EXECUTIVE SUMMARY

This report describes the findings of the remedial investigation at Operable Unit 1 at Hill Air Force Base, Utah (Hill AFB). Operable Unit 1 (OU 1) is one of seven operable units being investigated at Hill AFB, which was placed on the National Priority List in July 1987. Operable Unit 1 includes two landfills, two chemical disposal pits, and two fire training areas. Contamination by solvents and fuels has been found in soil and ground water at the site.

Hill AFB lies on a terrace approximately 300 feet above the Weber River Valley, which is immediately north of Hill AFB. The site geology consists of approximately 40 feet of gravelly sands underlain by approximately 200 feet of silty clays containing sand stringers. The hydrogeology at OU 1 is complex and includes several possible migration pathways from the shallow on-base aquifer. Ground water from the shallow aquifer migrates downward into the deeper portions of the shallow aquifer or laterally, discharging as springs and seeps on the hillside. Some ground water is probably moving in the preferential pathways that exist between interconnected sand stringers within the hillside. As evident from the ground-water contamination observed in the shallow aquifer in the Weber River Valley, there appears to be a hydraulic connection between the shallow on-base aquifer and the shallow off-base aquifer.

The principal contaminants are chlorinated and fuel hydrocarbons in soil and shallow ground water. Soil contamination on base includes perchloroethene up to 2,900 µg/kg, trichloroethene up to 1,000 µg/kg, dichloroethene up to 14,000 µg/kg, and jet fuel up to 42,000 µg/kg. Extending northwest from the chemical disposal pits is a light non-aqueous phase liquid (LNAPL) layer measured up to 1 foot thick in on-base monitoring wells that covers an area of approximately 7 acres. This layer is primarily composed of jet fuel and light lubricating oils. This LNAPL layer is the primary source of dissolved fuel constituents, such as benzene (up to 16 µg/L), toluene (up to 1,400 µg/L), and total xylenes (up to 1,100 µg/L), in the shallow on-base aquifer. No fuel hydrocarbons have been detected in the shallow off-base aquifer in the Weber River Valley. Chlorinated solvents found in the shallow on-base ground water include trichloroethene up to 2,300 µg/L and chlorinated benzenes up to 2,124 µg/L. Ground water contaminated with dichloroethene and chlorinated benzenes covers an area of approximately 16 acres. In addition, dichloroethene (up to 42,000 µg/L) and vinyl chloride (up to 2,400 µg/L), the degradation products of perchloroethene and trichloroethene, were also detected. In the shallow off-base aquifer, dichloroethene (up to 240 µg/L in a private spring) and trichloroethene (up to 6.2 µg/L) have been detected.

A detailed conceptual model (shown below) has been developed that describes the possible hydraulic interconnections and transport pathways which appear to be present based on the results of this investigation. The conceptual model shows that the predominant pathway for the bulk of the contamination at OU 1 is from the chemical disposal pits and fire training areas to the unsaturated zone, through the shallow on-base ground water, and then through the hillside either to springs and seeps or to the shallow ground water off base. The occurrence of chlorinated hydrocarbons in several private springs to the northwest of OU 1 in the Weber River Valley and an evaluation of ground-water flow, suggests that some of this contamination may have originated from Operable Unit 2, a known source of free-phase solvents, which is also under investigation.