



# Naval Support Activity Annapolis Annapolis, Maryland 2021 WATER QUALITY REPORT



(PWSID 002-0042)

## PROVIDING HIGH QUALITY WATER TO OUR CUSTOMERS

Naval Support Activity Annapolis (NSAA) provides you with high quality drinking water that is safe and reliable. We are pleased to provide you with the 2021 Annual Water Quality Report with detailed information about the source and quality of your drinking water. We have prepared this report using the data from water quality testing conducted January through December 2021, unless otherwise noted. Your high quality water supply meets or surpasses all federal and state water quality regulations.

### Where does Your Water Come From?

The NSAA Water Treatment Plant obtains untreated (i.e. raw) water from three groundwater wells owned and maintained by NSAA. These wells withdraw groundwater from the Patapsco Aquifer, approximately 600 to 700 feet below the ground surface. The Maryland Department of the Environment (MDE) completed an assessment of our source water in June 2004. This assessment determined that potential point sources of contamination include leaking underground storage tanks, landfills, permitted discharges, large-scale feeding operations and former disposal sites. Non-point sources of contamination are associated with certain land use practices that may lead to groundwater contamination over a greater area. Since all potential sources of contamination are at the land surface, the shallow water table aquifer may be impacted but the deeper confined aquifers, such as the Patapsco Aquifer, are well protected from groundwater contamination. The water from the three wells at NSAA contain a high level of naturally occurring iron. Iron levels are significantly reduced through a process called flocculation. The complete assessment is included in MDE's Source Water Assessment for community water systems using confined aquifers and is available on MDE's website:

[http://mde.maryland.gov/programs/water/water\\_supply/Source\\_Water\\_Assessment\\_Program/Documents/www.mde.state.md.us/assets/document/watersupply/SWAPS/Anne%20Arundel/For%20Community%20Water%20Systems%20Using%20Confined%20AquifersFINAL.pdf](http://mde.maryland.gov/programs/water/water_supply/Source_Water_Assessment_Program/Documents/www.mde.state.md.us/assets/document/watersupply/SWAPS/Anne%20Arundel/For%20Community%20Water%20Systems%20Using%20Confined%20AquifersFINAL.pdf)

### How is Your Water Treated?

Groundwater is withdrawn from the aquifer via three wells. The water is aerated through several metal trays, which allows the water to be infused with oxygen and release any gasses present in the raw water. This causes dissolved metals such as iron and manganese to be oxidized, easing their removal. Removing these metals minimizes red and black stains at your tap and in your laundry. Water moves from the tray aerators into the water treatment plant where four different chemicals (flocculant, lime, fluoride and chlorine) are added. The flocculant helps to make suspended particles in the water stick together and settle out. Lime is added to increase the pH of the water, increasing the effectiveness of the flocculant. Chlorine helps to oxidize the remaining dissolved metals and fluoride is added to prevent tooth decay. The water then flows to the clarifier tanks, where larger, sticky particles ("flocs") form and settle in a process called flocculation. The water that passes through is piped to the filtration tanks located inside the water treatment plant. The clarified water is filtered via seven (7) continuous backwashing, up-flow, deep bed, mono-media sand filters. Chlorine is added once again as a disinfectant to ensure there are no remaining microbial contaminants, completing the treatment process. The treated (finished) drinking water is then moved into two large (1 million gallons each) above ground storage tanks. A combination of high-rate pumps and the elevated 750,000-gallon water tower provides the pressure necessary to move this treated drinking water throughout the NSAA distribution system and, ultimately, to your faucets, drinking water fountains, pools and other places where potable water is required.

## Definitions

- Action Level (AL)** - The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
- Coliform** - A group of bacteria commonly found in the environment. They are an indicator of potential contamination of water. Adequate and appropriate disinfection effectively destroys bacteria.
- Disinfection** - A process that effectively destroys coliform bacteria.
- Contaminant** - Any naturally-occurring or man-made physical, chemical, biological, or radiological substance in water, which at a high enough level may have an adverse effect on public health, and which is known or anticipated to occur in public water systems.
- Maximum Contaminant Level (MCL)** - The highest level of a contaminant 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 are non-enforceable public health goals and allow for a margin of safety.
- mg/l** - milligram per liter. A milligram per liter is roughly equivalent to a part per million (ppm).
- Maximum Residual Disinfectant Level (MRDL)** - The highest level of a disinfectant allowed in drinking water.
- Maximum Residual Disinfectant Level Goal (MRDLG)** - 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.
- Nitrates** - A dissolved form of nitrogen found in fertilizers and sewage by-products, which may leach into groundwater and other water sources. Nitrates may also occur naturally in some waters.
- Picocuries per liter** - A measurement of radiation released by a set amount of a certain compound.
- pH** - A measure of the acidity or alkalinity of water.
- ppb** - Part per billion. Measurement of the amount of contaminant per unit of water. A part per billion is like one dollar in \$1,000,000,000.
- Treatment Technique** - A required process intended to reduce the level of a contaminant in drinking water.

## Understanding Your Drinking Water

**Your tap water is completely safe for human consumption, washing, and bathing. Your high quality tap water meets all MDE, federal Environmental Protection Agency (EPA) and Navy standards for drinking water.** The NSAA Water Treatment Plant is regulated by the federal Safe Drinking Water Act (SDWA) to ensure that your health and safety are protected.

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. Your drinking water is obtained through three wells.

NSAA routinely monitors your drinking water for potential contaminants. The sampling schedule for each contaminant varies by parameter, ranging from twice monthly to once every several years. The MDE allows us to monitor for some contaminants less than once per year because the concentrations of these contaminants in deep groundwater do not change frequently. Some of our data, though representative, are more than one year old.

The tables on page 3 list **only** those contaminants that were present in your drinking water at levels detectable by laboratory equipment. Nitrates, lead and coliform bacteria were not detected in our monitoring so they are not included in the tables. The tables contain the name of each contaminant, the likely sources of such contamination, the amount detected, the highest level allowed by regulation (MCL), the ideal goals for public health (MCLG) and whether or not the detected amount meets EPA standards. The MCLs listed in the tables are set by the EPA. These levels are based on the assumption that the average person drinks 2 liters of water each day over a 70-year life span. The MCLs are typically set at a level that will cause no harm or a one-in-ten thousand to one-in-a-million chance increase over the average risk of having the associated health effect as a result of exposure to a particular contaminant.

### Contaminants 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 stormwater 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 stormwater runoff and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals from gas stations, urban stormwater runoff, septic systems, industrial processes and petroleum production.
- Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

## 2021 Monitoring Data for NSAA Distribution System

The Tables below show those contaminants which were present at levels above the minimum detection limit but below the Maximum Contaminant Level (MCL) or Maximum Residual Disinfectant Levels (MRDL):

Contaminant	Highest Level Allowed (EPA's MCL)	Ideal Goals (EPA's MCLG)	Highest Level Detected	Sample Date	Violation Yes/No	Sources of Contamination
Barium	2 ppm	2 ppm	0.0235 ppm	2021	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits.
Chromium	100 ppb	100 ppb	1.9 ppb	2021	No	Discharge from steel and pulp mills; Erosion of natural deposits
Fluoride <sup>a</sup>	4 ppm	4 ppm	0.3 ppm	2021	No	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories

Contaminant	EPA's Action Level	Ideal Goals (EPA's MCLG)	90% of measured levels were less than	Samples Above Action Level	Sample Date	Violation Yes/No	Sources of Contamination
Copper	90% of homes less than 1.3 ppm	1.3 ppm	<0.05 <sup>b</sup> ppm	0 out of 20	09/5/2019 thru 09/17/2019	No	Corrosion of household plumbing systems; erosion of natural deposits

Contaminant	Highest Level Allowed (EPA's MCL)	Ideal Goals (EPA's MCLG)	Highest Level Detected	Range of Detection	Sample Date	Violation Yes/No	Sources of Contamination
Total Trihalomethanes	80 ppb	N/A <sup>c</sup>	13 ppb	12.5-12.5 ppb	2021	No	By-product of drinking water disinfection
Contaminant	Maximum Residual Disinfectant Level		Highest Running Annual Average	Range of Detection	Sample Date	Violation Yes/No	Sources of Contamination
	MRDL	MRDLG					
Chlorine	4 ppm	4 ppm	0.7 <sup>d</sup> ppm	0.6-0.7 ppm	Twice per month	No	Water additive used to control microbes

NSAA was selected for Assessment Monitoring for List 1 contaminants under the EPA Unregulated Contaminant Monitoring Rule (UCMR3) program. Unregulated contaminants are those for which the EPA has not yet established drinking water standards. Monitoring assists the EPA in determining the occurrence of these compounds and whether or not regulation is warranted. The table below lists those contaminants which were present at levels above the Minimum Reporting Limit (MRL):

Contaminant	Average Level Detected	Range of Detection	Sample Date	Sources of Contamination
Strontium <sup>a</sup>	51 ppb	50-52 ppb	11/16/2015	Erosion of natural deposits; land deposition of air contamination from milling and processing strontium, coal burning and phosphate fertilizers.
Chromium-6 <sup>a</sup>	0.16 ppb	0.16-0.16 ppb	11/16/2015	Erosion of natural deposits; industrial waste

Notes: N/A – Not Applicable

<sup>a</sup>Testing for some parameters is not required on an annual basis. Results reflect the most recent testing in accordance with regulatory requirements.

<sup>b</sup>Compliance with the MCL for Copper and Lead is based on the 90<sup>th</sup> percentile value of all analysis results.

<sup>c</sup>Although there is no collective MCLG for this contaminant group, there are individual MCLGs for some of the individual contaminants: Trihalomethanes: bromodichloromethane (zero); bromoform (zero); dibromochloromethane (0.06 mg/L); chloroform (0.07 mg/L).

<sup>d</sup>Compliance with the MRDL for Chlorine is based on the highest Running Annual Average for the four quarters of the calendar year.

## Drinking Water and Your Health

Inadequately treated water may contain disease-causing organisms. Our water system tested 10 total samples per month (five locations) for microbial contaminants, in accordance with the Revised Total Coliform Rule. These microbial contaminants can cause symptoms such as nausea, cramps, diarrhea and associated headaches. They include bacteria, viruses and parasites. If these contaminants are detected, there also may be a potential for the presence of other, more harmful, organisms. **Your tap water was determined to be completely safe with no trace of coliform bacteria in any of the 120 samples collected in 2021.**

The water treatment operators maintain a rigorous sampling schedule (some parameters are monitored several times per shift) to ensure proper plant operation. These include the continuous monitoring of fluoride, pH, iron, hardness, residual chlorine and flow so that the proper amount of treatment additives (fluoride, chlorine, lime, and flocculants) are used to generate high quality potable water.

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; and 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 and Prevention (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)**.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water comes primarily from materials and components associated with service lines and home plumbing. NSAA is responsible for providing high quality drinking water but cannot control the variety of materials used in plumbing components. When 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 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, testing methods and steps you can take to minimize exposure is available from the EPA Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>. NSAA sampled for lead in September 2019 and all samples collected were below the EPA action limit of 15 ppb.

In order to ensure that your tap water is safe to drink, EPA promulgates regulations, which limit the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water that must provide the same protection for public health. Any bottled water that is labeled "Drinking Water" has to meet FDA's drinking water regulations. Drinking water, including bottled water, may be reasonable 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. More information about contaminants and potential health effects can be obtained by calling the **EPA's Safe Drinking Water Hotline (1-800-426-4791)**.

## Current Issues Impacting Your Drinking Water

### 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 chemicals. PFAS have been used in a variety of industries and consumer products around the globe, including in the United States, since the 1940s. PFAS have been used to make coatings and products that are used as oil and water repellents 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 chemicals 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 regulation for PFAS in drinking water?

There is currently no established federal water quality regulation for any PFAS compounds. In May 2016, the EPA established a health advisory (HA) level at 70 parts per trillion (ppt) for individual or combined concentrations of perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS). Both chemicals are types of PFAS.

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 promulgated a policy to monitor drinking water for PFAS at all service owned and operated water systems at a minimum of every three years.

The EPA's health advisory states that if water sampling results confirm that drinking water contains PFOA and PFOS at individual or combined concentrations greater than 70 parts per trillion, water systems should quickly undertake additional sampling to assess the level, scope, and localized source of contamination to inform next steps.

### Has the Naval Academy tested its water for PFAS?

Yes. In December 2020 samples were collected from the Naval Academy Drinking Water Filtration Plant. We are pleased to report that drinking water testing results were below the Method Reporting Limit (MRL) for all 18 PFAS compounds covered by the sampling method, including PFOA and PFOS. **This means that PFAS were not detected in your water system.** In accordance with DoD policy, the water system will be resampled every three years for your continued protection.

Additionally, the Maryland Department of the Environment also collected samples from the Naval Academy Drinking Water Filtration Plant in March 2021. Testing results were below the Method Reporting Limit (MRL) for all 18 PFAS compounds covered by the sampling method, including PFOA and PFOS, confirming results from the Navy's December 2020 sampling.

In November 2021, the Navy sampled water from the entry point of the North Severn area. We are pleased to report that drinking water testing results were below the Method Reporting Limit (MRL) for all 18 PFAS compounds covered by the sampling method, including PFOA and PFOS. **This means that PFAS were not detected in the North Severn water system.**

#### New and Updated Regulations

The following drinking water regulations were adopted in recent years by EPA: Arsenic Rule, Groundwater Rule (GWR), Lead and Copper Rule Revision, Revised Total Coliform Rule and Disinfection Byproduct Rule (DBPR). For more information about these rules, you can go to <https://www.epa.gov/dwreginfo/drinking-water-regulatory-information>.

#### Radium

Radium was detected in shallow groundwater wells in Anne Arundel County, north of Route 50. For those of you who live in northern Anne Arundel County, the MDE has an informative website, which discusses this issue, [http://www.mde.state.md.us/programs/Water/water\\_supply/Pages/radium.aspx](http://www.mde.state.md.us/programs/Water/water_supply/Pages/radium.aspx).

#### Important Information for the North Severn Area

For those of you who reside and/or work in the North Severn area, Anne Arundel County has been supplying your water since December 1999 (upon closure of the former David Taylor Research Center's water treatment plant). Anne Arundel County Department of Public Works web site contains their most recent Annual Water Quality Report, which covers the entire county's water service area, <http://www.aacounty.org/departments/public-works/utilities/forms-and-publications/water-quality-reports/>.

### Contact Us

The Naval Academy community has an important participatory role in helping us provide you with safe and reliable drinking water. Please contact us if you have any questions or concerns about the quality of your water. A copy of this report is posted on the Naval Academy public website listed below.

**Any questions about this report please contact:**

**Drinking Water Media Manager  
(410) 293-1046**

**Environmental Division Director  
(410) 293-1025**



#### WEBSITES

**EPA:** [www.epa.gov/safewater](http://www.epa.gov/safewater)

**MDE:**

[http://mde.maryland.gov/programs/Water/water\\_supply/Pages/index.aspx](http://mde.maryland.gov/programs/Water/water_supply/Pages/index.aspx)

**Anne Arundel County:** <http://www.aacounty.org/NSAA/USNA>:

<http://www.usna.edu/PublicWorks/enviro.htm>  
(public access)

