Welcome

Open House Meeting

Actions to Address Impacts to Drinking Water

From Former Naval Air Station Joint Reserve Base Willow Grove

and

Former Naval Air Warfare Center Warminster

February 24, 2015 4:00pm – 7:00 pm
February 25, 2015 11:00am – 2:00pm

http://www.bracpmo.navy.mil/brac_bases/northeast/reserve_base_willow_grove.html

Warrington Township Water and Sewer Department (WTWSD)

Sampling for Unregulated Contaminants

- WTWSD has voluntarily accelerated participation in the third Unregulated Contaminant Monitoring Rule (UCMR3).
- Under UCMR3 the EPA requires water suppliers, to sample for up to 30 contaminants that are not regulated, but may require regulatory levels in the future
- In October 2014, Perfluorooctane sulfonate *(PFOS)* and perfluorooctanoic acid *(PFOA)* were detected in multiple wells
- WTWSD Wells 1, 2, and 6, contained PFOS above the EPA's Provisional Health Advisory (*PHA)* level and were taken off-line.
- On 3 November 2014, WTWSD customers were notified of the PFOS findings.

Drinking water provided by the WTWSD continues to meet all regulatory standards.

Warrington Township Water and Sewer Department (WTWSD)

Actions to Protect the WTWSD Water Supply

- ***Current Actions***
  - Wells 1, 2, and 6 continue to be kept out of service
  - Supplemental water is being purchased from North Wales Water Authority
  - Working with Navy, Air Force, EPA and CDC to find source of PFOS contamination in Warrington Public Wells
  - Park Creek and Little Neshaminy Creek being studied from Horsham Township to Street Rd in Warrington to better understand sources of PFOS contamination
  - Assisting Warrington residents with private wells to connect to public water if available

- ***Future Actions***
  - Work with all Federal Agencies involved on a cooperative agreement to compensate WTWSD for added costs of supplemental water, treatment systems for wells 1, 2, and 6, need to extend water service and assistance to those provided with public water service
  - Install filtration system on wells 1, 2, and 6 that is approved by EPA and DEP
  - Continue to address residents concerns

Warminster Township Municipal Authority *(WTMA)*

Sampling for Unregulated Contaminants

- As part of the third Unregulated Contaminant Monitoring Rule (UCMR3), the Environmental Protection Agency (EPA) requires public water suppliers, including WTMA, to sample for 28 contaminants that are not regulated, but may require regulatory levels in the future.
  - In June 2014, Perfluorooctane sulfonate *(PFOS)* and perfluorooctanoic acid *(PFOA)* were detected in multiple wells
  - WTMA Public Water Supply (PWS) Well 26, contained PFOS above the EPA's Provisional Health Advisory Level *(HAL).* PWS Wells 10 and 13 also contained PFOS at levels just below the provisional HAL. Well 13 is closest to former Naval Air Warfare Center (NAWC) Warminster property.
  - Firefighting agents used at the former NAWC Warminster are a likely source of the PFOS/PFOA in groundwater.
- After EPA review of the results and consultation with the Pennsylvania Department of Environmental Protection (PADEP), **Wells 10, 13, and 26 were taken off-line** and consumers were notified of the PFOS findings.

Drinking water provided by the WTMA continues to meet all regulatory standards.

Warminster Township Municipal Authority *(WTMA)*

Actions to Protect the WTMA Water Supply

- ***Current Actions***
  - Wells 10, 13, and 26 are no longer connected to the drinking water system
  - Installed temporary carbon filters at Well 26 and the water is being pumped to wastewater treatment to comply with an existing environmental clean-up remedy.
  - The Navy and WTMA are completing a cooperative agreement (grant) to compensate for replacement water costs, and for treatment system installation on all three wells, and to operate them for the first year. The grant includes installation of a water main on a portion of Newtown Road and connection of private residences to the water system.
- ***Future Actions***
  - WTMA will construct and operates filtration system at wells number 10, 13, and 26
  - WTMA constructs new water main in Newtown Road

Horsham Water and Sewer Authority *(HWSA)*

Sampling for Unregulated Contaminants

- As part of the third Unregulated Contaminant Monitoring Rule (UCMR3), the EPA requires public water suppliers, including HWSA, to sample for up to 30 contaminants that are not regulated, but may require regulatory levels in the future

- In July 2014, Perfluorooctane sulfonate *(PFOS)* and perfluorooctanoic acid *(PFOA)* were detected in multiple wells

- HWSA Public Water Supply (PWS) Wells 26 and 40, contained PFOS above the EPA's Provisional Health Advisory (*PHA)* level.

- Firefighting agents used at the former NASJRB Willow Grove are a likely source of the PFOS/PFOA in groundwater.

- After EPA review of the results and consultation with the Pennsylvania Department of Environmental Protection (PADEP), **Wells 26 and 40 were taken off-line** and consumers were notified of the PFOS findings.

Drinking water provided by the HWSA continues to meet all regulatory standards.

Horsham Water and Sewer Authority *(HWSA)*

Actions to Protect the HWSA Water Supply

- **Current Actions**
  - Wells 26 and 40 are no longer connected to the drinking water system
  - Three other HWSA wells have levels of PFOS below PHA level
    - HWSA Wells 10, 17 and 21
    - Monthly monitoring continues
- **Future Actions**
  - HWSA is evaluating options for permanent replacement of water
    - Install treatment and reconnect wells to the drinking water system
    - Abandonment of impacted wells
    - Purchase water from other sources
  - HWSA and the Navy are currently in the process of negotiating a cooperative agreement (grant) to cover HWSA costs

Private Well Sampling
NAWC Warminster

Navy Requested EPA Assistance

- **Private drinking water wells near the former Naval Air Warfare Center (NAWC) Warminster may contain PFOS/PFOA.**

- **EPA has sampled private wells on behalf of the U.S. Navy.**
  - EPA has sampled 107 private wells.
  - Results - 12 are at/above PHA levels and have been provided a temporary drinking water source. They have been offered a permanent water connection.
  - Re-sampling - 15 wells (greater than or equal to 25% of the PHA, 0.05 ug/L) will be re-sampled on a periodic basis to monitor that they remain below PHA.

Private Well Sampling
NAS JRB Willow Grove

Navy Requested EPA Assistance

- **Private drinking water wells near the former Naval Air Station Joint Reserve Base (NAS JRB) Willow Grove may contain PFOS/PFOA.**

- **EPA is sampling private wells on behalf of the U.S. Navy.**
  - EPA has reached out to over 300 well owners for permission to sample. As of 15 February 2015, all 216 wells that EPA has permission to sample have been sampled.
  - Results - 41 private wells are at/above the PHA level and receiving bottled water. They will be offered a permanent water connection.
  - An additional 4 are receiving bottled water, while awaiting test results due to proximity to other wells at/above PHA levels.
  - Re-sampling - 25 wells (greater than or equal to 25% of the PHA, 0.05 ug/L) will be re-sampled on a periodic basis to monitor that they remain below PHA.

Private Well Sampling

Actions to Ensure Water Quality Regarding PFOS/PFOA

Action	PFOA Concentration (ug/L or ppb)	PFOS Concentration (ug/L or ppb)
Provide bottled water and future connection to public water supply	At/above PHA level (0.4 ug/L)	At/above PHA level (0.2 ug/L)
Resampling, initially quarterly	0.1 ug/L to PHA level	0.05 ug/L to PHA level
No further action at this time	Below 0.1 ug/L	Below 0.05 ug/L

- ***Results letters provided to private well owners***
- ***Permanent connection to public water supply provided (no cost to homeowner) for those at/above the PHA level due to Navy PFOS/PFOA contamination***
- ***If PHA levels change in the future, the Navy will consult with EPA and review all current sampling information to determine future actions***

Actions Private Well Owners Can Take to Ensure Water Quality

- ***Agree to have your well tested and/or retested for PFOS/PFOA***
- ***If bottled water is provided, use it for cooking and drinking***

The Navy will continue to fund actions required to protect water quality at private wells that were impacted by Navy contamination

Does Your Well In This Area Need Testing for PFOS/PFOA?

If you have a private well and are unsure if it should be tested for PFOS/PFOA please contact:

Willie Lin, BRAC Environmental Coordinator
willie.lin@navy.mil

PFOS and PFOA

Perfluorinated Compounds

- **PFOS and PFOA are both perfluorinated compounds (PFCs) and have similar properties**
  - Man-made compounds with multiple carbon-fluorine bonds
  - Break down very slowly, which makes them useful for many home and industrial purposes, but also long-lasting in the environment

Example of fire fighting foam being used for fire training

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)

Example of hangar fire suppression system being tested

- **Now, widely distributed in the environment and have been detected in the blood of humans, wildlife, and fish**
- **EPA continues to investigate and work to eliminate sources**
  - 3M completed a voluntary phase-out of PFOS production in 2002.
  - DuPont and others are phasing out PFOA by 2015

PFOS and PFOA

Unregulated Contaminants

- **PFOS, PFOA and other emerging contaminants are unregulated contaminants that are being sampled for the first time in Public Water Systems**

- **EPA uses the Unregulated Contaminant Monitoring Rule (UCMR) program to collect data for contaminants suspected to be present in drinking water**
  - Monitoring is required for public water systems serving > 10,000 persons
  - Data collection began in 2013 and will continue through 2016

- **EPA is working to improve its understanding of the prevalence and toxicity of these chemicals to determine if safe drinking water regulatory limits are needed**

- **EPA issued Provisional Health Advisories (PHAs) for PFOS and PFOA in 2009**
  - The PHAs are reasonable health based hazard concentrations, above which actions should be taken to reduce exposure
  - Laboratories were only recently capable of analyzing for these contaminants
  - It is important to note that PHAs include many safety factors to protect vulnerable populations (e.g., children)

The PHA for PFOS is 0.2 ug/L or 0.2 parts per billion

The PHA for PFOA is 0.4 ug/L or 0.4 parts per billion

PFOS and PFOA

Health Effects

What We Know Now

- Exposure to PFOS and PFOA appears to be widespread
  - Studies have found PFOS and PFOA in the blood samples of the general human population and wildlife nationwide (ATSDR 2009; EPA 2006a)
  - Exposure through ingestion is the primary concern
- Studies on exposed human populations indicate PFOS and/or PFOA may cause elevated cholesterol levels and possibly low infant birth weight
- When animals are given large doses, they exhibit developmental, reproductive and liver effects. Other studies suggest a link with certain cancers

What We Don't Know

- Health effects from exposure to low levels of PFOS and PFOA are not well known and studies are continuing
- It is not possible to link exposures to PFOS and PFOA in water to a person's individual health issues.
- Blood tests are available, but not routinely done. The results can be inconclusive and test results do not predict health effects
- Long term exposure effects are still being investigated by EPA

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Former Naval Air Warfare Center (NAWC) Warminster

Timeline

2011

- The Five Year Review process identified PFOS/PFOA as a new environmental issue at the former NAWC Warminster. Limited sampling conducted during the Five Year Review process identified PFOA in Area C groundwater as a potential concern.

2012

- Navy expands groundwater sampling in Area C. Concentrations of PFOS/PFOA above the provisional Health Advisory Levels (HALs) were found in several onsite monitoring wells.

2013

- Navy performs additional sampling including sampling public supply well, WTMA-13. PFOS/PFOA are detected in WTMA-13
  - Navy begins investigating potential sources of PFOS and PFOA

2014

- UCMR3 sampling performed; WTMA Wells 10, 13 and 26 shut down
- Navy/EPA samples private wells for PFOA/PFOS
- Navy completes PFOS/PFOA Source Investigation on NAWC; initiates Remedial Investigation for PFOA/PFOS on NAWC

Current PFOS/PFOA Evaluation

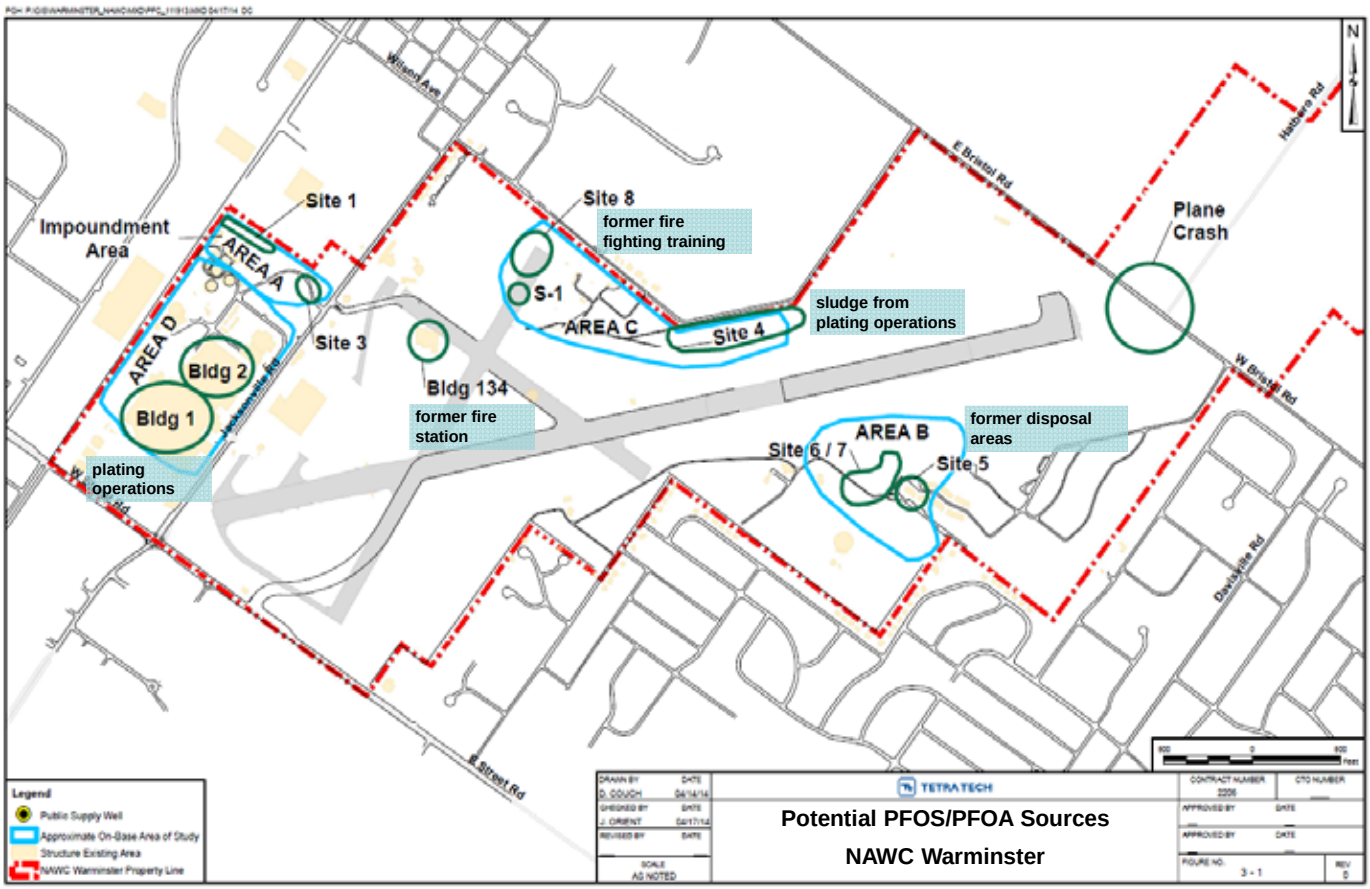
PFOS/PFOA are suspected to be from fire fighting foam and plating processes.

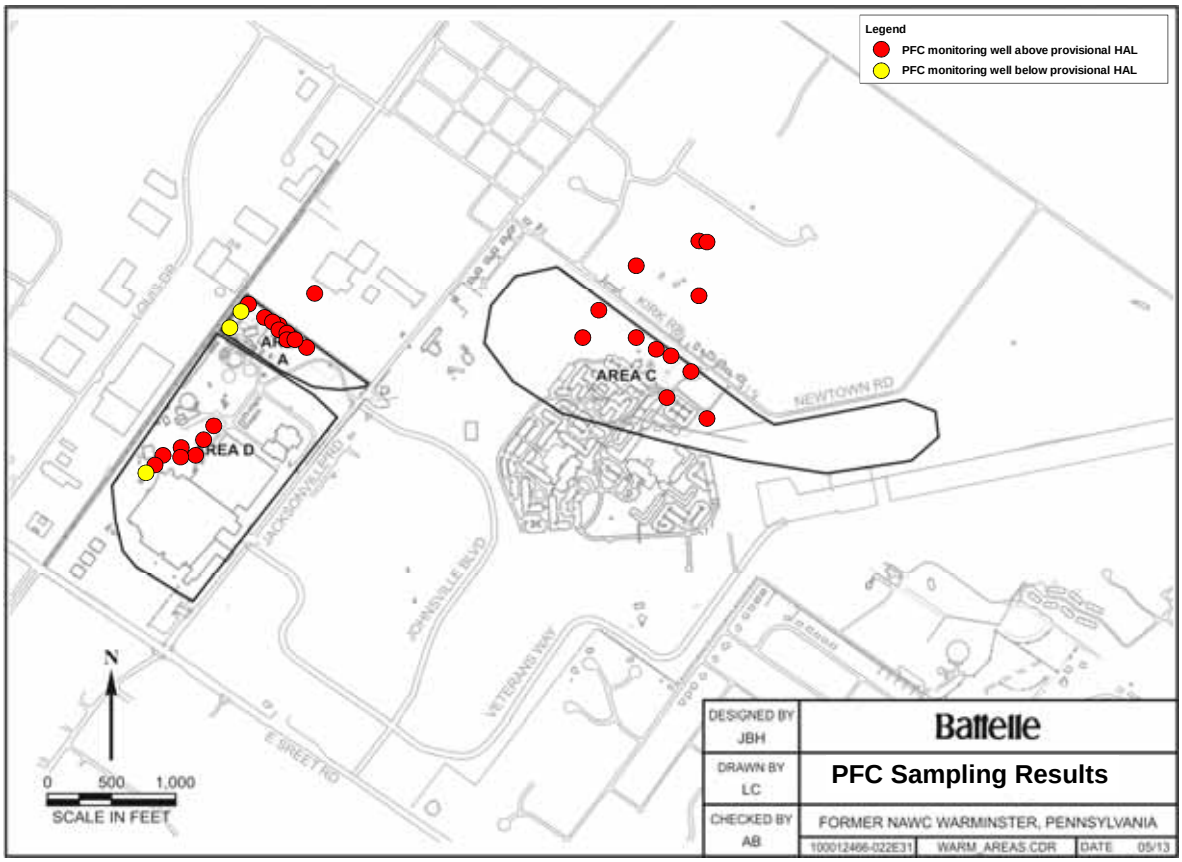
- Area C (Sites 4 and 8) is the likely source of PFOS/PFOA detected in down gradient supply well WTMA-13
  - Site 4 - largest disposal location at NAWC Warminster
  - Site 8 - fire-fighting training activities using fire fighting foam
  - Other potential sources - plane crash site and former fire station (Building 134)
- Areas A and D also may be potential sources of PFOS/PFOA (e.g., plating operations)

Existing Navy groundwater treatment plant has been upgraded to remove these contaminants.

Former Naval Air Warfare Center (NAWC) Warminster

Current PFOS/PFOA Evaluation





Former Naval Air Warfare Center (NAWC) Warminster

Base History and Environmental Cleanup

For over 25 years, the Navy, EPA, and PADEP have been conducting environmental cleanup at the former NAWC Warminster.

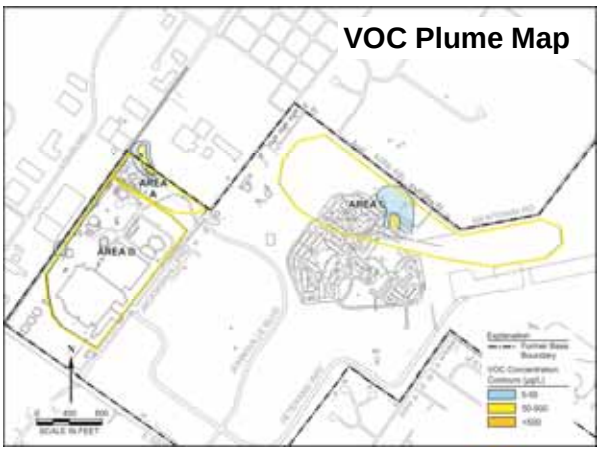
- **1944 – 1996**: Used for manufacturing, research, development, testing and evaluation of Navy aircraft and aircraft components.
- **1989**: Facility was listed on the National Priorities List (NPL) due to groundwater contamination and environmental studies begin.
- **1996 - 1998**: Base closure was initiated under the DoD Base Realignment and Closure (BRAC) Program and environmental cleanup continues.
- ***Early 2000s:*** Property transferred to local authorities.
- ***2000-present:*** The Navy continues to cleanup groundwater.

Groundwater Cleanup

- Three Areas identified for remediation (Area A, Area C, and Area D)
- Groundwater extraction and treatment system (GWETS) provides hydraulic control and removes volatile organic compounds (VOCs) from groundwater

Monitoring Program

- 74 wells sampled annually (44 semiannually) for VOCs
- PFCs are being added to the monitoring program



Former Naval Air Station Joint Reserve Base (NASJRB) Willow Grove

Timeline

2011

- Limited sampling conducted as part of the Site 5 Record of Decision identified PFOS and PFOA in groundwater as a potential concern to be re-evaluated during the Five Year Review

2014

- Because of PFOS/PFOA contamination at former Naval Air Warfare Center (NAWC) Warminster, Navy samples monitoring wells at Willow Grove and samples Horsham Water and Sewer Authority (HWSA) Well 26
- Unregulated Contaminant Monitoring Rule results posted to EPA database
  - HWSA Wells 26 and 40 shut down
- Navy develops plan for additional sampling to determine the extent of contamination and further identify sources of PFOS/PFOA
- Navy and EPA begin sampling private wells

Current PFOS/PFOA Evaluation

PFOS/PFOA in groundwater are suspected to be from the use of fire fighting foam.

- Site 5 is the likely source of PFOS/PFOA detected in down gradient HWSA Well 26
- Fire-fighting training activities at Site 5 used fire fighting foam
- Use of fire fighting foam on runways, plane crash sites and hangar areas may also be a potential source of PFOS/PFOA

The Navy will continue to investigate and cleanup PFOS/PFOA contamination related to Navy activities at NASJRB Willow Grove.

Former Naval Air Station Joint Reserve Base (NASJRB) Willow Grove

Current Navy PFOS/PFOA Monitoring Well Results and Potential Sources

Former Naval Air Station Joint Reserve Base (NASJRB) Willow Grove

Expanded View of NASJRB and Vicinity

Former Naval Air Station Joint Reserve Base (NASJRB) Willow Grove

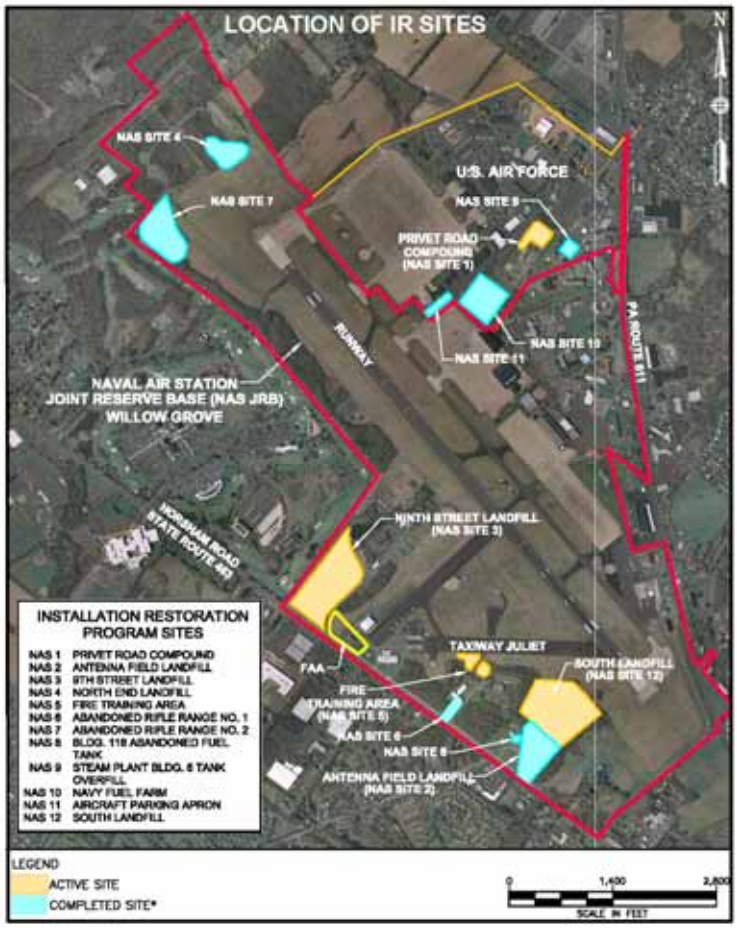
Base History and Environmental Cleanup

For over 20 years, the Navy, EPA, and PADEP have been conducting environmental cleanup at the former NASJRB Willow Grove.

- **1942 – 2011**: Used for Navy Reserve Aviation and related training and operations
- **1995**: Facility was listed on the National Priorities List (NPL) due to groundwater contamination and environmental studies begin.
- **2005**: Base closure was initiated under the DoD Base Realignment and Closure (BRAC) Program and environmental cleanup continues.
- ***2011***: NASJRB is officially disestablished.
- ***2011-present:*** The Navy continues to investigate and cleanup the environment.

Environmental Cleanup

- **Navy has completed environmental cleanup at several sites**
  - Landfills (Sites 2 and 4)
  - Rifle Ranges (Sites 6 and 7)
  - Other Sites (Sites 8, 9, 10, 11)
- **Navy is currently actively investigating several sites**
  - Site 1 Privet Road Compound
  - Site 3 Ninth Street Landfill
  - Site 5 Fire Training Area
  - Site 12 South Landfill
- **Restoration Advisory Board (RAB) meetings occur on quarterly basis**



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