Why Does the Navy Sample for PFOS and PFOA?

For more information, please visit
www.cnic.navy.mil/FentressInfo

If you have specific questions, please contact
fentressinfo@navy.mil or **757-433-3132**

The Navy is identifying and mitigating potential exposure to unregulated compounds (PFOS and PFOA) in drinking water.

The Navy PFAS policy goes beyond the requirements of the Safe Drinking Water Act.

- In May 2016, the EPA established a drinking water lifetime health advisory of 70 ppt for two PFAS compounds, PFOS and PFOA.
- The Navy is taking action to protect our on-base personnel and civilian neighbors who may be exposed to drinking water that has PFOS and/or PFOA above the EPA lifetime health advisory.

EPA	U.S. Environmental Protection Agency	NALF	Naval Auxiliary Landing Field	PFOA	perfluorooctanoic acid	ppt	parts per trillion
GAC	granular activated carbon	PFAS	per- and polyfluoroalkyl substances	PFOS	perfluorooctane sulfonate		

NALF Fentress PFAS Investigation Timeline

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SEPTEMBER 2015

Navy policy required drinking water sampling for PFOS and/or PFOA (commonly found in firefighting foam) on some Navy bases.

JANUARY 2016

On-base results received.

- Drinking water concentrations detected above EPA provisional health advisory levels.
- Some groundwater monitoring wells were above EPA provisional health advisory levels.

MARCH 2016

Off-base property owners notified of results and provided with bottled water where drinking water concentrations were greater than the EPA provisional health advisory levels. Public information session held.

MAY 2016

Properties in expanded area sampled with permission from property owners.

Lifetime health advisory issued by EPA resulted in the Navy providing bottled water to additional properties. The issuance of LHA did not result in any additional homes to be sampled.

MAY–JUNE 2017

Treatment systems installed on six off-base drinking water wells to conduct a treatability study to evaluate granular activated carbon treatment of PFAS.

DECEMBER 2017

On-base drinking water treatment system began operating.

MARCH–APRIL 2018

Resampling results received and notification provided to residents; no additional action required.

DECEMBER 2015

The Navy sampled drinking water and groundwater at NALF Fentress.

FEBRUARY 2016

Public information session held, community water station established, and off-base drinking water sampled with permission from property owners.

APRIL 2016

Sampling area expanded due to exceedances of EPA provisional health advisory levels in initial sampling area.

JUNE 2016

Off-base property owners notified of results. No additional actions required.

OCTOBER–NOVEMBER 2017

Off-base monitoring wells installed to assess potential migration of PFAS.

FEBRUARY 2018

Voluntary resampling of all parcels within designated sampling area conducted.

OCTOBER 2018

Engineering Evaluation/Cost Analysis available for public review and comment from 10/08/2018–11/07/2018 at Chesapeake Central Library, 298 Cedar Road, Chesapeake, Virginia 23322.

EPA	U.S. Environmental Protection Agency	NALF	Naval Auxiliary Landing Field	PFOA	perfluorooctanoic acid	ppt	parts per trillion
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Ground Water Sampling Results

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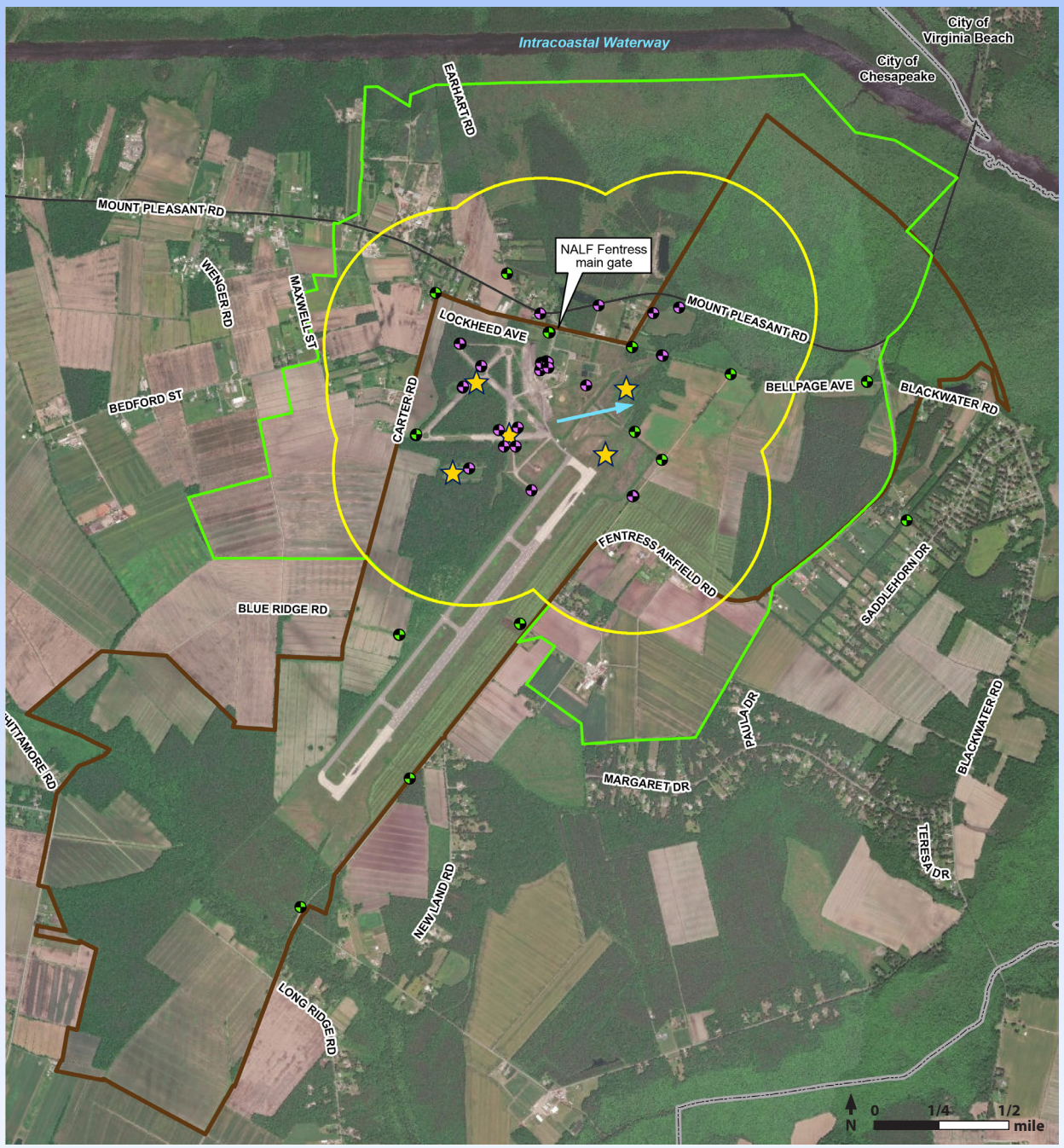
If you have specific questions, please contact
fentressinfo@navy.mil or **757-433-3132**



LEGEND

- Monitoring well location with lifetime health advisory exceedance
- Monitoring well location with no lifetime health advisory exceedance
- Potential source area
- General groundwater flow direction (shallow and deep aquifer; May 2017)
- NALF Fentress boundary
- Sampling boundary – 0.5 mile of lifetime health advisory exceedance
- Extent of property boundary within the designated sample area
- City boundary

EPA	U.S. Environmental Protection Agency
GAC	granular activated carbon
NALF	Naval Auxiliary Landing Field
PFAS	per- and polyfluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
ppt	parts per trillion

Drinking Water Sampling Results

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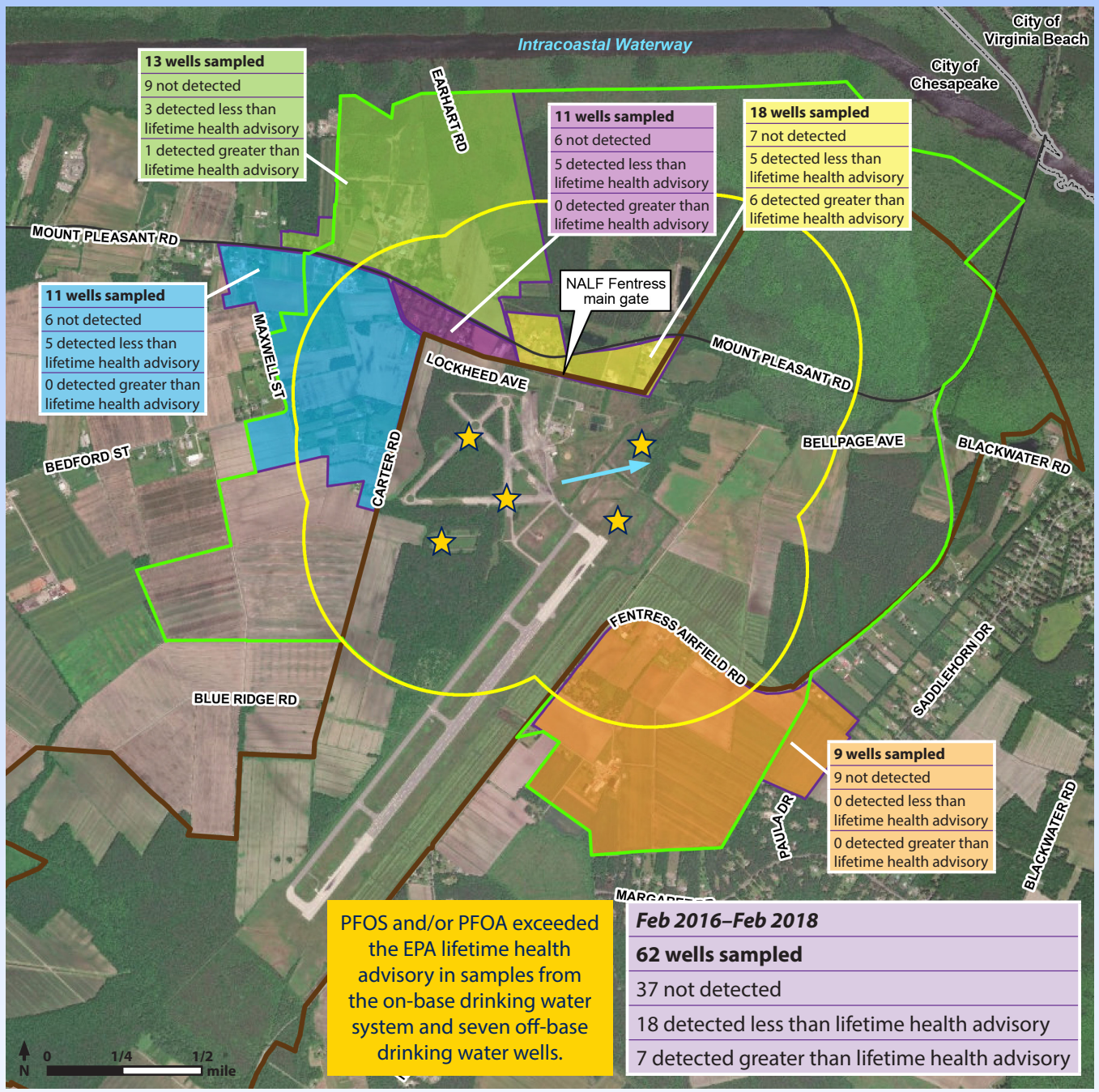


PFOS and/or PFOA exceeded the EPA lifetime health advisory in samples from the on-base drinking water system and seven off-base drinking water wells.

Feb 2016–Feb 2018
62 wells sampled
37 not detected
18 detected less than lifetime health advisory
7 detected greater than lifetime health advisory

LEGEND

- Potential source area
- General groundwater flow direction (shallow and deep aquifer; May 2017)
- NALF Fentress boundary
- Sampling boundary – 0.5 mile of lifetime health advisory exceedance
- 2016–2018 sampling area
- Extent of property boundary within the designated sample area
- City boundary

EPA	U.S. Environmental Protection Agency	PFAS	per- and polyfluoroalkyl substances	PFOS	perfluorooctane sulfonate
GAC	granular activated carbon	PFOA	perfluorooctanoic acid	ppt	parts per trillion
NALF	Naval Auxiliary Landing Field				

Engineering Evaluation/Cost Analysis – Drinking Water Long-Term Solutions

For more information, please visit
www.cnic.navy.mil/FentressInfo

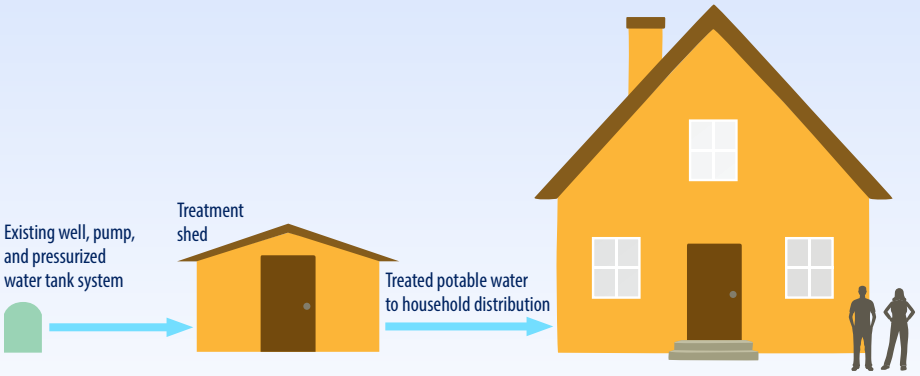
If you have specific questions, please contact
fentressinfo@navy.mil or **757-433-3132**

Alternative 1 – No Further Action

- Bottled water would continue to be provided every two weeks to off-base residents with drinking water above the EPA lifetime health advisory.
- Off-base pilot granular activated carbon (GAC) treatment systems currently installed as treatability studies would be removed.
- On-base GAC treatment system would continue.

Alternative 2 – Point of Entry Treatment

- System will be maintained for continuous use.
- Alternative 2A – Removal of PFOS and PFOA using GAC.
- Alternative 2B – Removal of PFOS and PFOA using ion exchange.
- Alternative 2C – Removal of PFOS and PFOA using reverse osmosis.



Recommended Alternative (Alternative 3) – Connect to City of Chesapeake Water System

- Connect impacted properties to the City of Chesapeake water system.

EPA	U.S. Environmental Protection Agency	NALF	Naval Auxiliary Landing Field	PFOA	perfluorooctanoic acid	ppt	parts per trillion
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Recommended Alternative – Connect to City of Chesapeake Water System

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EPA	U.S. Environmental Protection Agency	NALF	Naval Auxiliary Landing Field	PFOA	perfluorooctanoic acid	ppt	parts per trillion
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What Are PFAS, PFOS, and PFOA?

For more information, please visit
www.cnic.navy.mil/FentressInfo

If you have specific questions, please contact
fentressinfo@navy.mil or **757-433-3132**

What Are PFAS?

- Man-made compounds (not naturally occurring).
- Have been used since 1950s in many products.
- Last a long time in the environment.
- Found in people, animals, and fish around the world.

firefighting foam

paints and stains

stain-resistant carpets

water-repelling fabrics

nonstick cookware

food packaging

What Is an EPA Lifetime Health Advisory?

- Establishes concentrations in drinking water that are protective of the most sensitive populations and the general public, even for lifetime exposure.
- Is based on the latest available studies of lab animals and exposed human populations.
- Provides information to state agencies and public health officials on health effects and water treatment so they can take steps to reduce exposures.
- Is non-enforceable.

What Is the EPA Lifetime Health Advisory for PFOS and PFOA?

- The lifetime health advisory is only for two types of PFAS – PFOS and PFOA.
- The lifetime health advisory is exceeded if the amount of PFOS and PFOA (combined or individually) is greater than 70 ppt.
- 1 ppt is equivalent to one grain of sand in an Olympic-size swimming pool.

ATSDR	Agency for Toxic Substances and Disease Registry
CDC	Centers for Disease Control and Prevention
EPA	U.S. Environmental Protection Agency
GAC	granular activated carbon
NALF	Naval Auxiliary Landing Field
PFAS	per- and polyfluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
ppt	parts per trillion

Exposure and Health Effects

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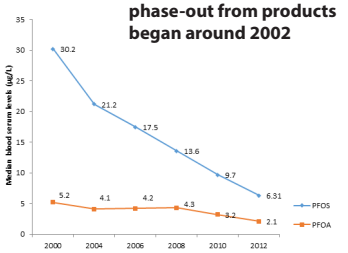
fentressinfo@navy.mil or **757-433-3132**

PFAS in People

- CDC monitoring estimates that most people in the U.S. have PFAS in their bodies.
- Levels of PFOS and PFOA are going down over time following their phase-out from use.
- Some PFAS stay in the body a long time – there is no recommended medical treatment to reduce PFAS in the body.

Levels of PFOS and PFOA in blood serum of the U.S. population since their phase-out from products began around 2002



Source: CDC National Health and Nutrition Examination Survey

Exposures to PFAS

- Appear to be widespread around the world.
- Are primarily through ingesting contaminated food, water, or soil.
- Cause PFAS to build up in the body until exposure stops.
- Cause PFAS to reach the unborn babies or nursing infants of mothers who are exposed.
- Are not significant through skin contact when bathing or showering.

Potential Health Effects

- Research is needed to learn more about the possible links between PFAS exposure and health effects.
- Animals exposed to high levels of PFAS had changes in liver, thyroid, and pancreas function; altered hormone levels; and increased rates of certain cancers.
- Based on available studies of people who have experienced high levels of exposure, potential health effects include:
  - Increased cholesterol levels
  - Changes in growth, learning, and behavior of the developing unborn baby and child
  - Immune system changes
  - Decreased fertility
  - Altered hormone function
  - Increased risk of certain types of cancer
- The levels of PFOS or PFOA in drinking water do not predict what, if any, health impact might occur as a result of exposure.

ATSDR	Agency for Toxic Substances and Disease Registry
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EPA	U.S. Environmental Protection Agency
GAC	granular activated carbon
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PFAS	per- and polyfluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
ppt	parts per trillion

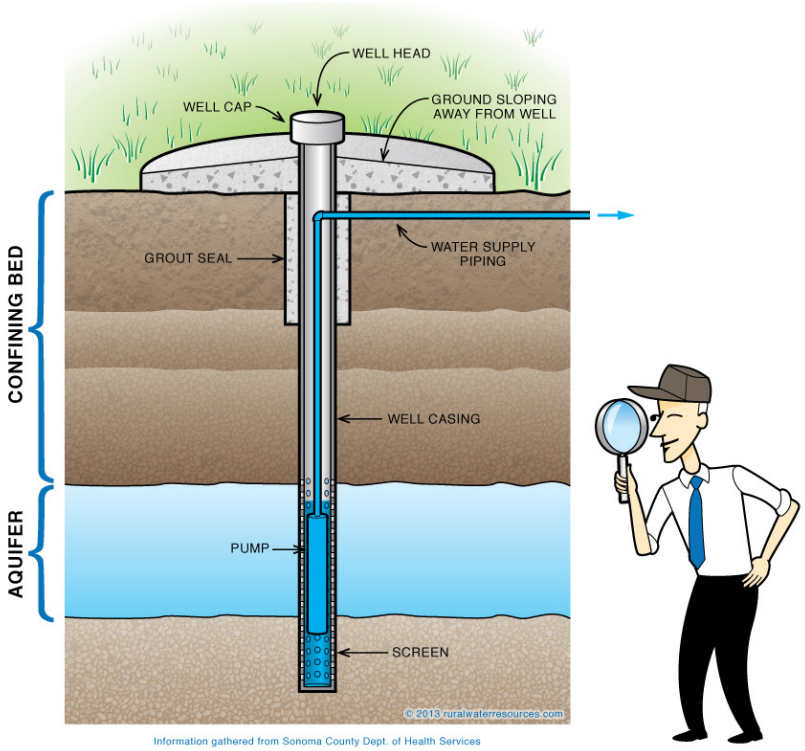
Managing Your Private Well

If you have specific questions, please contact Chesapeake Health Department
757-382-8661 | **ChdEnvHlth@vdh.virginia.gov** | **www.vdh.virginia.gov/chesapeake**

Managing the Risks

- Testing of private wells is recommended to ensure water quality.
- Bacteriological testing once a year is a good idea. Regular testing can tell you the quality of the water.
- More frequent testing is recommended if your water changes in taste, odor, or appearance.
- The National Ground Water Association recommends well owners test their water at least annually for contaminants, including bacteria and nitrates.
- If using water conditioner (aka, "water softener") equipment, it should be maintained and kept in working order.
- Do not dispose of or store hazardous materials or chemicals near your well.

Typical Well Design



Information gathered from Sonoma County Dept. of Health Services

Drinking Water Sampling Process

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Future Sampling

Beginning in February 2019, the Navy will begin twice-yearly sampling of private drinking water wells in the sampling area at no cost to the property owner. Residents within the designated sampling area will be contacted by a Navy representative to request sampling.

Sampling Process

- If you are within the designated sampling area and haven't yet been sampled, we appreciate your help to:
  - Make your appointment (sampling will take approximately 30 minutes).
  - Provide any new information such as contact information or upgrades/changes to your well.
- A team of qualified professionals will:
  - Collect water from the sample point (water will run for 3–5 minutes).
  - Analyze the sample according to EPA guidelines with strict quality control and quality assurance protocols.

EPA	U.S. Environmental Protection Agency	NALF	Naval Auxiliary Landing Field	PFOA	perfluorooctanoic acid	ppt	parts per trillion
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