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NAVY ON- AND OFF-BASE PFC SAMPLING TIMELINE

SEPTEMBER 2015 — NEW NAVY POLICY

A new Navy PFC policy required drinking water sampling for sites with the potential to have PFCs. Fire-fighting foam that potentially contained PFCs was historically used at some Navy installations.

DECEMBER 2015 — ON-BASE SAMPLING

The Navy sampled **NWS EARLE FIRE TRAINING CENTER** on-base groundwater and drinking water.

JANUARY 2016 — ON-BASE SAMPLING RESULTS

- **Drinking water results** showed no PFCs above Health Based Levels.
- **Groundwater results** indicated PFOS above U.S. EPA Provisional Health Advisory levels and PFNA above NJDEP Interim Ground Water Quality Standard.

FEBRUARY 18, 2016 — FIRST PUBLIC INFORMATION MEETING

Navy requested to sample off-base private drinking water within designated sampling area.

FEBRUARY 19-26, 2016 — OFF-BASE SAMPLING

Navy sampled for PFCs in off-base private drinking water at 28 properties.

MARCH 11, 2016 — PRELIMINARY ACTIONS

Based on preliminary results, the Navy provided bottled water to one residence.

APRIL 6, 2016 — OFF-BASE RESULTS NOTIFICATION

Validated results provided to all off-base property owners.

APRIL 14, 2016 — SECOND PUBLIC INFORMATION MEETING

Share sampling results summary and answer questions.

PFCs = Perfluorinated Compounds
PFOA = Perfluorooctanoic Acid
PFOS = Perfluorooctane Sulfonate
PFNA = Perfluorononanoic Acid
NJDEP = New Jersey Department of Environmental Protection
U.S. EPA = United States Environmental Protection Agency

NAVY PFC TESTING AND RESPONSE GOES BEYOND SAFE DRINKING WATER ACT REQUIREMENTS TO PROTECT OUR NEIGHBORS.

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OFF-BASE PRIVATE DRINKING WATER SAMPLING PROCESS

	WHAT WE DID	WHY WE DID IT
1	Requested 30-minute appointment for sampling of off-base drinking water from property owner.	Identified the property as having a well and within the designated sampling area of investigation downgradient of the NWS Earle Fire Training Center.
2	Collected drinking water information from owner, including location, well construction, and treatment.	The well construction details help us determine the depth of the water that the sample represents and could aide in determining a corrective action if necessary.
3	Ran cold water from faucet (typically kitchen sink) for 10-15 minutes.	To clear all stagnant water from the piping system and collect a sample that represents the ground water coming from the well.
4	Measured and recorded water parameters (e.g., pH & temperature).	These parameters enable the sampler to determine when all stagnant water from the water system in the home has been purged and when the sample should be collected.
5	Collected sample directly from the faucet into approved laboratory bottle.	It is imperative that point-of-use samples be collected in laboratory bottles, which have been certified as contaminant free were used. As many contaminants can be introduced accidentally by the sampler, personnel trained in sample collection techniques collected the samples.
6	Collected quality control sample within same room and poured laboratory provided PFC-free water into a sample container.	PFCs are present in many household materials. This quality control sample enabled us to determine if PFCs in the home affected the drinking water sample.
7	Shipped sample overnight to an approved laboratory.	Expediting the sample shipment ensured that samples would be received by the laboratory at the proper temperature and also enabled the laboratory to provide results faster.
8	Validated all analytical data per U.S. EPA guidance.	Data validation was performed to ensure that the data reported to the home owners was accurate.

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NWS Earle PFC Investigation Area Sample Summary

NWS Earle Fire Training Center

Drinking Water Sample Identification Number	PFOS (EPA PHA = 200 ng/L)	PFOA (EPA PHA = 400 ng/L)	PFNA (NJDEP IGWQS = 10 ng/L)
DW-57	200	28	3.4
DW-68	18	27	2.7
DW-95	28	42	1.5 J
DW-3	16	2 J	ND
DW-44	ND	2.6	ND
DW-1	ND	ND	ND
DW-10	ND	ND	ND
DW-13	ND	ND	ND
DW-15	ND	ND	ND
DW-18	ND	ND	ND
DW-19	ND	ND	ND
DW-23	ND	ND	ND
DW-29	ND	ND	ND
DW-37	ND	ND	ND
DW-48	ND	ND	ND
DW-55	ND	ND	ND
DW-56	ND	ND	ND
DW-59	ND	ND	ND
DW-6	ND	ND	ND
DW-63	ND	ND	ND
DW-71	ND	ND	ND
DW-78	ND	ND	ND
DW-80	ND	ND	ND
DW-84	ND	ND	ND
DW-87	ND	ND	ND
DW-88	ND	ND	ND
DW-91	ND	ND	ND
DW-100	ND	ND	ND

Approximate Existing Public Water Distribution System

Reported New Jersey American Water Connection within investigation area

One Half Mile Area Designated for Drinking Water Sampling (Potable Well Source)

NWS Earle Property Boundary

Parcels within Investigation Area

Notes:
All Concentrations are in nanograms per liter (ng/L).
PFNA = Perfluorononanoic Acid
PFOS = Perfluorooctane Sulfonic Acid
PFOA = Perfluorooctanoic Acid
NJDEP IGWQS = New Jersey Department of Environmental Protection Interim Ground Water Quality Standard
EPA PHA = United States Environmental Protection Agency Provisional Health Advisory
ND = Compound was not detected in the sample.
J = Compound present, result is estimated.
Each sample location was assigned a random number between 1 and 100.
Bold text indicates detections.
Orange text indicates exceedance of or equivalent to NJDEP or EPA health based levels.
Purple text indicates exceedance of NJ preliminary health advisory level.
Green text indicates PFNA was detected above detection limit, but below NJDEP health based level.

0 500 1,000 Feet

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HEALTH EFFECTS

WHAT WE KNOW

- Exposure through a variety of sources to perfluorinated compounds (PFCs) appears to be widespread globally.
- 98% or more of the general U.S. population has PFCs in their blood (CDC 2007).
- Some studies on exposed human populations indicate PFCs may cause elevated cholesterol, effects on the liver and immune system, and possibly low infant birth weight. New studies are continually becoming available.
- When animals are given large doses, they exhibit developmental, reproductive, and liver effects. Some human and animal studies suggest a link with certain cancers.
- Exposure through ingestion is the primary concern.

WHAT WE DON'T KNOW

- It is not possible to definitively link exposures to PFCs in water to a person's individual health issues.
- Blood tests are not routinely done because they provide limited information. The results can be inconclusive, do not allow for a determination of the source of the exposure, and do not predict health effects.
- Long-term exposure effects are still being investigated by the U.S. EPA and State regulatory agencies.

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Q WHAT ARE PFOS, PFOA and PFNA?

Perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), and perfluorononanoic acid (PFNA):

- Are all perfluorinated compounds (PFCs) and have similar properties
- Are man-made compounds
- Break down slowly, making them useful for home and industrial purposes, but long-lasting in the environment
- Have been used since the 1950s in many products because of their stain and water repellant properties:
  - Fire-fighting foam
  - Stains, paints, and grease
  - Fabric for upholstered furniture
  - Carpets
  - Nonstick cookware
  - Floor wax
  - Food packaging (e.g., lining of microwave popcorn bags, fast food wrappers)
- Are globally distributed in the environment and have been detected in the blood of humans, wildlife, and fish

U.S. EPA CONTINUES TO INVESTIGATE AND WORK TO ELIMINATE SOURCES.

UNREGULATED CONTAMINANT MONITORING RULE (UCMR)

- U.S. EPA uses the UCMR program to collect data for contaminants suspected to be present in drinking water.
- U.S. EPA is working to improve its understanding of the prevalence and toxicity of PFCs to determine if safe drinking water regulatory limits are needed.
- Safe Drinking Water Act (SDWA) does not include regulatory limits for PFCs.

HEALTH BASED LEVELS

- U.S. EPA issued Provisional Health Advisories for PFOS and PFOA in 2009.

U.S. EPA LEVEL FOR PFOS IS 200 ng/L OR 200 PARTS PER TRILLION.
U.S. EPA LEVEL FOR PFOA IS 400 ng/L OR 400 PARTS PER TRILLION.

  - These are reasonable health based concentrations, at or above which actions should be taken to reduce exposure.

- NJDEP promulgated an Interim Ground Water Quality Standard for PFNA in November 2015 and a preliminary drinking water guidance value for PFOA based on a lifetime exposure.

NJDEP LEVEL FOR PFNA IS 10 ng/L OR 10 PARTS PER TRILLION.
NJDEP PRELIMINARY VALUE FOR PFOA IS 40 ng/L OR 40 PARTS PER TRILLION.

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OFF-BASE PFC SAMPLE RESULTS—NAVY ACTIONS

ACTION CRITERIA	PFOS RESULTS	PFOA RESULTS	PFNA RESULTS	ACTION	PROPERTIES
At or greater than U.S. EPA Provisional Health Advisory or NJDEP Interim Ground Water Quality Standard for PFNA	200 ppt or greater	400 ppt or greater	10 ppt or greater	Provide alternate water	1 property affected
Greater than 25% of U.S. EPA Provisional Health Advisory or above detection limit for PFNA	50 ppt to less than 200 ppt	100 ppt to less than 400 ppt	Above detection limit (3 ppt)	Follow up sampling with further evaluation of potential action	1 property affected (same property as above)
Less than 25% of U.S. EPA Provisional Health Advisory and below the detection limit for PFNA	Below 50 ppt	Below 100 ppt	Not detected	No further action at this time	All remaining sampled properties

OFF-BASE PFC SAMPLE RESULTS—NJDEP ACTIONS

The NJDEP has developed a preliminary drinking water guidance value for PFOA of 40 ppt based on a lifetime exposure of 40 ppt.
The NJDEP will take corrective action for any drinking water sample above their preliminary value. Based on the sampling conducted to date, one property's drinking water sample was above the preliminary PFOA value. The NJDEP will contact the property owner directly to coordinate future actions.

PFCs were not detected in the majority of properties sampled.

- **26 of 28 samples indicated no additional action is necessary at this time.**
- **Two sample locations determined to contain concentrations that required alternate water. Drinking water monitoring will continue to be performed at one of those locations.**

NEXT STEPS

- Conduct additional groundwater sampling.
- Install on-base shallow and deep monitoring wells.
- Perform drinking water monitoring at one property to check for PFC concentration changes.
- Continue to monitor and respond as appropriate to changes in health based levels.
- Evaluate and implement possible long term solutions.

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