

EXECUTIVE SUMMARY

This report describes the Feasibility Study (FS) process by which remedial alternatives were developed for Operable Unit 6 (OU 6) at Hill AFB, Utah. Hill AFB was placed on the National Priorities List (NPL) in 1987. OU 6, which is located in the northernmost portion of the Base and includes adjacent residential areas to the east and northeast, is one of nine operable units at the Base. A remedial investigation (RI) at OU 6 was conducted under the Federal Facilities Agreement (FFA) between EPA Region VIII, the Utah Department of Environmental Quality (UDEQ), and the U.S. Air Force to determine the nature and extent of contamination. A Baseline Risk Assessment (BRA) was also conducted on the basis of data collected during the RI.

The Feasibility Study consisted of the following phases:

- ▶ Compilation and interpretation of site-specific information;
- ▶ Development of remedial action objectives (RAOs);
- ▶ Identification and screening of technologies;
- ▶ Development of alternatives; and
- ▶ Detailed analysis of alternatives.

These phases are documented in this report and are described in the paragraphs that follow.

Site-specific background information and data on the nature and extent of contamination were compiled. Next, RAOs were developed through consideration of the contaminants of concern, exposure routes and receptors, and preliminary remediation goals. These RAOs are defined as follows:

- ▶ Restore the groundwater aquifer and seeps and springs to trichloroethene (TCE) concentrations of 5 µg/L or lower (i.e., the drinking water standard) which results in a risk that is protective of human health.
- ▶ Prevent human exposures to 1,1-dichloroethene (1,1-DCE) in subsurface soil that lead to a total excess cancer risk for 1,1-DCE greater than 10⁻⁶. This corresponds to a concentration of 26 µg/kg or lower.

The volumes of groundwater and soil subject to the RAOs were estimated. Two groundwater plumes have been identified and are referred to as the "east" and "west" plumes. The area of the east plume with TCE concentrations above 5µg/L is approximately 37.5 acres; 21.9 acres on Base and 15.6 acres off Base. The area of the west plume is approximately 5.6 acres, the entirety of which is located on Base. The total volume of groundwater with TCE concentrations above 5 µg/L is estimated to be 66 million gallons (61 million gallons in the east plume; 5 million gallons in the west plume). Only one area of subsurface soil contains 1,1-DCE concentrations (up to 439 µg/kg) that exceed the RAO. The soil is located between 18 and 22 ft below land surface (bls) and extends to an area of approximately 3,300 ft². The volume of soil is estimated to be 490 yd³.

Next in the FS process, general response actions that have the potential to meet the RAOs were identified. For each general response action, potentially applicable technology types and technology process options were identified and screened on the basis of effectiveness, implementability, and cost. Five viable alternatives were developed from representative technology types and process options. These remedial alternatives incorporate removal actions

that are part of the Basewide Seeps and Springs and OU 6 Engineering Evaluation/Cost Analysis (EE/CA) as remedial actions. A treatability study is currently being conducted to evaluate two in situ groundwater remedial technologies, UVB (vacuum vaporizing well) and in situ air sparging and soil vapor extraction (IAS/SVE), that are candidate process options for an in situ treatment alternative. For the purposes of the FS, only the UVB technology is included in that alternative.

- ▶ Long-term effectiveness and permanence;
- ▶ Reduction of toxicity, mobility, or volume through treatment;
- ▶ Short-term effectiveness;
- ▶ Implementability; and
- ▶ Cost.

During the detailed analysis phase, the viable alternatives were evaluated on the basis of the following criteria:

- ▶ Overall protection of human health and the environment;
- ▶ Compliance with applicable or relevant and appropriate requirements (ARARs; listed in Appendix A);

Two additional criteria, state and community acceptance, will be presented in the record of decision after comments on the FS report and proposed plan have been received. A comparative analysis was also performed to evaluate the relative advantages and disadvantages of each alternative. A summary of the alternatives along with their estimated remediation times and estimated present worth costs is presented below.

Evaluation Criteria	Alternative 1 No Further Action	Alternative 2 Alternative 1 Plus Institutional Actions	Alternative 3 Alternative 2 Plus Pump-and- Treat of On-Base Plumes	Alternative 4 Alternative 2 Plus In Situ Remediation (UVB)* of On-Base Plumes	Alternative 5 Alternative 2 Plus Accelerated Treatment of On-Base Plumes and Soil Remediation
Remediation Time (yrs): West Plume ^b	28-35	28-35	6-9	7-14	4-6
East Plume, off-Base	50-75	50-75	2-3	2-3	2-3
East Plume, on-Base	50-75	50-75	30-45	25-50	12-18
Present Worth Cost ^c (millions of dollars)	\$2.55	\$2.90	\$5.74	\$7.17	\$6.97

*UVB—Unterdruck-Verdampfer-Brunnen (vacuum vaporizing well) technology.

^bFor Alternatives 1 and 2, the times listed for the west plume are for natural attenuation.

^cFor components with remediation times of 30 years or longer, a 30-year period was used for cost estimating purposes. For alternative components with estimated remediation times shorter than 30 years, the upper ranges of remediation times were used in the cost estimates (e.g., nine years was used for the west plume remediation system for Alternative 3).