	2	NA	<0.1	2019*	No	Erosion of natural deposits
Beryllium (ppm)	0.004	0.004	NA	<0.00025	2019*	No	Discharge from electrical, aerospace, and defense industries
Cadmium (ppm)	0.005	0.005	NA	<0.001	2019*	No	Erosion of natural deposits
Chromium (ppm)	0.1	0.1	NA	<0.001	2019*	No	Erosion of natural deposits
Cyanide (ppm)	0.2	0.2	NA	<0.05	2019*	No	Discharge from steel/metal factories
Fluoride (ppm)	4	4	NA	<0.1	2019*	No	Water additive which promotes strong teeth
Mercury (ppm)	0.002	0.002	NA	<0.0002	2019*	No	Erosion of natural deposits
Nickel (ppm)	0.1	0.1	NA	<0.002	2019*	No	Erosion of natural deposits
Selenium (ppm)	0.05	0.05	NA	<0.002	2019*	No	Discharge from factories
Thallium (ppm)	0.0005	0.002	NA	<0.001	2019*	No	Erosion of natural deposits
* Most recent sampling data available for the listed contaminant.							

Radioactive Contaminants							
Contaminants (Units)	**MCLG or MRDLG**	**MCL, TT, or MRDL**	**Range**		**Sampled**	**Violation**	**Typical Source**
			Low	**High**			
Gross Alpha Emitters (pCi/l)	0	15	NA	<3	2019*	No	Erosion of natural deposits
Radium-228 & 226 combined (pCi/l)	0	5	NA	1.5	2019*	No	Erosion of natural deposits
* Most recent sampling data available for the listed contaminant.							

Regulated PFAS						
Contaminant	**NJDEP MCL (ppt)**	**Wells 44 and 48**		**Wells 5 and 9**		**Monitoring Year**
		Low	**High**	**Low**	**High**	
PFOS (ppt)	13	<0.190	0.69	<0.188	0.62	2020
PFOA (ppt)	14	NA	<0.916	NA	<0.946	2020
PFNA (ppt)	13	NA	<0.328	NA	<0.115	2020

Table 4 – Secondary and Unregulated Contaminants (No MCL Established)

Secondary Group				
Secondary Contaminant[4]	**Recommended Upper Limit (RUL)**	**Range Detected**		**Date of Monitoring**
		Low	**High**	
Alkalinity (ppm)	N/A	88	96	2020
Aluminum (ppm)	0.2	NA	<0.02	2019*
Chloride (ppm)	250	NA	2.1	2019*
Iron (ppm)	0.3	NA	<0.04	2019*
Manganese (ppm)	0.05	NA	<0.04	2019*
Sodium (ppm)	50	NA	<10	2019*
Sulfate (ppm)	250	NA	10.4	2019*
Zinc (ppm)	5	NA	<0.04	2019*

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

* Most recent sampling data available for the listed contaminant.

Table 5 – Unit Descriptions

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
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 the rate at which a radioactive material decays.

Table 6 – Drinking Water Definitions

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
TT	Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.
AL	Action Level: The concentration of a contaminant which, if exceeded triggers treatment or other requirements which a water system must follow.
Variances and Exemptions	State or EPA permission not to meet an MCL or a treatment technique under certain conditions.
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
LHA	Lifetime health advisory levels (LHAs) are not regulatory standards. LHAs 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
Did you know that 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 kids 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?
The Consumer Confidence Report was prepared by Joint Base Water Working Group members from the 87th Air Base Wing Medical and Civil Engineer Group and the JBMDL Housing Offices. We welcome your questions and comments about the water quality from the Lakehurst systems. Any questions regarding this report or the quality of Lakehurst tap water should be directed to the Public Affairs office at (609) 754-2104, Bioenvironmental Engineering at 754-9057 or Civil Engineering at (609) 754-1809. Copies of this report are available in the following locations: Base Library, Housing Offices, Warfighter and Family Readiness Center, Medical Group's Bioenvironmental Engineering Office and Civil Engineering Offices.

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

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