



BIOVENTING SYSTEMS

Elmendorf Air Force Base



FT23 BIOVENTING SYSTEM

Bioventing Initiative

Bioventing is the process of “feeding” oxygen to microbes that naturally live in the soil. The oxygen stimulates growth and activity among the microbes, which break down the petroleum, oils, and lubricants (POLs) into harmless substances.

Bioventing has widespread potential application because soil microbes can degrade a variety of petroleum products, including JP-4 jet fuel, gasoline, diesel fuel, and heating oil. A basic bioventing system includes a well (or series of wells, depending on the area) and a blower system, which pumps air through the well and into the soil.

The Air Force Center for Environmental Excellence (AFCEE) developed bioventing and tested it at

more than 135 sites, proving the technology works under varied site conditions.

Bioventing is sometimes slow, but it works in a variety of conditions and is always cost effective.

Regulators have approved bioventing in 31 states and in all 10 Environmental Protection Agency (EPA) regions. Private-sector use of the technology is expanding rapidly.

Applications at Elmendorf

Elmendorf Air Force Base supported the AFCEE initiative by putting systems at three sites during the summer of 1993. As the program progressed, the bioventing systems proved effective in dealing with POL-contaminated soil. Bioventing was then selected as the remedy to deal with contamination at three sites in Operable Unit 4. These

systems, at SS10, FT23 and SD25, were installed in the fall of 1995. The following year, the base and the Alaska Department of Environmental Conservation agreed to install bioventing systems at all State-Elmendorf Environmental Restoration Agreement (SERA) sites. This effort resulted in six sites getting bioventing systems.

FT23 and the Future

FT23 is an example of bioventing at work on Elmendorf Air Force Base. From the 1940s to 1960s, ignitable wastes were used as fuel for fire training exercises. During each exercise, 300 to 3,600 gallons of waste materials were spread on the ground and ignited. Protein foams or chlorobromoethane were used to extinguish the fires. The bermed area remained saturated with unconsumed fuel following each training exercise. Tests conducted in 1987/88 showed groundwater and soil contamination. Testing of the FT23 bioventing system was completed in 1996 as part of a treatability study.

As of March 1999 this site was one of ten on base. They are due to be phased out between 1999 and 2006, resulting in an average operating period of six years.

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