



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, 2016 – December 31, 2016**

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 (NJ) state drinking water health standards. Members of the 87th Air Base Wing Medical and Civil Engineering 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 ground water from five wells. Four of the wells are screened in the Cohansey Aquifer and one deeper well is screened in 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

The New Jersey Department of Environmental Protection (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 five sources (all groundwater wells) are presented in the following table. 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 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 seven contaminant categories are defined in Table 1.

Table 1 - Source Water Assessment Summary

Contaminant	Well 5	Well 9A	Well 37	Well 44
Pathogens	Low	Low	Low	Low
Nutrients	High	High	High	High
Pesticides	Medium	Low	Medium	Low
Volatile Organic Compounds (VOC's)	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.

VOC's: 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, 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 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 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
VOC's	Every 3 years
Radiologicals Sample Point TP001001	Every 3 Years
Radiologicals Sample Point TP002011	Every 6 years
Lead and Copper	Every 3 Years

The Safe Drinking Water Act regulations allow monitoring waivers to reduce or eliminate the monitoring requirements for asbestos, VOC's and synthetic organic compounds (SOC's). The Hill system received a monitoring waiver for asbestos and SOC's 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 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 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.

The HALs 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 HALs 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 HALs 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.

At this time, detection levels of PFOS/PFOA exceeded the HAL in back-up wells 5 and 9 only. The primary well which feeds the water system the majority of the time had no detection for PFOS/PFOA. Please see Table 4 for information on these sample results. 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 9 are currently shut down for restoration of the water tower and will be retrofitted with a filtration system to remove PFCs from the back-up drinking water prior to future use.

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

In order 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 your water. 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 or the State requires us to monitor 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 below in Table's 3 and 4. In Table's 5 and 6, you will find important terms and abbreviations that might not be familiar to you. To help you better understand these terms, we have provided the definitions that are commonly used:

Table 3 - Regulated Contaminants

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).

<u>Contaminants</u> <u>Units</u>	<u>MCLG</u> <u>or</u> <u>MRDLG</u>	<u>MCL,</u> <u>TT, or</u> <u>MRDL</u>	<u>Your</u> <u>Water</u>	<u>Range</u>		<u>Sample Date</u>	<u>Violation</u>	<u>Typical Source</u>
				<u>Low</u>	<u>High</u>			
Disinfection Byproducts								
TTHM (ppb)	NA	80	14.31	3.61	25.00	2016	No	Byproduct of drinking water disinfection ¹
HAA5 (ppb)	NA	60	8.88	5.20	12.55	2016	No	Byproduct of drinking water chlorination ¹
1. Locational running annual average of quarterly results								
Radioactive Contaminants								
Gross Alpha Emitters (pCi/l)	0	15	2.26	1.33	3.19	2012 & 2015	No	Erosion of natural deposits
Radium-228 & 226 combined (pCi/l)	0	5	2.26	1.33	3.19	2012 & 2015	No	Erosion of natural deposits
<u>Contaminants</u> <u>Units</u>	<u>MCLG</u> <u>or</u> <u>MRDLG</u>	<u>MCL,</u> <u>TT, or</u> <u>MRDL</u>	<u>Your</u> <u>Water</u>	<u>Range</u>		<u>Sample Date</u>	<u>Violation</u>	<u>Typical Source</u>
				<u>Low</u>	<u>High</u>			
Regulated Disinfectant								
Chlorine (ppm)	4.0	4.0	0.93	NA	NA	Monthly	No	Drinking water disinfection
Inorganic Contaminant								
Barium (ppm)	2	2	0.045	<0.03	0.06	2015	No	Erosion of natural deposits
Nitrate (ppm)	10	10	<0.1	<0.1	<0.1	2016	No	Erosion of natural deposits
<u>Contaminants</u>	<u>MCLG</u>	<u>AL</u>	<u>Your</u> <u>Water</u>	<u>Sample</u> <u>Date</u>	<u># Samples</u> <u>Exceeding AL</u>	<u>Exceeds</u> <u>AL</u>	<u>Typical Source</u>	
Lead (ppb)	0	15	5	2015	0	No	Corrosion of household plumbing systems; Erosion of natural deposits	
Copper (ppm)	1.3	1.3	0.1	2015	0	No	Corrosion of household plumbing systems; Erosion	

							of natural deposits
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Table 4 – Secondary and Unregulated Contaminants No MCL Established

Secondary Contaminant	Recommended Upper Limit (RUL)	Range Detected	2016 Hill System Data	Date of Monitoring
Aluminum (ppb)	RUL=200	<10.0 – 200.0	105.0	2015
Chloride (ppm)	RUL=250	43.5 – 65.5	54.5	2015
Iron (ppb)	RUL=300	40.0 – 100.0	70.0	2015
Manganese (ppb)	RUL=50	<30.0-40.0	35.0	2015
Sodium (ppm)	RUL=50	35.0 – 46.0	40.5	2015
Sulfate (ppm)	RUL=250	9.8 – 11.7	10.75	2015
Zinc (ppm)	RUL=5	<0.03-0.04	0.035	2015

Unregulated Contaminant	Health Advisory Limit (HAL)	2016 Hill System Data	Date of Monitoring
PFOS Primary Well 48	70 ppt	<4 ppt	2016
PFOA Primary Well 48	70 ppt	<2 ppt	2016
PFOS Back-up Well 44	70 ppt	15 ppt	2016
PFOA Back-up Well 44	70 ppt	10 ppt	2016
PFOS Back-up Wells 5 and 9	70 ppt	170 ppt	2016
PFOA Back-up Wells 5 and 9	70 ppt	45 ppt	2016

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
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).

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 Engineering 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 (732) 323-7800. 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:

<http://www.jointbasemdl.af.mil>