

MILITARY FAMILY HOUSING USTs

ST-19

Joint Base Andrews

April 2022

BACKGROUND

The Military Family Housing (ST-19) was converted from oil-burning furnaces to natural gas during 1992-1993. With this conversion, approximately 520 underground storage tanks (USTs) which contained #2 Heating Fuel were removed. The Maryland Department of the Environment (MDE) requested groundwater monitoring at 321 of these locations due to suspected fuel leaks in the removed USTs. Following four rounds of groundwater and soil sampling, all but 51 of the sites were closed. After conducting a Treatability Study in 1998, in which 3 quarterly rounds of data were analyzed, 24 additional sites were closed. Another 16 were closed after a fourth round of sampling. Ultimately, eight sites contained significant free-phase petroleum product that required remedial action. Passive product recovery and manual product bailing occurred weekly in monitoring wells at all of the remaining eight sites. Surfactant injection and vacuum extraction events occurred at all the sites, and an injection of chemical oxidation compounds was attempted at Site 43 to enhance the natural attenuation. After years of weekly monitoring, the MDE issued case closure for five of the eight sites in 2003. In 2003, a groundwater pump and treat system was installed at one of the remaining sites (Site 38), and a solar powered petroleum product skimming system was used at another (Site 34).

CHALLENGES

Three sites remained with persistent free-phase petroleum product floating on the groundwater table. The petroleum fuel sorbs to soil particles, and continually interacts with the groundwater creating a dissolved-phase plume at the site. Groundwater monitoring continued for several years. Microbial communities actively consumed the petroleum constituents in the dissolved-phase plumes, the contaminant sources were eliminated, and the dissolved-phase product dissipated.

PERFORMANCE BASED APPROACH

The MDE Oil Control Program (OCP) operated in a performance-based manner with streamlined field efforts, letter work plans, and real-world approaches to establishing clean up goals since this site opened in 1993. MDE inspectors visited the base quarterly to discuss the remediation strategy and system performance.

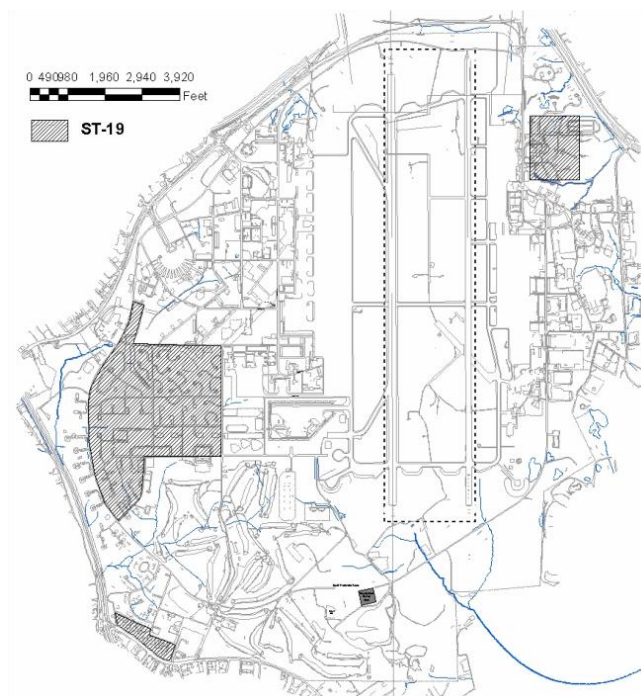


Figure 1: ST-19 Site Location Map

A performance-based contract (PBC) was awarded in 2006 to address the environmental impacts at the three remaining sites. The extent of the impacted soil was properly delineated, the source-zone soil was excavated, and the existing remediation system at Site 38 was upgraded to include three extraction trenches. The approach was successful at eliminating the stubborn residual petroleum at the three remaining sites. MDE inspectors issued closure letters for the remaining ST-19 sites in July 2009.

RISK DRIVERS

Contaminants: Free-phase petroleum product was present within the soil matrix and floating on top of the groundwater table. Dissolved petroleum constituents were present in the groundwater above regulatory standards at three remaining sites.

Impacted Media: Groundwater, subsurface soil

Exposure Pathways Completed: Construction activities

Drainage: Meetinghouse Branch and Payne's Branch

Current Land Use/Surface Cover: Residential

Reasonably Anticipated Land Use: Residential

Risk: NR