

2022 Annual Water Quality Report

Hadnot Point Water Treatment System

PWSID # 04-67-041



Marine Corps Installations East-Marine Corps Base Camp Lejeune (MCIEAST-MCB CAMLEJ) is pleased to present the Annual Water Quality Report (Consumer Confidence Report). This report provides details about where your water comes from, what it contains, and how it compares to standards set by regulatory agencies.

MCIEAST-MCB CAMLEJ is committed to providing you with information because informed customers are our best allies.

Source Water

Twenty-nine drinking water supply wells provide groundwater from the Castle Hayne Aquifer to the Hadnot Point Water Treatment Plant (WTP). There, the raw water is treated by disinfection, softening, and filtration practices prior to distribution to our customers.

The North Carolina Department of Environmental Quality, Public Water Supply Section, Source Water Assessment Program (SWAP) assessed drinking water sources across North Carolina to determine the susceptibility of each drinking water source to potential contaminant sources. More information on the SWAP, including source water assessment reports, can be found on the web at:



<https://www.ncwater.org/?page=600>



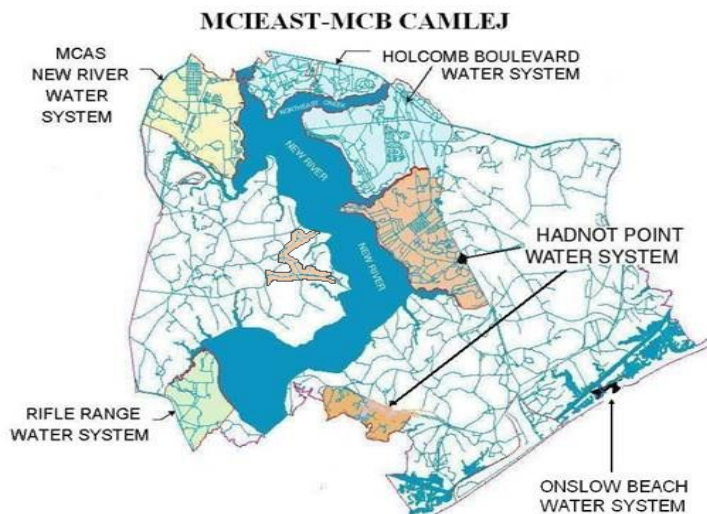
MARINE CORPS BASE
CAMP LEJEUNE
"Home of Expeditionary Forces in Readiness"

Important Drinking Water Terms and Definitions

Term	Definition
AL	Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
HAA	Halo Acetic Acids: Chlorine from the water disinfection process can react with organic matter and small amounts of bromide present in water to produce various HAAs.
MCL	Maximum Contaminant Level: The highest level of a contaminant that is allowed in drinking water. MCL's are set as close to the MCLG's as feasible using the best available treatment technology.
MCLG	Maximum Contaminant Level Goal: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLG's allow for a margin of safety.
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.
MRDLG	Maximum Residual Disinfection Level Goal: The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLG's do not reflect the benefits of the use of disinfectants to control microbial contaminants.
NA	Not Applicable: Information not applicable/not required for that particular water system or for that particular rule.
SDWA	Safe Drinking Water Act: The federal law that protects public drinking water supplies throughout the nation.
TT	Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.

Unit Descriptions

Term	Definition
ppm	ppm: parts per million, or milligrams per liter (mg/L)
ppb	ppb: parts per billion, or micrograms per liter (ug/L)
ppt	ppt: parts per trillion, or nanograms per liter (ng/L)



Water Quality Data

The Hadnot Point water distribution system met all Federal and State drinking water standards in 2022. MCIEAST-MCB CAMLEJ routinely monitors drinking water quality for more than 150 substances that may be in your drinking water. The information below lists all of the regulated drinking water substances that were detected in recent water quality sampling. The detection of substances does not necessarily indicate that the water poses a health risk. Unless otherwise noted, the information below is from testing done January 1 through December 31, 2022. The EPA and the State allow us to monitor for certain substances less than once per year because the concentrations of the substances are not expected to vary significantly from year to year. Some of the information below, though representative of the water quality, is more than one year old. Other information presented in this report is from recent monitoring. Although many more substances were tested, only those substances listed below were detected in your water.

Regulated Contaminants	MCLG or MRDLG	MCL, TT or MRDL	Amount Detected	Range		Year Sampled	Violations	Typical Source
				Low	High			
Disinfectants & Disinfection By-Products								
Chlorine (ppm)	4	4	1.28 ¹	0.30	2.2	2022	No	Water additive used to control microbes
Haloacetic Acids (HAA5) (ppb)	NA	60 (LRAA)	16 ²	7	18	2022	No	By-product of drinking water disinfection
Total Trihalomethanes (TTHMs) (ppb)	NA	80 (LRAA)	50 ²	22	56	2022	No	By-product of drinking water disinfection
¹ Result reported is the running annual average. Minimum of 0.2 ppm disinfectant residual concentration required.								
² Result reported is the highest locational running annual average (LRAA), which is the average of the sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters under the Stage 2 Disinfection and Disinfectant Byproducts Rule.								
Inorganic Contaminants								
Fluoride (ppm)	4	4	0.751	NA		2021	No	Erosion of natural deposits, water additive which promotes strong teeth, discharge from fertilizer and aluminum factories.
Sodium (ppm) ³	NA	NA	10.9	NA		2021	No	Naturally occurring in the environment. Adequate levels of sodium are required for good health.

³ Sodium is optional to report.

Regulated Contaminants	MCLG or MRDLG	MCL, TT or MRDL	Amount Detected	Range		Year Sampled	Violations	Typical Source
				Low	High			

Microbiological Contaminants

Total Coliform Bacteria	0	Two positive samples per month ⁴	0 ⁵	N/A	2022	No	Naturally present in the environment; used as an indicator that other, potentially harmful bacteria may be present.
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⁴ For a water system collecting 40 or more samples per month.

⁵ There were no coliforms found in samples.

Regulated Contaminants	MCLG	AL	Amount Detected	# Samples Exceeding AL	Year Sampled	Exceeds AL	Typical Source
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Inorganic Contaminants

Copper (ppm)	1.3	1.3	0.057 ⁶	0	2020	No	Corrosion of household plumbing systems, erosion of natural deposits
Lead (ppb)	0	15	< 3 ⁶	0	2020	No	Corrosion of household plumbing systems, erosion of natural deposits

⁶ Amount Detected represents the 90th percentile level of all samples detected and is the number used to determine if MCIEAST-MCB CAMLEJ is in compliance with Federal, State, and DOD guidance.

Lead and Drinking Water

Exposure to lead in drinking water can cause serious health effects in all age groups. Infants and children can have decreases in IQ and attention span. Lead exposure can lead to new learning and behavior problems or exacerbate existing learning and behavior problems. The children of women who are exposed to lead before or during pregnancy can have increased risk of these adverse health effects. Adults can have increased risk of heart disease, high blood pressure, kidney or nervous system problems.

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. MCIEAST-MCB CAMLEJ's Hadnot Point water treatment system 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 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 (1-800-426-4791) or at:

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

Additional information about lead and drinking water can be viewed on the web at:

<https://www.lejeune.marines.mil/Offices-Staff/Environmental-Mgmt/Additional-Resources/>

Help Protect Your Water

Protection of drinking water is everyone's responsibility. You can help protect our drinking water sources in several ways: dispose of chemicals properly, take used motor oil to recycling centers, volunteer to participate in group efforts to protect your water sources, etc.

Voluntary Sampling Program

In addition to what is required by regulation, and as part of our commitment to ensure that we are providing the safest, most reliable drinking water possible, MCIEAST-MCB CAMLEJ has monitored drinking water for substances found in explosives (nitroaromatics, nitramines, nitrate esters) and perchlorate in finished water since 2004, and raw groundwater starting in 2011.

These substances, commonly known as "munitions constituents", are used in the manufacture of explosives or are the breakdown products of compounds used in explosives. Voluntary water sampling during 2022 detected trace amounts of one munitions constituent in the finished water and one munitions constituent in the raw water. These trace amounts are not a health concern. There are no MCLs established for munitions constituents.

Additionally, MCIEAST-MCB CAMLEJ sampled both raw groundwater and finished water for Volatile Organic Compounds, Synthetic Organic Compounds, Inorganic Compounds, and Per- and polyfluorinated Alkyl Substances (PFAS). There were two detections of PFAS in the finished water. This sampling was done voluntarily above what is required by current regulations and DOD requirements. Results of all voluntary testing were within Federal, State, and DOD drinking water guidance.

Detections for voluntary sampling conducted throughout the Hadnot Point water system can be viewed on the web at:

<http://www.lejeune.marines.mil/Offices-Staff/Environmental-Mgmt/Annual-Reports/Voluntary-Monitoring-Detected-Contaminants/>

Important Health Information

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 persons or their parents should seek advice about drinking water from health care providers. EPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

Per- and polyfluoroalkyl Substances (PFAS)

What are per- and polyfluoroalkyl substances and where do they come from?

Per- and polyfluoroalkyl substances (PFAS) are a group of thousands of man-made compounds. PFAS have been used in a variety of industries and consumer products around the globe, including the United States, since the 1940s. PFAS have been used to make coatings and products that are used as oil and water repellants for carpets, clothing, paper packaging for food, and cookware. They are also contained in some foams (aqueous film-forming foam or AFFF) used for fighting petroleum fires at airfields and in industrial fire suppression processes because they rapidly extinguish fires, saving lives and protecting property. PFAS compounds are persistent in the environment, and some are persistent in the human body - meaning they do not break down and they can accumulate over time.

Is there a federal or North Carolina state regulation for PFAS in drinking water?

There is currently no federal drinking water standard or regulation for any PFAS compound. In May 2016, the U.S. Environmental Protection Agency (EPA) established a health advisory level at 70 parts per trillion (ppt) for individual or combined concentrations of perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS). Both compounds are a type of PFAS.

In North Carolina, there is not a PFAS drinking water regulation.

Out of an abundance of caution for your safety, the Department of Defense's (DoD) PFAS testing and response actions go beyond EPA Safe Drinking Water Act requirements. In 2020, the DoD voluntarily began to monitor drinking water for PFAS at all military service owned water systems at least every three years using a combined concentration for PFOS and PFOA of 70 ppt as an action level.

DoD policy states that if water sampling results confirm that drinking water contains PFOS and PFOA at individual or combined concentrations greater than 70 ppt, water systems should 1) take immediate action to reduce exposure to PFOS or PFOA, to include providing alternative drinking water; and 2) undertake additional sampling to assess the level, scope, and localized source of contamination to inform next steps.

What about the EPA's 2022 interim Health Advisories?

Because the interim Health Advisories for PFOS and PFOA are based on draft analyses that are still undergoing review by the EPA's Science Advisory Board, are below quantifiable limits, and are non-regulatory levels, DoD is instead looking to EPA to promulgate a regulatory drinking water standard. DoD looks forward to the clarity that a nationwide regulatory standard for PFOS and PFOA in drinking water will provide.

In anticipation of this EPA drinking water regulation and to account for emerging science that shows potential health effects of PFOS and PFOA at levels lower than 70 ppt, DoD is evaluating its efforts to address PFAS in drinking water, and what actions we can take to be prepared to incorporate this standard, such as reviewing our current data and additional sampling where necessary. We remain committed to fulfill our cleanup responsibilities, operating within the law and authorities provided by the federal cleanup law, and clearly communicating and engaging with communities.

Has MCIEAST-MCB CAMLEJ tested its water for PFAS?

Yes. As part of MCIEAST-MCB CAMLEJ's continuing voluntary sampling program, samples are collected twice a year from the Hadnot Point Water Treatment Plant distribution point and from the system's water supply wells. Test results for all 18 PFAS compounds, including PFOS and PFOA, have been below the action level.

For more information about PFAS please visit: <https://www.defense.gov/pfas/>

Substances That Could Be in the Water

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. U.S. Food and Drug Administration regulations establish limits for contaminants in bottled water, which provide the same protection for public health. 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 the water poses a health risk. 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, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Substances that may be present in the water include:

Microbial Contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife;

Inorganic Contaminants, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil or gas production, mining, or farming;

Pesticides and Herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses;

Organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems;

Radioactive Contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791).

Questions?

For more information about this report, or for any questions relating to your drinking water, please call David Towler (EMD) at (910) 451-9385.



SOURCE WATER ASSESSMENT PROGRAM (SWAP) RESULTS

The North Carolina Department of Environmental Quality (NCDEQ), Public Water Supply Section (PWSS), Source Water Assessment Program (SWAP) conducted assessments for all drinking water sources across North Carolina. The purpose of the assessments was to determine the susceptibility of each drinking water source (wells) to Potential Contaminant Sources (PCSs). The results of the assessment are available in SWAP reports that include maps, background information, and a relative susceptibility rating of Higher, Moderate or Lower. The relative susceptibility rating of each source for the Hadnot Point Water Treatment System was determined by combining the contaminant rating (number and location of PCSs within the assessment area) and inherent vulnerability rating (i.e., characteristics or existing conditions of the well or watershed and its delineated assessment area). The assessment findings based on the SWAP report completed on September 10, 2020 are summarized in the table below:

Hadnot Point Drinking Water Supply Wells	
Source Name	Susceptibility Rating
585	Moderate
595	Lower
596	Lower
606	Moderate
607	Moderate
611	Lower
612	Lower
614	Lower
621	Moderate
622	Moderate
627	Moderate
630	Lower
632	Lower
640	Moderate
641	Higher
652	Lower
661	Moderate
662	Lower
663	Lower
668	Lower
669	Moderate
684	Lower
685	Moderate
686	Lower
688	Lower
709	Moderate
710	Moderate
711	Moderate
5186	Higher

The complete SWAP report for the Hadnot Point Water Treatment System may be viewed on the web at:

<http://www.ncwater.org/?page=600>

In order to access his report you will need to enter either the system name or PWS ID. Both have been provided below. Please note that because SWAP results and reports are periodically updated by the PWS Section, the results available on this website may differ from the results that are available at the time this report was prepared.

**System Name: USMC Lejeune -
Hadnot Point**

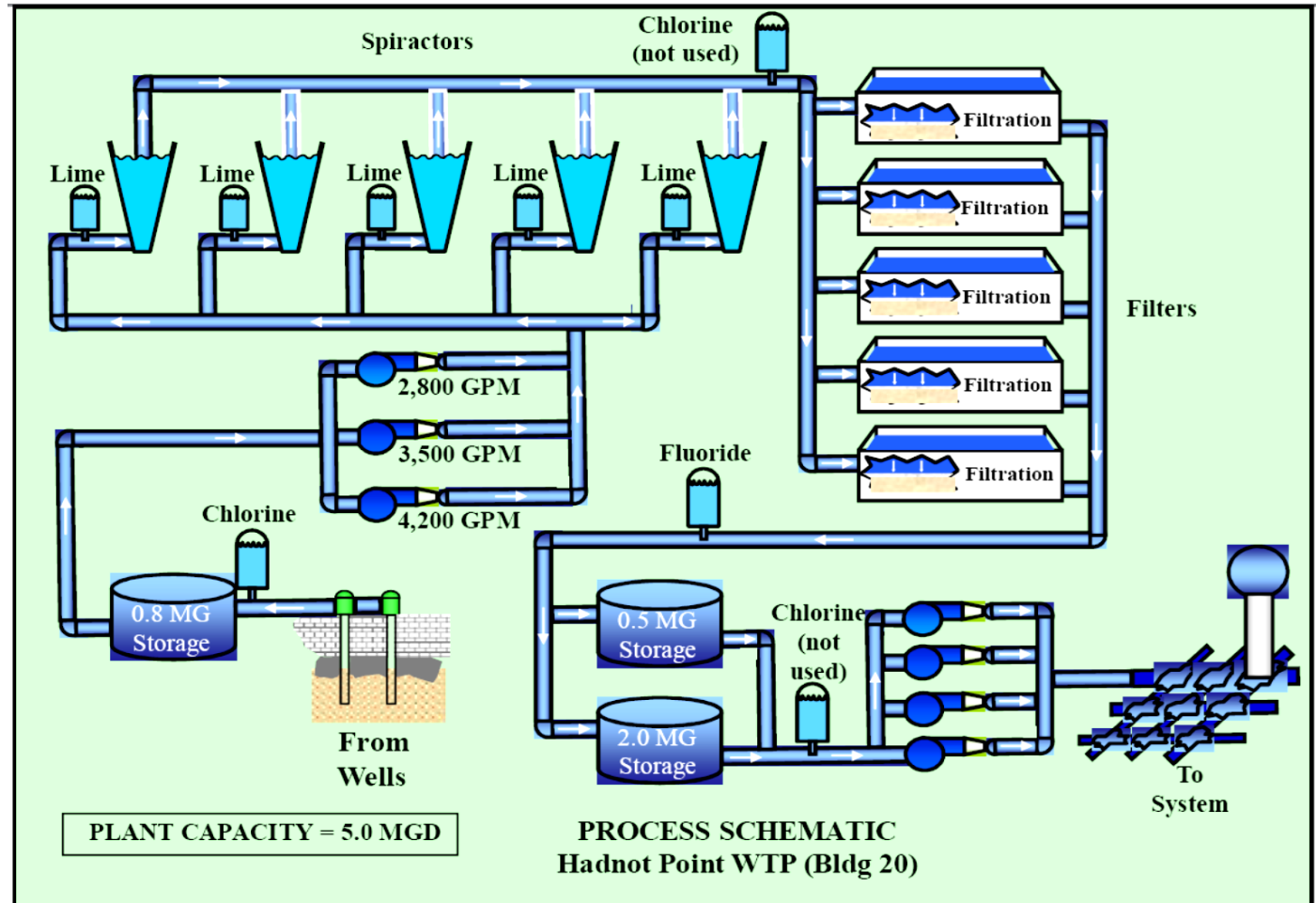
PWS ID: 0467041



It is important to understand that a susceptibility rating of "Higher" does not imply poor water quality, only the system's potential to become contaminated by PCSs in the assessment area.

Hadnot Point Water Treatment Process

As the raw water enters the water treatment plant, sodium hypochlorite is added to protect against microbial contamination, and the water is placed into a storage reservoir. From the storage reservoir the water is pumped to a set of large, cone-shaped devices called spiractors. The spiractors are used to soften the water by removing minerals. Lime is added at the bottom of the spiractors to aid the softening process. The water is then passed through a set of filters, which contain layers of sand and carbon, to remove particles through a process called filtration. Fluoride (to prevent tooth decay) is added to the water, and then the clean water is placed in a large storage tank called a reservoir. When water is needed by customers, it is pumped from the reservoirs and distributed throughout the Hadnot Point community water system.



WATER CONSERVATION

Did you know that the average U.S. household uses approximately 400 gallons of water per day or 100 gallons per person per day? You can play a role in conserving water by becoming conscious of the amount of water your household is using and by looking for ways to use less whenever possible. It is not hard to conserve water. Small changes can make a big difference. Here are a few tips:

- Take short showers – a 5 minute shower uses 4 to 5 gallons of water compared to up to 50 gallons for a bath.
- Run your clothes washer and dishwasher only when they are full. You can save up to 1,000 gallons a month.
- Shut off water while brushing your teeth, washing your hair and shaving and save up to 500 gallons a month.
- Check every faucet in your home for leaks. Just a slow drip can waste 15-20 gallons a day.
- Check your toilets for leaks by putting a few drops of food coloring in the tank. Watch for a few minutes to see if the color shows up in the bowl. It is not uncommon to lose up to 100 gallons a day from an invisible toilet leak.
- Use a water-efficient showerhead. They're inexpensive, easy to install, and can save you up to 750 gallons a month.
- Water plants only when necessary and 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.
- Don't run the hose while washing your car. Use a bucket of water and a quick hose rinse at the end or wash vehicles at a carwash that recycles its water. Saves 150 gallons each time.

Teach your kids about water conservation to ensure a future generation that uses water wisely.

Visit www.epa.gov/watersense for more information.

Remember, when you conserve water you also conserve energy!

