

**Former Pease Air Force Base
Newington/Portsmouth
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The former Pease Air Force Base (AFB) site is located in the towns of Newington and Greenland and the city of Portsmouth. Construction of the Strategic Air Command base was completed in 1956 and, on March 31, 1991, Pease AFB was officially closed under the Base Realignment and Closure Act (BRAC). Today the former Pease AFB is one of the most successful redeveloped BRAC bases in the nation, home to over 250 businesses employing more than 9,000 workers.

Pease AFB was officially listed as a National Priority List (NPL) Superfund Site on February 21, 1990. The environmental cleanup of the former Pease AFB is currently divided into two programs; 1) investigations and cleanup activities focused on perfluorinated compounds (PFC's), a newly-discovered emerging class of environmental contaminants associated with the Air Force's historical use of AFFF fire-fighting foam and, 2) and the Air Forces Installation Restoration Program (IRP) cleanup of hazardous waste and petroleum releases. In 2015, NHDES requested the Air Force reactivate the restoration advisory board (RAB), which includes representatives from local communities, the Air Force, EPA, and NHDES, to facilitate communication and community input on the investigation and cleanup of PFC's and work being conducted under the IRP program.

PFC Program:

In 2013, sampling work at the Air Force's Fire Department Training Area-2 (Site 8) detected Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS) above the EPA Provisional Health Advisory (PHA) in site groundwater. Subsequent testing of the Pease Water Supply Wells in April of 2014 detected PFOS in the Haven Well above the PHA. The Haven Well was immediately shut-down and the Air Force began response actions to investigate the magnitude and extent of PFCs in site groundwater and off-site neighboring private water supply wells. In 2015, the Air Force was issued an Administrative Order by EPA under the Safe Drinking Water Act to treat the Haven well, investigate and remediate PFC sources, restore the Pease aquifer and monitor and protect residential and water supply wells. The Air Force is currently conducting work to satisfy the requirements and schedule specified in the Order.

IRP Program:

In 1991 there were 41 hazardous waste and 63 petroleum release sites identified at Pease. Between 1991 and 2011 significant cleanup work was conducted, and many contaminated sites were closed out. However, follow on cleanup activities are required at some of the more contaminated sites to achieve closure. In 2012, the Air Force implemented a new performance based contract, which called for the closure of nearly all Pease contaminated sites by 2020.

Some of the clean-up actions and progress at the former Pease AFB include;

Site 8—The Air Force constructed a soil vapor extraction (SVE) and groundwater treatment system to extract and contain contamination at Fire Department Training Area 2 (Site 8) in 1995. A re-examination of remaining site contamination was conducted in 2007 leading to follow-on remedial actions in select locations that included an air sparge system, improved free-product removal methods and enhanced bio-remediation. The additional remedial components were installed and began operating in 2009. In 2012 a soil and groundwater sampling investigation was conducted to evaluate remedy performance and additional optimization actions. A chemical oxidation pilot test was conducted in 2015 to treat IRP related contamination. Monitoring is ongoing. PFC related work in 2015 included sampling off-site and onsite groundwater, remedial system optimization and treatability and containment studies.

Site 32—In 1995 the Air Force installed sheet-piling to the top of bedrock to form a physical barrier around the source of groundwater contamination at Building 113 (Site 32) and constructed a groundwater treatment plant to treat groundwater pumped from seven hydraulic containment extraction wells. In 2012 a supplemental remedial action plan was proposed to excavate contaminated soil and biologically treat remaining contamination. The soil excavation was completed in 2015, follow-on groundwater investigations and remedial design work is needed.

Sediment Removals—All Brooks and Ditches across the base were investigated and at a number of locations sediments were excavated and disposed offsite.

Site 39—A groundwater extraction system was brought on-line in 1997. This system consisted of seven extraction wells positioned to allow containment of groundwater contamination from Sites 34 and 39 and prevent it from migrating towards the Haven water supply well. In 2001, based upon review of performance monitoring data, it was determined this remedial system was not operating properly and successfully in accordance with Section 120(h) (3) of CERCLA. Revision of the remedy through an amendment to the ROD was completed in 2003. The revised remedy includes VOC wellhead treatment capacity to protect the Haven water supply well from IRP contamination and optimization of source area pumping. Construction of the revised remedy started in 2004 and was completed in 2005. Remedial system and groundwater monitoring is ongoing and contamination has been significantly reduced. The Air Force will be conducting additional investigations to better define the remaining contamination in shallow zones and propose follow-on actions. ISEB pilot testing in deep groundwater was conducted in 2015.

Site 22—In 1997 an SVE/air sparging system became operational at the former Burn Area. The SVE/Air Sparge treatment system was taken off line in 2004. Comprehensive groundwater sampling in the source area was completed in 2005 and it was determined additional active soil treatment was no longer needed and monitored natural attenuation was appropriate. Groundwater monitoring is ongoing.

Site 45—An SVE system was installed at the Old Jet Engine Test Stand (Site 45) in 1997. The system has cleaned up contaminated soils to below regulatory standards. Low levels of groundwater contamination remain and are being naturally attenuated. Groundwater monitoring is ongoing.

Site 73—In 1999 the Air Force completed installation of a permeable reactive barrier (PRB) in overburden at Building 234 (Site 73) to clean up groundwater contamination associated with solvent releases. In 2012 a modified remedy was implemented which consists of in-situ bioremediation to treat the low levels of contamination that remain. Performance monitoring is ongoing.

Site 49—In 2000 an environmental site assessment conducted at a location where redevelopment activities were planned discovered chlorinated solvents in groundwater in the vicinity of former Building 22. The site is now identified as Site 49. The Air Force completed installation of a PRB in overburden and shallow bedrock in 2000 to cleanup groundwater contamination. In 2013 a modified remedy was implemented, which consists of in-situ bioremediation treatment of the remaining contamination. Additional source investigation was conducted in 2015 and up-gradient contamination was discovered. Additional work is needed at the site. Monitoring is ongoing.

Site 10—Groundwater monitoring at Site 10 (Leaded Fuel Tank Sludge Disposal Area) in 2000 showed dramatic increases in contamination up gradient of the site. Site 10 is located on the west side of the runway and is an area where leaded fuel tank sludge was buried. Source investigation work that included geophysical investigations, geo-probe installations, test pitting and soil sampling was conducted between 2001 and 2003, however no contamination source was found. In 2015 follow-on groundwater investigations were conducted but did not locate the contamination source.

Landfills 2, 4, 5 and 6. The Air Force excavated waste in contact with groundwater at Landfill 5 in 1995. Concurrently, solid waste from Landfills 2, 4 and 6 was excavated and consolidated into Landfill 5. In addition, quantities of petroleum-contaminated soil, excavated under the Underground Storage Tank program were placed in Landfill 5. The landfill was then covered with a multi-layered cap, which is regularly inspected and maintained. A groundwater and surface water monitoring program is ongoing.

Weapons Storage Area (WSA) -- In 2003 information was released by the Air Force that indicated waste materials containing residual radioactive contamination generated during cleaning of certain weapons systems in the 1950s and early 1960s may have been buried within the former WSA. The site is being managed under the CERCLA program and geophysical and radiological survey investigations were completed in 2003. Follow on test-pitting investigations were conducted in December of 2004 and did not locate any radiological waste materials. The Final Preliminary Assessment and Site Inspection Report (PA/SI) was completed in November 2006 and recommended no further action.

In addition to hazardous waste sites at Pease there are 63 petroleum release sites. Monitored natural attenuation (MNA) was the Air Forces selected remedy for most of the

petroleum release sites located on the Flightline (FLRS). At a number of FLRS sites MNA was determined to be ineffective before the 10 year MNA timeframe expired and alternate remedies such as soil removal or AS/SVE systems have been implemented. The FLRS MNA timeframe expired in 2009 and additional investigations are needed to develop alternate remedies for the sites where contamination remains.

Plume 13/14, is one of the larger petroleum release sites, and a location where the initial remedial action was not effective. A revised remedial action plan (RAP) consisting of AS/SVE was proposed in 2005 to address high levels of soil contamination that remain below the water table. The Plume 13/14 remedial system is one of the largest remedial systems at the former base. Construction for the SVE/AS remedial system was completed in the spring of 2008 and start-up began in early summer. Excessive flammable vapor generation however caused the system to be shut-down. Additional investigations and other work is needed to determine a safe remedial approach.

The Bulk Fuel Storage Area (BFSA) was the location of the primary above ground storage tank farm that supplied the FLRS. Significant contamination was present in this area and a bio-vent system was installed and began operation in 1997. The system was effective at removing the mass of contamination from the unsaturated overburden and was shut down in 2004. Pilot testing and follow-on remediation methods using enhanced biological treatment were deployed to remediate persistent contamination present in the shallow bedrock. In 2012 pre-design investigations were conducted and pilot wells installed to evaluate installation of a groundwater recirculation system to speed-up bedrock bio-remediation. Pump tests were completed in 2013, and additional work is still needed to implement an effective remedy.

At Pump-House 2, another large petroleum release site, the original enhanced bio-remediation remedy was not effective. An alternatives analysis was conducted in 2007 to determine the cost and feasibility of a number of remedial alternatives. An AS/SVE remedial system was selected by the Air Force. The system was constructed and started operation in 2010. Performance monitoring indicates system modifications are needed.

In addition to the clean-up activities at Pease, environmental survey and property transfer work was completed at the remaining Pease land parcels and the deeded property transfer to the Pease Development Authority (PDA) was completed in 2005. DES works closely with the PDA, Air Force and EPA to review planned development activities occurring in areas of environmental concern to ensure institutional controls and other issues associated with contaminated sites are addressed. The Air Force, EPA and DES will continue to evaluate remedy performance and other monitoring data to ensure response actions are optimized and remedial objectives are achieved in a timely and cost effective manner.