



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 377TH AIR BASE WING (AFMC)

Barbara
file KAFB Red F1994
ENTERED

18 APR 1994

377 ABW/EM
2000 Wyoming Blvd SE
Kirtland AFB NM 87117-5659

Mr. David W. Neleigh, Chief
New Mexico and Federal Facilities Section
RCRA Permits Branch (6H-PN)
U.S. EPA Region 6
1445 Ross Ave, Ste 1200
Dallas TX 75202-2733

APR 20 1994

Dear Mr. Neleigh

As requested in your 23 March 1994 letter, the latest quarterly progress report for the Pilot Respiration (Bioventing) test at Fire Training Pit FT-14 is attached. Although the report was due to your office in February 1994, the results of the respiration test were not available from the contractor until 29 March 1994.

A copy of the report was faxed to Ms. Nancy Morlock of your staff on 29 March 1994. If you have any questions, please call Mr. Chris DeWitt, (505) 846-2773/0053.

Sincerely

Thomas A. Norris
THOMAS A. NORRIS, Colonel, USAF
Director
Environmental Management Division

Attachment:
Ltr, 23 Mar 94
29

cc:
NMED-H&RMB (Mr. Benito Garcia)



ENGINEERING-SCIENCE, INC.

1700 Broadway, Suite 900 • Denver, Colorado 80290 • (303) 831-8100 • Fax: (303) 831-8208

29 March 1994

Mr. Harry Davidson
377th ABW/EM
2000 Wyoming S.E.
Kirtland AFB, NM 87117

Subject: 9-Month Respiration Test, Bioventing Pilot Test, Former
Fire Training Area (FT-13), Kirtland AFB, New Mexico

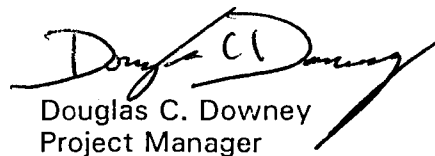
Dear Harry,

This letter report summarizes the results of the 9-month respiration test performed at the subject site. For this respiration test we assumed the initial soil gas carbon dioxide and oxygen concentrations to be equivalent to the initial measurements at the three and six month respiration tests. The changes in concentrations of these parameters in the soil gas were then measured over a 13 day period. Oxygen levels throughout the test ranged from 17.8 to 20.8 percent, indicating that the bioventing system is providing sufficient oxygen throughout the test soil volume. Results of the 9-month respiration test are included with this letter report.

The 9-month oxygen utilization rates measured by ES personnel ranged from 0.000058 to 0.000139 percent per minute. Using the same soil conditions that were used for the initial calculations, an estimated 50 milligrams of fuel per kilogram of soil per year is currently being degraded on this site. Based on time-averaged degradation rates, an estimated 160 kilograms of fuel have been degraded on this site in the initial nine months of operation. Both the oxygen utilization rates and estimated fuel degradation rates decreased compared to the rates measured during the 3-month and 6-month tests performed in June and November 1993, respectively. This decrease could be the result of fuel residual concentration reductions, drying of the soil, or seasonal temperature variations. One-year respiration testing and soil sampling will be useful in determining the long-term bioventing potential for this site. Methods for increasing site soil moisture to enhance biodegradation are being discussed with AFCEE.

If you have any questions concerning these results, please contact me or Robert Williams at (303) 831-8100.

Sincerely,
ENGINEERING-SCIENCE, INC.


Douglas C. Downey
Project Manager

Enclosure

Respiration Test														
Kirtland AFB, NM														
9 Month Respiration Test														
Elapsed														
Days														
Hrs elapsed														
Days														
Time														
Total														
Monitoring	Elapsed		(fractional		Elapsed		(min. x		Hydro-		Trend of O2/		New	
Point	Date	(frac. days)	Time	days)		1000)	O2%	CO2%	carbon	Comments		Time	x-values	k
VW-1	02/09/94	0.00	14:00	0.00	0.00	0.00	20.8	0.05	NA	Initial measurement assumed from previous respiration tests.		20.8	0	0.000059
VW-1	02/22/94	13.00	14:27	0.02	13.02	18.75	19.7	0.1	90	Point was open to atmosphere through blower during respiration test. Possible reason for high oxygen.		19.699824	18.75	
MPA-15	02/09/94	0.00	14:00	0.00	0.00	0.00	20.7	0.1	NA	Initial measurement assumed from previous respiration tests.		20.7	0	0.000139
MPA-15	02/22/94	13.00	13:50	-0.01	12.99	18.71	18.1	0.35	180	1 min. purge		18.1	18.71	
MPB-24	02/09/94	0.00	14:00	0.00	0.00	0.00	20.8	0.1	NA	Initial measurement assumed from previous respiration tests.		20.8	0	0.000069
MPB-24	02/22/94	13.00	14:17	0.01	13.01	18.74	19.5	0.1	105	1 min. purge		19.499792	18.74	
MPC-24	02/09/94	0.00	14:00	0.00	0.00	0.00	20.6	0.35	NA	Initial measurement assumed from previous respiration tests.		20.6	0	0.000096
MPC-24	02/22/94	13.00	14:22	0.02	13.02	18.74	18.8	0.6	340	1 min. purge		18.800192	18.74	