

Shepley's Hill Landfill

Shepley's Hill Landfill (SHL) is a part of the former Fort Devens Army Installation and the location of various environmental remedial activities. This fact sheet provides background information on SHL, from the historical operation and closure of the landfill to past environmental investigation results, and a summary of ongoing activities.

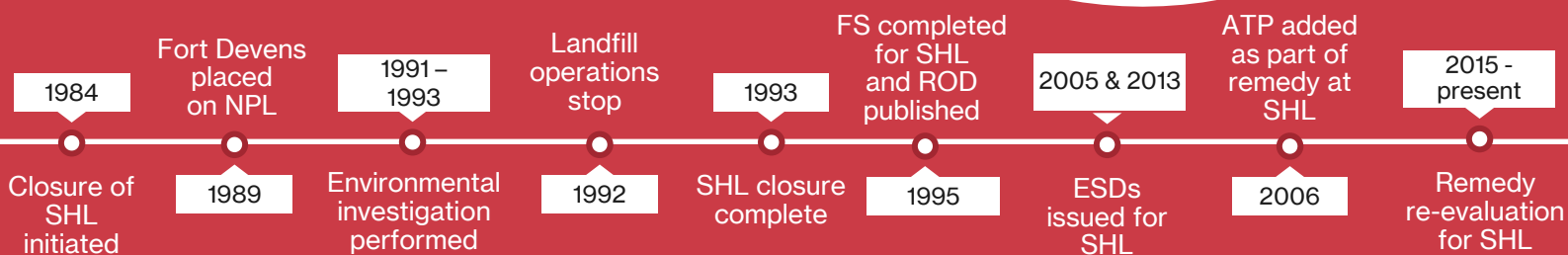
Overview of Shepley's Hill Landfill

SHL is an 84-acre site at Fort Devens, located between Shepley's Hill (a bedrock outcrop) to the west and Plow Shop Pond to the east. Before it was a landfill, the area was a low-lying marshland. The landfill opened in 1917 and was closed in phases starting in 1984 and ending in 1993. When it was operational, SHL accepted household refuse, asbestos construction debris, and glass. SHL included three areas: sanitary landfill, sanitary landfill incinerator, and asbestos cell.

To lessen the possibility that landfill contaminants would affect the surrounding area, Fort Devens started closing the landfill in 1984, following a Closure Plan approved by the Massachusetts Department of Environmental Protection (MADEP). Closure activities are outlined in the timeline below. During closure, Fort Devens was placed on the National Priorities List (NPL) in 1989.



Timeline of SHL Closure Activities



The SHL closure included:

- Providing for a 2% to 3% slope for landfill surface (this was changed to 5% during last phase of closure)
- Removing waste from certain areas within 100 feet of the 100-year floodplain
- Closing the asbestos cells
- Demolishing and burying the incinerator and building foundation
- Placing a low-permeability cap
- Installing a gas venting system
- Establishing a groundwater monitoring program

Environmental studies

Environmental investigations were performed at SHL between 1991 and 1993. These activities concluded that the main concern to human health at SHL would be long-term exposure of residents to contaminated groundwater, if using it as a drinking water source.

From the studies performed for SHL, the primary contaminant of concern in groundwater was determined to be arsenic.

Cleanup options

In 1995, a Feasibility Study (FS) was completed for SHL to evaluate remedial alternatives to prevent exposure to contaminated groundwater from the site. The cleanup option was selected in the 1995 Record of Decision (ROD) for former Fort Devens, with these key elements:

- Completing the landfill closure and survey
- Improving stormwater drainage
- Maintaining landfill cover and gas collection system
- Monitoring groundwater and landfill gas
- Contingency for groundwater extraction and treatment system
- Establishing institutional controls (ICs)
- Annual reporting to Massachusetts Department of Environmental Protection (MassDEP) and USEPA
- Conducting Five-Year Site Reviews

Based on the continued elevated arsenic levels in groundwater downgradient of the SHL, an arsenic treatment plant (ATP) was installed in 2006 as the contingency remedy for a groundwater extraction and treatment system. The ATP extracts groundwater, treats it, and then sends it to the local sewage treatment plant. In addition, a barrier wall was installed at SHL in 2012 to prevent landfill groundwater from migrating to Plow Shop Pond.



Re-evaluation of the remedy

After the remedy had been implemented for SHL, an Explanation of Significant Differences (ESD) was issued in 2013. The ESD expanded the scope of the ICs that were already in place, and the Army prepared land use controls (LUCs) as an added measure to prevent exposure to impacted groundwater. Additionally, the ESD stated that since the time of the ROD, a different understanding of the Conceptual Site Model (CSM) had developed, which indicated that arsenic in the groundwater is being mobilized by both natural and landfill-induced conditions. The ESD concluded that the CSM and complex groundwater issues had increased the uncertainty that the ATP would meet the groundwater cleanup goals.

Other reports regarding SHL, as well as analyses conducted as part of the Five-Year Site Review, have shown that continued operation of the ATP will not result in groundwater reaching arsenic cleanup goals. Arsenic levels in groundwater downgradient of SHL are significantly higher than cleanup goals – even though the system has been operating for 15 years and capturing the majority of groundwater leaving SHL. What's more, data from extraction wells show that arsenic concentrations in extracted groundwater are not decreasing.

As such, the Army and USEPA are conducting studies to evaluate the effectiveness of the current remedy. These studies allow the Army to evaluate sustainable cleanup options that are appropriate for the human health risk posed by the site given the LUCs that are already in place. The studies are also looking at other, more sustainable options that meet the cleanup objectives.

Reducing the Carbon Footprint at SHL

The Army is studying more sustainable options for SHL to reduce the carbon footprint. The current ATP is energy-intensive, uses hazardous chemicals (chlorine gas, sodium hypochlorite, citric acid, sulfuric acid), and results in disposing arsenic-containing waste to another landfill, at a rate of about 190 tons per year (which equates to about 3,600 tons to date).

The current carbon footprint is about 462,000 pounds of carbon dioxide per year, or 7 million pounds generated to date, which is equivalent to more than 360,000 gallons of gasoline.

These studies, which follow the processes and guidance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA or "Superfund"), began in 2003 and will continue through 2022. If warranted upon completion of the review, the ROD will be amended to incorporate a new remedy for the SHL.

For more information

The former Fort Devens Environmental Cleanup Project website has more info: <https://www.nae.usace.army.mil/missions/projects-topics/former-fort-devens-environmental-cleanup/>

If you want to get involved, get on our mailing list, or have questions, send an email to: FormerFortDevensRAB@arcadis.com

You can also contact our Army BRAC Environmental Coordinator with questions: Bob Simeone | robert.j.simeone.civ@mail.mil | 978.615.6090