Air Force BRAC Environmental Restoration Program

Former Pease AFB
May 2019
History of Pease AFB

- 1956 to 1991 Strategic Air Command (SAC) Base.
  - 4,365 acres
  - Population --10,715
  - Water Supply—3 on-site supply wells; Haven, Smith and Harrison wells
- 1990 added to National Priority List under CERCLA (Superfund).
- 1991 - First Base in nation to be closed under the Base
- Realignment and Closure Act (BRAC). Base Clean-up Team Formed
DERP - Defense Environmental Restoration Program. Established by Congress in 1986, it provides framework for the cleanup of Department of Defense (DoD) sites

- Clean-up is under jurisdiction of the Secretary of Defense
- DoD is lead agency for all clean-up activities at Pease.
- DoD work is coordinated through BRAC Clean-up Team (BCT)
  - BCT: Air Force, EPA and DES

- Two Cleanup Program Categories:
  - CERCLA (hazardous waste sites)
  - NHDES Sites (petroleum releases and solid waste sites)
• Pease CERCLA Program Sites
  – 41 Hazardous Waste Sites identified + 9 areas of interest
  – Primarily Solvents (PCE/TCE) and metals
  – Sites were grouped into 8 Zones

• NHDES Sites (non-CERCLA)
  – 33 sites managed under NH Env-Or 600
  – 161 former fuel storage tanks removed or abandoned in place
  – 6 solid waste sites (former landfills, construction rubble dumps)
• CERCLA Records of Decision (ROD) are issued for each zone
  – 26 sites/areas closed or determined to require no further action (NFA)
  – 5 landfill sites in long term management (LTM)
  – 6 restored surface water sites
  – 13 sites remain open (8 are in close proximity and referred to as Zone 3 sites)
• NHDES Site Decisions
  – 5 Open Sites (Includes FLRS with numerous groundwater plumes)
  – 6 Solid Waste sites in LTM
  – 22 NFA Sites
## Records of Decision

<table>
<thead>
<tr>
<th>Zone/Site</th>
<th>Date</th>
<th>Purpose</th>
<th>Remedial Action</th>
</tr>
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<tbody>
<tr>
<td>LANDFILL 5</td>
<td>9/27/1993</td>
<td>Initial Remedy Selection</td>
<td>Excavate Soils below water table; Consolidate wastes from Landfills 2,4,6, Site 72, Flightline area and Railway Ditch; composite cap</td>
</tr>
<tr>
<td>SITE 34 JETC</td>
<td>9/27/1993</td>
<td>Initial Remedy Selection</td>
<td>Excavation and Disposal of source area soils at/near Bldg 222 to prevent leaching of jet fuel to groundwater</td>
</tr>
<tr>
<td>FIRE TRAINING AREA (Site 8)</td>
<td>9/30/1994</td>
<td>Initial Remedy Selection</td>
<td>Groundwater Extraction and Treatment for VOCs, free product recovery and soil-vapor extraction for VOC-contaminated soils</td>
</tr>
<tr>
<td>ZONE 5</td>
<td>9/30/1994</td>
<td>Initial Remedy Selection</td>
<td>No Further Action for under CERCLA for Site 9 (Construction Rubble Dump-1) and Site 11 (Field Maintenance Squadron)</td>
</tr>
<tr>
<td>ZONE 4</td>
<td>1/30/1995</td>
<td>Initial Remedy Selection</td>
<td>Remove soils and restore Landfill 6; land use controls; and groundwater monitoring</td>
</tr>
<tr>
<td>ZONE 1</td>
<td>6/26/1995</td>
<td>Initial Remedy Selection</td>
<td>No further action for Zone 1 sites other than Landfill 5; land use controls and groundwater monitoring</td>
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</tr>
<tr>
<td>OLD JET ENGINE TEST STAND (Site 45)</td>
<td>8/9/1995</td>
<td>Initial Remedy Selection</td>
<td>Air Sparge and Soil Vapor Extraction for fuel-related contaminants; land use controls and groundwater monitoring</td>
</tr>
<tr>
<td>BUILDING 113, 119 (Sites 32/26)</td>
<td>9/26/1995</td>
<td>Initial Remedy Selection</td>
<td>Technical Impracticability Waiver for VOC contamination in bedrock; containment and groundwater extraction and treatment at Bldg 113; Excavation of Soils at Bldg 119</td>
</tr>
<tr>
<td>ZONE 3</td>
<td>9/26/1995</td>
<td>Initial Remedy Selection</td>
<td>Groundwater extraction and treatment for VOCs primarily PCE/TCE; Soil removal near three industrial buildings</td>
</tr>
<tr>
<td>CONSOLIDATED BROOKS/DITCHES</td>
<td>9/30/1997</td>
<td>Initial Remedy Selection</td>
<td>Excavation and off-site disposal of sediment from Pauls Brook anc McIntyre Brook; No further action for Flagstone Brook or Lower Newfields Ditch</td>
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<tr>
<td>ZONE 3</td>
<td>12/30/2003</td>
<td>Amendment to ROD</td>
<td>Contingency Wellhead Treatment for Haven Well; Optimization of Bldg 227 groundwater treatment; Treatment of Sites 73 and 49 with permeable reactive barriers (PRB) for degradation of TCE; Land use controls</td>
</tr>
<tr>
<td>ZONE 3</td>
<td>12/10/2012</td>
<td>Explanation of Significant Differences</td>
<td>Modifications to remedy for Site 73 to include in-situ enhanced biodegradation by injecting emulsified vegetable oil and de-chlorinating bacteria</td>
</tr>
<tr>
<td>ZONE 3</td>
<td>10/24/2013</td>
<td>Explanation of Significant Differences</td>
<td>Modifications to remedy for Site 49 (Bldg 22) to include in-situ enhanced biodegradation by injecting emulsified vegetable oil and de-chlorinating bacteria</td>
</tr>
<tr>
<td>ZONE 5 (Site 8)</td>
<td>03/25/2019</td>
<td>Explanation of Significant Differences</td>
<td>Modification to Site 8 remedy to add treatment for PFOS/PFOA in groundwater</td>
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<td>ZONE 3 (Site 39)</td>
<td>Pending</td>
<td>Amendment to ROD</td>
<td>Additional remedy components for treatment of shallow groundwater and soil vapor extraction to prevent infiltration of sub-slab vapors into Bldg 227</td>
</tr>
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</table>
Site Status in 2013

- Remedies selected in Records of Decision were fully implemented and operating properly and successfully
- Substantial remedial progress had been achieved
- Land use controls/groundwater management zones prevent exposure to residual contamination
- Haven well air stripper (contingency remedy) was determined to be no longer needed and was dismantled
- Investigation into emerging contaminants PFOS and PFOA begin at Former Fire Training Area 2 (Site 8)
PFOS/PFOA Timeline

• June and September 2013 – Air Force samples 21 wells for PFOS and PFOA at the fire training area (Site 8)
• April/May 2014 – Air Force samples the Haven, Smith, and Harrison Municipal Supply Wells
• May 2014 – Haven Well Shut Down
• June 2014 – Air Force begins identifying and sampling private wells in Newington and Greenland
• 2014 - 2015 – 39 private drinking water wells sampled quarterly; four whole house carbon treatment systems installed
• August 2015 – USEPA Issues Safe Drinking Water Act Administrative Order
Response to PFOS/PFOA

• EPA Administrative Order (AO) required:
  – Hydraulic Containment and Treatment at Fire Training Area
  – Groundwater Treatment System for Haven Well
  – Investigation of nature and extent of PFOS/PFOA in groundwater and surface water

• Air Force Response in Sept 2015
  – Respond to AO in parallel with CERCLA
  – Fire Training Area Treatment
  – Respond to Haven, Smith & Harrison Wells
  – Begin CERCLA Investigations (e.g. Site Inspection)
PA/SI for PFOS/PFOA

• Preliminary Assessment:
  – Completed in December 2015
  – Documented 21 storage, use, or release locations
  – AF Administrative Record (AR) #469495

• Site Inspection:
  – Sampling of soils, groundwater and surface water at locations identified in the PA and additional data gap areas
  – Most significant source areas related to past releases at Site 8 and airfield area north of the Haven Well (KC-135 fire area and former fire station)
  – Site 8 Investigation Report: AR #555567; #555567.1 (Mar 2017)
  – Base-wide SI: AR #559411; #559411.1; #559411.2 (June 2017)
Supplemental Site Inspection

• USEPA Region 1 Letter dated 7 Nov 2017
  – Requested evaluation of human exposure pathways other than drinking water
  – Provided screening values for child and adult recreation (swimming in surface water; wading in sediments); fish and shellfish consumption and soil exposure for workers

• Air Force performed Supplemental Site Inspection in 2018
  – Sampled surface water bodies, sediments, groundwater, and shellfish in water bodies receiving discharge from Pease
  – Report is underway
Groundwater/Drinking Water Response

• Integrated Response Actions between AF, Regulators, and City of Portsmouth
  ✓ Haven Well taken offline in 2014
  ✓ Bottled Water provided to 5 private well users
  ✓ Point-of-Entry Treatment on four private wells
  ✓ Begin mitigation of known source at Fire Training Area 2 (Site 8)
  ✓ Granular Activated Carbon (GAC) Demonstration Project for Smith & Harrison Wells
  ✓ Airfield Interim Mitigation System up-gradient of Haven Well
    – Drinking Water Treatment System for Smith, Harrison & Haven Wells under construction
Groundwater/Drinking Water Response

Pease Groundwater and Drinking Water Treatment

Site 8
Interim Mitigation System

AIMS
Airfield Interim Mitigation System

Grafton Road
Drinking Water Treatment Plant (DWTP)

Portable Water to
Pease Drinking Water Sys.
Groundwater/Drinking Water Response

- Site 8 Interim Mitigation System
  - 11 groundwater extraction wells providing up to 110 gallons per minute (gpm)
  - Regenerable ion exchange resin treatment plant sized for up to 200 gpm
  - Currently operating at 40-45 gpm from 3 extraction wells due to unexpected iron fouling
  - Iron pre-treatment under design to achieve higher extraction rates
  - First six months of data show positive trends in controlling flow of groundwater, even at lower extraction rate
  - PFOS/PFOA effectively treated to Non-Detect levels prior to re-injection
Groundwater/Drinking Water Response

- Airfield Interim Mitigation System
  - Extraction network designed to achieve 700 gpm
    - Up to 350 gpm from a series of wells near the Airport terminal
    - 350 gpm from a well co-located with the Haven Well
  - Reinjection network to allow redundant re-injection capacity (2 x 700 gpm)
  - Single use ion exchange resin treatment
City of Portsmouth Grafton Road Drinking Water Plant

- Provides drinking water to Pease Tradeport
- Water source is the Haven, Harrison, and Smith supply wells
- Water from Harrison and Smith treated by granular activated carbon (GAC)
- New treatment plant sized for approximately 1100 gpm under construction
- Single use ion exchange resin treatment with GAC polishing prior to distribution to drinking water supply
- Full plant expected to be operation in Summer 2021