Restoration Advisory Board Fact Sheet

Presumptive Remedies: Cleanup Technologies with Proven Track Records

Number 10 • March 1995

This fact sheet is one of a series prepared for RAB members about the Travis Air Force Base (AFB) Installation Restoration Program (IRP).

PRESUMPTIVE REMEDY: THE DEFINITION

A presumptive remedy is an environmental cleanup technology that has repeatedly been used successfully at hazardous waste sites sharing similar contaminants and concentrations. The presumptive remedy concept was born from trends in Superfund cleanups at hazardous waste sites nationwide. A closer look at the trends revealed that the same remedies were often chosen to clean up sites sharing similar conditions; therefore, the remedies or technologies could be "presumed" to be appropriate for various sites with similar characteristics.

In 1993, the U.S. Environmental Protection Agency (U.S. EPA) Office of Solid Waste and Emergency Response (OSWER) issued the first nationwide guidance for implementing presumptive remedies at hazardous waste sites. As a result, presumptive remedies are viewed as the best available technologies to clean up hazardous waste sites polluted with similar contaminants. In the near future, Travis AFB may use one or several of these technologies to clean up potential on-base contamination.

THE BENEFITS OF USING PRESUMPTIVE REMEDIES

Before the introduction of presumptive remedies, a cleanup remedy was not selected at a hazardous waste site until a lengthy and often costly evaluation known as a feasibility study (FS) was completed. However, using presumptive remedies streamlines the process of selecting a cleanup remedy and saves time and money. Figure 1 (see over) compares the relatively short cleanup process using presumptive remedy with the detailed feasibility study process.

PRESUMPTIVE REMEDIES AND TRAVIS AFB

All four presumptive remedies described on the following page may be implemented during environmental cleanup efforts at Travis AFB. Investigators will be looking to see if the conditions of various IRP sites in the four Operable Units (OUs) match the conditions necessary to use these technologies.

Specifically, ***soil vapor extraction*** and ***bioventing*** may be applicable to distinct areas of on-base soil contamination. Likewise, capping could be applied in areas such as the two landfills located in the North Operable Unit (NOU). Finally, ***groundwater pump-and-treat*** for containment could be used to remove groundwater contaminants, such as trichloroethene (TCE), in the East Industrial and North Operable Units.

PRESUMPTIVE REMEDIES: THE TECHNOLOGY DESCRIPTIONS

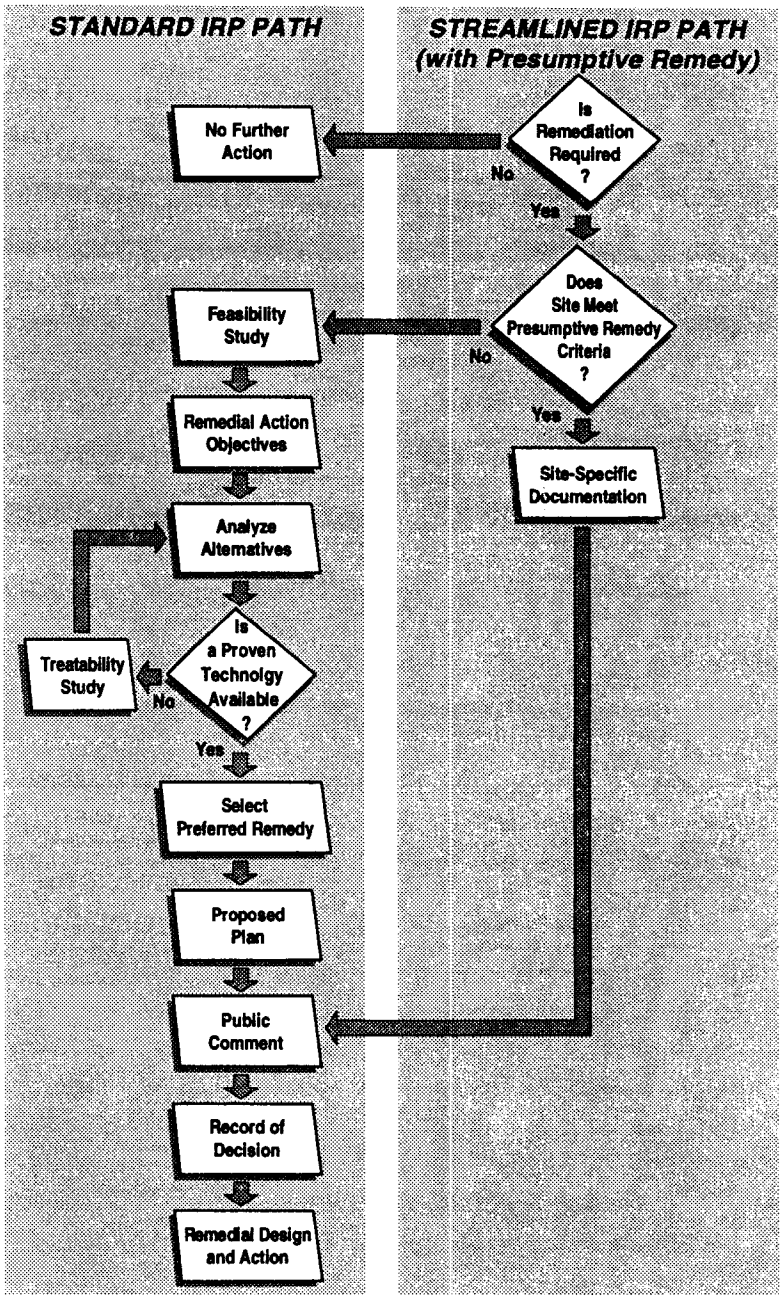
- **Soil Vapor Extraction (SVE)**—The U.S. EPA has designated SVE as the presumptive remedy for sites that are contaminated with chemicals such as solvents and degreasers in the unsaturated zone (the layer of earth below

ground surface and above the groundwater table). These solvents, also known as volatile organic compounds (VOCs), can volatilize from a liquid phase to a gaseous phase in the air spaces between soil particles. SVE involves extracting the VOCs from the unsaturated zone via a series of wells connected to a vacuum or pump. In simplified terms, the contaminants are actually vacuumed out of the soil gas in the unsaturated zone. Once extracted from the soil, the VOCs can be treated by a variety of methods.

- **Bioventing**—Bioventing is the presumptive remedy for sites contaminated with petroleum-based compounds, such as oil or fuel. Bioventing involves injection wells instead of extraction wells. With bioventing, clean air is injected into the ground through wells to provide naturally occurring microorganisms the oxygen they need to degrade—or break down—the contaminants. The major advantage of bioventing is that it allows the contaminants to be destroyed underground, whereas SVE requires contaminants to be treated at the surface.

- **Capping**—Containment, that is, preventing contaminants from migrating away from a source area, is the presumptive remedy for municipal landfills. Surface capping is a component of this remedy. Capping involves installing impermeable layers consisting of soil/clay, asphalt, or concrete on the surface of a hazardous waste site. The impermeable layers are designed to eliminate exposure to surface contamination, reduce the infiltration of rainwater, and minimize the leaching of contaminants to groundwater. Capping is often combined with the next remedy—groundwater pump-and-treat for containment.

- **Pump-and-Treat for Containment**—Groundwater pump-and-treat for containment is the extraction and treatment of contaminated groundwater. This is done to stop the contaminants from migrating to another area and possibly affecting additional groundwater. Generally, the water is extracted by vertical or horizontal wells, treated aboveground, and discharged at the surface or reinjected into the aquifer from which it was withdrawn. Pump-and-treat technology is often used in cases where groundwater contamination could spread to another water resource.



The use of presumptive remedies allows the Air Force to proceed more quickly to cleanup (remedial action) by eliminating the need for a costly Feasibility Study.