EXECUTIVE SUMMARY

Hill Air Force Base (HAFB), home of the Ogden Air Logistics Center, disposes of various munitions and propellants at a Thermal Treatment Unit (TTU) on its Utah Test and Training Range. The TTU is used to demilitarize these items by open burning and open detonation. Because these munitions are considered as hazardous waste due to their reactive nature, HAFB is required to follow federal permitting regulations to continue these disposal operations. Presently the TTU is operating under interim status and, as the such, federal regulations require that HAFB submit an application for a Resource Conservation and Recovery Act Part B Permit. In support of the Part B Permit application, subsurface geologic and groundwater conditions in the vicinity of the TTU were investigated through drilling, installing, and sampling two monitoring wells.

Monitoring Well Drilling Construction and Sampling

The monitoring well borings were drilled using both air-rotary and mud-rotary drilling techniques. Cutting samples of the materials penetrated were collected every ten feet and a continuous log of the geologic conditions maintained. Because the groundwater beneath the TTU area is quite deep, the borings extended to depths ranging from 600 to 700 feet. After the well borings were completed, both boreholes were geophysically logged for additional geologic and groundwater information. After interpretation of the geologic and geophysical logs, 6-inch diameter monitoring wells were constructed of galvanized steel above the water table and stainless steel below the water table. Each well contains a 10-foot screen section which is sand packed with Colorado silica sand. The remaining annular space in each borehole was backfilled with cement grout from the top of the sand pack to the ground surface. The wells were completed with a locking 10-inch steel protective casing cemented into a 5-foot square concrete pad. Four protective steel posts are positioned on 10-foot centers around each pad.

A dedicated sampling system consisting of a stainless steel sampling pump, sounding tube, and water level tape was installed in each well. The wells were developed by air-lift pumping before the dedicated sampling system was installed and by operating the sampling pump once the installation was complete.

Findings of the Field Program

Significant thicknesses of clayey gravel deposits were found to underlie much of the TTU and occur at the ground surface above the 4,800 foot elevation. Below that elevation, a clayey silt unit overlies the clayey gravel unit. In the area beneath the eastern portion of the TTU, a volcanic unit was penetrated at 400 feet below ground surface.

Groundwater was found both in the clayey gravels and in the volcanic unit penetrated by the monitoring well borings at elevations ranging from approximately 4,205 to 4,214 feet above sea level. Depth of the groundwater beneath the eastern portion of the TTU is approximately 650 feet . Beneath the central portion of the TTU, the depth to groundwater is about 500 feet below the ground surface.