FORMER BRANDYWINE DRMO YARD

SS-01

Joint Base Andrews January 2018

BACKGROUND

The former Brandywine Defense Reutilization and Marketing Office (DRMO) Yard (SS-01) is an inactive facility administratively controlled by Joint Base Andrews (JBA). The 8-acre site is approximately eight miles south-southeast of JBA in the town of Brandywine, MD. While in operation from 1943-1987, the Brandywine DRMO yard was used for temporary storage of scrap materials and hazardous waste generated from various Department of Defense facilities in the region.

The primary groundwater contaminant at the Brandywine DRMO site is trichloroethylene (TCE), a cleaning solvent. A TCE groundwater plume has spread beyond the DRMO property into a residential neighborhood and commercial property. The primary soil contaminant is polychlorinated biphenyls (PCBs), and to a lesser extent metals and pesticides.

During the process of evaluating the extent of contamination, it was discovered that residents within a quarter-mile of the groundwater contaminant plume were using shallow groundwater wells as their drinking water source. In 1991, the Air Force (AF) converted some homes to public water. In 1994, a remedial action was completed to remove the PCB-impacted surface soils within the DRMO Yard, and in 1996 a groundwater extraction and treat system (GWETS) was installed on the Brandywine DRMO property. The Environmental Protection Agency (EPA) placed this site on the National Priorities List in 1999. A Remedial Investigation (RI) was completed in June 2005. A Feasibility Study (FS) was then completed and a Proposed Plan (PP) was issued in June 2006, in which the preferred remedy identified was in-situ bioaugmentation with groundwater gradient control. The Interim Record of Decision (IROD) was completed in September 2006 confirming the selected remedy and establishing ~90 acres of land use controls (LUCs). Between 2007 and 2008, the AF acquired 3.6 acres of private property to strategically address the leading edge of the groundwater contaminant plume. This acquisition occurred because, during the remedial design of the groundwater remedy, it was determined that the chlorinated volatile organic compound (VOC) plume had migrated farther off the Brandywine DRMO property than was originally characterized. It was determined that, as of 2008, the plume was 20+ acres.

In 2008, the Remedial Design (RD) was completed, a groundwater pump-and-treat system was installed at 13709 Cherry Tree Crossing Road, and system operation began. At that time operation of the 1996 GWETS ceased. The new GWETS was strategically positioned to prevent plume migration. The high TCE concentrations observed in the groundwater, coupled with confirmatory sampling, suggested the presence of dense non-aqueous phase liquid (DNAPL).

In 2009, JBA signed a Federal Facilities Agreement with the EPA which outlined the scope of efforts for remedial actions at SS-01. On-site substrate injections occurred in 2008, 2010, 2012 and 2014 in an effort to treat the groundwater contamination by using direct-push injections to condition the aquifer to allow for continued microbial bioremediation. The success of the bioremediation has resulted in a 78% reduction in the groundwater contaminant plume; and to date, operation of the GWETS has treated over 11,200,000 million gallons of water resulting in the removal of over 85 pounds of VOCs from site groundwater. JBA has also completed 3 PCB removal actions, removing over 18,000 cubic yards of contaminated soil.

The Interim ROD estimated the time to achieve cleanup for the nonsource areas to be 7 years. The 14th post-injection sampling event, performed in March 2015, was the final post-injection sampling event required under the Interim ROD; and exhibited that the interim remedy decreased the TCE plume area by 93 percent. The FS for the final remedy was completed in June 2015, and the PP in 2016. The Final ROD was completed and submitted for signature in January 2018. A pre Remedy in Place (RIP) groundwater monitoring event took place in October 2017, with the final report expected by February 2018. Future groundwater monitoring requirements, including frequency are spelled out in the Final ROD, and include quarterly, semiannual, and annual sampling through proposed site closure (SC).

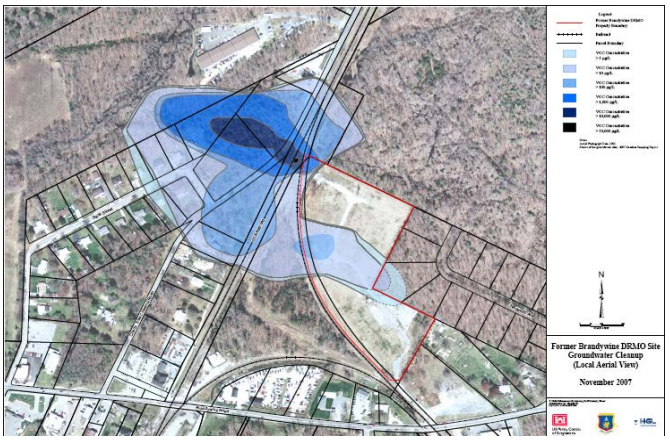

Figure 1. Brandywine TCE Plume

CHALLENGES

Remediation of this source zone presents a significant technical obstacle given the plume extends under multiple private land parcels, including an active CSX railroad line. Long-term access to private land parcels is required, so community involvement is critical, as well as securing the appropriate right of entry permits. Of additional concern, is the necessary design and replacement of various sections of the water and sewer line, within the remediation area, that could be affected by the chosen remedy prior to RIP implementation.

Regulatory agencies have a high level of concern with groundwater contamination under multiple private land parcels. The management of LUCs across the 90-acre area is a challenge, given the majority of the area is on non-government-owned property and relies upon Prince George's County monitoring, inspection, and enforcement.

Successful transformation of the DRMO site from its current condition to a parcel suitable for unlimited potential future use will require proper planning from the technical and real estate communities.

PERFORMANCE-BASED APPROACH

In 2012, a performance-based remediation contract was awarded to address the remaining contamination. The preferred alternative identified in the revised 2016 Final FS to address the source area, is the use of Electric Resistance Heating (ERH) thermal treatment. ERH heats the soil and groundwater, creating steam and vapor in the subsurface, which is then captured and treated at the surface. The Remedial Action Work Plan (RAWP) and RD were approved in 2017 and the final RIP is expected upon ROD signature in early 2018.

RISK DRIVERS

Contaminants: TCE, DCE, PCE, and vinyl chloride in concentrations above regulatory standards. naphthalene, 2-Methlynaphthalene, 1,4-DCB, and metals (iron and manganese) also extend onto neighboring properties.

Impacted Media: Groundwater and soil

Exposure Pathways Completed: Groundwater to domestic wells

Current Land Use/Surface Cover: Residential & Industrial

Reasonably Anticipated Land Use: Residential & Industrial

Relative Risk: High