



Langley Air Force Base Annual Water Quality Report For Calendar Year 2016

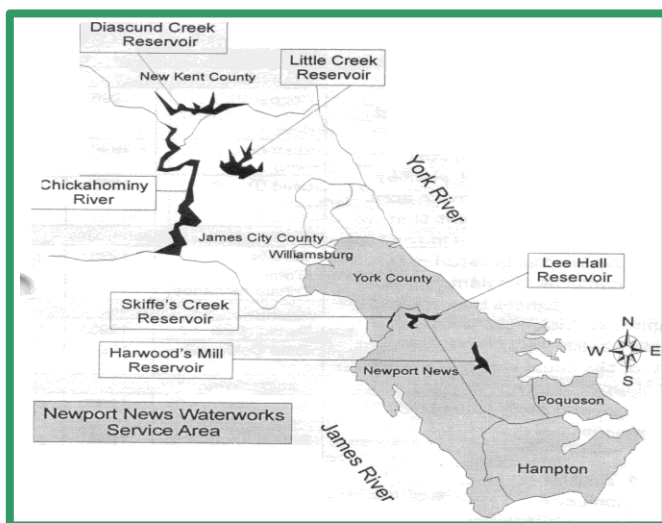
Langley AFB's goal is to provide you with a safe and dependable supply of drinking water. This is our annual Consumer Confidence Report on the drinking water delivered to Langley AFB (main base and heavier than air (HTA)/lighter than air (LTA) housing areas only). This report is required by the Safe Drinking Water Act (SDWA) and provides information such as to where your water comes from and information on *potential* contaminants. The quality of your drinking water must meet state and federal requirements administered by the Virginia Department of Health (VDH). The information contained in this report validates all requirements were met and the water is safe for consumption.

If you have questions about this report, please contact MSgt Francisco Torres or SSgt Michelle Smith at the 633d Aerospace Medicine Squadron, Bioenvironmental Engineering Flight (757) 764-7069.

Water Source

The sole public water system for supplying drinking water to Langley AFB is Newport News Waterworks (NNWW). Surface water provides the *primary source* of drinking water. It begins with the Chickahominy River. Water is pumped from the river above Walker's Dam and is transferred through pipes to one of five reservoirs owned and operated by NNWW. These reservoirs store and supply water to the treatment plants. Groundwater provides a *secondary source* of water. Brackish (slightly salty) groundwater is pumped from deep wells in the Lee Hall area. The two source waters are treated separately then blended together at Lee Hall water treatment plant (WTP) before distribution to the service area. Langley AFB receives very little ground water as most of the water comes from Harwood's Mill Reservoir WTP.

Newport News Waterworks



How the water is treated

Water is treated at NNWW treatment plants where it passes through screens to remove large debris. Then aluminum sulfate (alum) and polymer are added during clarification process for flocculation and coagulation needed to remove natural organics. After the water is clarified, ozone (disinfection) is added to kill microorganisms such as bacteria and viruses. The water is then sent through filters to remove any remaining particles (filtration). Lime is added to adjust the pH, fluoride is added to prevent tooth decay, and zinc orthophosphate is added to control corrosion inside the pipe system. Finally, chloramines are added (secondary disinfection) to maintain disinfection as it travels through the pipe system to your home or office.

The brackish groundwater is pumped to NNWW's desalination plant located in Lee Hall. Using a process called reverse osmosis, water is forced by high pressure through membranes that can remove the salt and other contaminants to produce very high quality water. The water is blended with treated surface water and sent out to its customers.

NNWW had its source water assessments completed prior to 2003. Information on the NNWW source water assessment is obtainable from the Hampton Roads Planning District Commission, (757) 420-8300, or NNWW, (757) 926-1000.

Information

Sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals, and can pick up substances resulting from the presence of animals or from human activity. *Contaminants that may be present in source water include:*

- ★ Microbial contaminants, such as viruses and bacteria, 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 contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production. They 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.

Your drinking water is continually monitored for contaminants. Langley AFB water is safe to drink.

In order to ensure that tap water is safe to drink, the Environmental Protection Agency (EPA) prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) prescribe regulations establishing limits for contaminants in bottled water, and must provide the same level of protection for the consumers as available tap 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 (1-800-426-4791).

Important Information for People with Health Concerns

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons 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 drinking water contaminants. These people should seek advice about drinking water from their health care providers. EPA and Center 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 (1-800-426-4791).

Chloramines, a combination of chlorine and ammonia, are now used as a secondary disinfectant. **Reminder** - kidney dialysis centers are advised of the dangers of the chloramine treatment. Also, tropical fish owners need to de-chlorinate the water before use in fish habitats or tanks.

Direct questions to: MSgt Francisco Torres
or SSgt Michelle Smith at Bioenvironmental
Engineering Flight
633d Aerospace Medicine Squadron
Commercial 764-7069 DSN 574-7069

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 comes from materials and components associated with service lines and home plumbing. NNWW 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 approximately 60 seconds or until it becomes cold or reaches a steady temperature before using water for drinking or cooking. Waterworks recommends that you prepare baby formula with cold water. If you are concerned about elevated lead levels in your home's water, you may have your water tested. Additional information to include steps you can take to minimize exposure to lead is available from the EPA's Safe Drinking Water Hotline at (1-800-426-4791) or visit them on the web at <http://www.epa.gov/safewater/lead>.

Because Waterworks is a department of the City of Newport News, major decisions about your drinking water are made by Newport News City Council. They meet on the second and fourth Tuesdays of each month at 7:00pm, and you are welcome to attend and participate. These meetings are broadcast live on Newport News City Channel (in Newport News - Cox channel 48 and Verizon FIOS channel 19) and can be viewed live or on-demand by all customers in our service area on the web at www.nnva.gov.

Explanation of Terms

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

Maximum Contaminant Level (MCL) - 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.

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. It does not reflect the benefits of adding the chemical for control of water borne microbial contaminants

Maximum Residual Disinfectant Level (MRDL) - 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.

Maximum Residual Disinfectant Level Goal (MRDLG) - A non-enforceable health goal. It does not reflect the benefits of adding chemical for the control of water borne microbial contaminants.

Nephelometric Turbidity Unit (NTU) - A measure of the clarity of the water. Turbidity in excess of 5 NTUs is just noticeable to the average person.

Non-detects (ND) - Lab analysis indicates that the contaminant is not present.

Parts per million (ppm) - One part per million corresponds to one minute in two years, or a single penny in \$10,000.

Parts per billion (ppb) - One part per billion corresponds to one minute in 2,000 years, or a single penny in \$10,000,000.

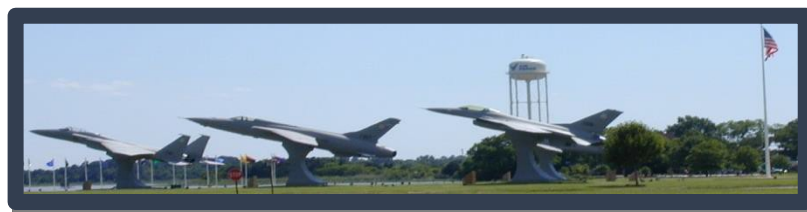
Picocuries per liter (pCi/L) - Picocuries per liter is a measure of the radioactivity in water.

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

TESTING RESULTS: Regulated Health Risk Contaminants - NEWPORT NEWS WATERWORKS

(Samples and Analysis were conducted by Newport News Waterworks' personnel on over 2,000 tests each month to ensure water quality.)

<u>Contaminant</u>	<u>MCLG</u>	<u>MCL</u>	<u>Units</u>	<u>Highest Result</u>	<u>Result Range</u>	<u>Violation</u>	<u>Sample Date</u>	<u>Likely Source</u>
Fluoride	4	4	ppm	0.88	0.80-0.88	None	2016	Fluoride is added to promote strong teeth
Barium	2	2	ppm	0.022	0.020-0.022	None	2016	Erosion of natural deposits
Nitrate	10	10	ppm	0.054	0.053-0.054	None	2016	Erosion of natural deposits
Nitrite	1	1	ppm	0.004	0.002-0.004	None	2016	Erosion of natural deposits
Total Organic Carbon Removal	Removal Ratio	TT	ppm	1.25 (Note 2)	1.04-1.90	None	2016	Naturally present in the environment
Turbidity	None	TT	NTU	0.22 (Note 4)	0.02-0.22	None	2016	Soil runoff
Radium-228	0	5	pCi/L	0.6 (Note 6)	<0.6-0.6	None	2016	Erosion of natural deposits
Beta/Photon Emitters	0	4	pCi/L	2.5 (Note 6)	1.4-2.5	None	2016	Decay of natural & man-man deposits



TESTING RESULTS: Detected Regulated Contaminants - LANGLEY AFB Distribution System (Note 1)

(Lab Analysis was conducted at James R. Reed & Associates, state-certified lab on 184 samples for 2016 calendar year to ensure water quality.)

<u>Contaminant</u>	<u>MCLG</u>	<u>MCL</u>	<u>Units</u>	<u>Test Result</u>	<u>Result Range</u>	<u>Violation</u>	<u>Sample Date</u>	<u>Typical Source of Contamination</u>
TTHM	N/A	80	ppb	21 (Note 3)	10-27	None	2016	By-product of drinking water chlorination
HAA5	N/A	60	ppb	20 (Note 3)	ND-29	None	2016	By-product of drinking water disinfection
Chloramines (Total chlorine)	MRDLG 4	MRDL 4	ppm	0.95 (Note 7)	0.11-2.40	None	2016	Water additive used to control microbes
Lead	0	AL = 15	ppb	<0.001 at the 90th percentile (Note 5)	ND-11	None	Sep 15	Corrosion of household plumbing systems; Erosion of natural deposits; (Testing next due in Sep 18)
Copper	0	AL = 1.3	ppm	0.399 at the 90th percentile (Note 5)	0.016-0.624	None	Sep 15	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservative (Testing next due in Sep 18)

Notes:

- (1) The table shows the date of the latest sample with a detectable level of contaminant. Although many more tests were performed, only these contaminants were found.
- (2) Total Organic Carbon removal is regulated based on the percentage of how much is removed in the treatment process divided by the target removal percentage set by the EPA. Compliance is based on the running average removal over the year. A detection level of 1.0 or greater indicates compliance with the TT.
- (3) At the end of each quarter in 2016, we calculated the running annual average for TTHM and HAA5 for each of the sample sites. The test result for TTHM is the highest running annual average of the four running annual averages for each of the sample sites. The test result for HAA5 was similarly determined. The result ranges are the highest and lowest values found in the individual samples collected in 2016.
- (4) Turbidity is a measure of water cloudiness. It indicates how well the filtration systems are working. 100% of the samples were within the limits.
- (5) Samples for lead and copper vary widely due to variations in plumbing at the delivery sites. The EPA standard is to report a concentration at which 90% of the samples fall below that certain level. The 90th percentile samples were well below the Action Level for both lead and copper.
- (6) The EPA considers 50 pCi/L to be the level of concern for beta particles.
- (7) We measure the chloramine residual whenever we collect a compliance bacteriological sample. A running annual average of the chloramine residuals was calculated every quarter in 2016. The test result for chloramines was the highest of the four running annual averages. The result range is the highest and lowest residuals found in the individual measurements in 2016.

Violation Information:

Your Langley Air Force Base waterworks did not have any violations during the calendar year 2016.

Additional Information of Interest:

Hardness - No EPA standard is set. Water treated by NNWW is considered moderately hard (the range of 4 grains - 6 grains is equal to 68.4 mg/L - 102.6 mg/L as calcium carbonate or CaCO_3). In 2016 the average was 83 mg/L with a range of 64 mg/L - 104 mg/L.

Pharmaceuticals - Medication, cosmetics, lotions, sunscreen, and other substances are referred to as “pharmaceuticals and personal care products” or PPCPs. PPCPs in water are an area of growing scientific interest because they are present in very small concentrations, but little is known about their effects on human health. NNWW tested the Chickahominy River, the terminal reservoirs (Harwood’s Mill and Lee Hall) and finished (or treated) water from both plants. Trace amounts of caffeine and triphenyl phosphate (a flame retardant) were found in the raw (or untreated) water. However, these substances were not found in the finished or treated water, confirming that the NNWW water treatment process is providing adequate protection and producing high-quality water.

Fluoride - Fluoride is added to water to prevent tooth decay. NNWW adheres to drinking water regulations set by the EPA and guidance provided by the Virginia Department of Health (VDH). The range for prevention of dental cavities is 0.7 mg/L to 1.2 mg/L. Waterworks’ average fluoride level is below the Primary Maximum Contamination Level (PMCL) of 4 mg/L. The U.S. Department of Health and Human Services have recently made recommendations to lower the fluoride levels in drinking water. This is being reviewed both nationally and locally. If the VDH alters their fluoride guidance to Virginia water utilities, NNWW will comply.



Environmental Protection Agency
Safe Drinking Water Hotline

(1-800-426-4791)

Newport News Waterworks:

www.nhgov.com/waterworks



“Continued Excellence in Keeping America’s #1 Resource Healthy & Safe”