



DEPARTMENT OF THE AIR FORCE

HEADQUARTERS 377TH AIR BASE WING (AFMC)

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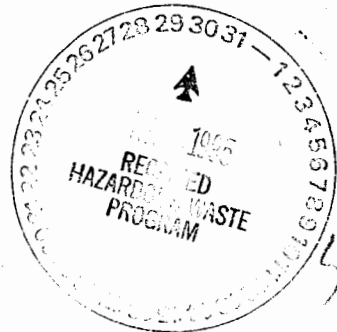
RETURN RECEIPT REQUESTED

Kowk  
BARBARA

ORIGINAL HAS BEEN FILED  
26 May 1995 SP 5/30

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

Ms. Nancy Morlock, Environmental Engineer  
RCRA Permits Branch  
U.S. EPA Region 6  
1445 Ross Ave, Ste 1200  
Dallas TX 75202-7233



Dear Ms. Morlock

As requested in your 27 April 1995 letter, we have attached site-specific sampling plans for RW-68, Radium Dump/Slag Piles, and SS-69, Drum Storage Area.

Please contact Mr. Jerry Sillerud, (505) 846-2773/0053, if you have any questions.

Sincerely

*Christopher B. DeWitt*  
CHRISTOPHER B. DeWITT, R.P.G  
Chief, Restoration Branch  
Environmental Management Division

Attachments:  
Sampling Plans

cc:  
NMED-HRMB (Mr. Pullen)  
USACE Omaha (Mr. Janis)  
Foster Wheeler Environmental (Mr. Mantooth)

KAFB1625



These are  
the  
"Hazardous Waste"  
sites!

# SITE RW-68, RADIUM SLAG PILES

## RCRA FACILITY INVESTIGATION SAMPLING PLAN

### 1.0 LOCATION

Site RW-68 is located in the southeast area of Kirtland AFB, southeast of Albuquerque, New Mexico. This site is composed of two adjacent sub sites: a) an unimproved open area, previously identified as RW-68, that consists of 10 slag piles within an estimated 1.2-acres and b) a 42-acre site known as the Cratering Area South of Schoolhouse Mesa (formerly Sandia National Labs site ER 61B) located about 0.25 mi. northwest of the slag pile site.

### 2.0 SOURCE CHARACTERIZATION

The Cratering Area site was actively used by the Army Air Force in the 1940s to conduct research on planes to determine weaknesses and other vulnerabilities under combat conditions. In the course of conducting these tests, the planes would be blown up or otherwise severely damaged. Upon completion of the tests, the planes were moved over to what is now the slag pile area, where they were then dismantled and incinerated. A total of 10 distinct slag piles have been identified here. During the approximate period 1957 - 1963, SNL used the Cratering Area for "Operation Plowshares," conducting subsurface explosives tests for the purpose of studying the cratering effects of charges ranging in size from two to eight pounds of trinitrotoluene (TNT). These tests resulted in craters with diameters of less than three feet. Larger charges of up to 256 pounds were reported to have been detonated but it is believed these were conducted at other SNL sites on KAFB and/or the Nevada Test Site (NTS). The overall purpose of the research was to conduct scale-model tests to determine the depth to which a nuclear device would have to be buried so that there would be no crater development at the ground surface.

Explosives  
Tests

→ tests

↳ Different  
Tests

↳ Need to  
expand

#### 2.1 PREVIOUS INVESTIGATIONS

a. Radium Slag Piles: The KAFB Bioenvironmental Engineering Squadron performed a radiological survey of the site on May 1992 and collected samples from the slag piles for analysis. The analytical results confirmed the presence of radium 226 at the site. In October 1994, samples were collected from the slag piles and refractory brick at the site for TCLP analysis. The results indicated soluble heavy metals in excess of regulated levels: cadmium 3.37 ppm, lead 709 ppm, selenium 1.58 ppm, and zinc 17.5 ppm (all readings in mg/l of TCLP extract). A Phase I investigation consisting of non-intrusive radiological characterization, an electro-magnetic survey, and slag pile and soil

sampling is currently in progress; the EPA will be furnished with a copy of the results upon completion.

b. Cratering Area: Little information is known about this site except that it was identified by the Department of Energy (DOE) in 1987 as a possible ER site as a result of DoD aircraft vulnerability testing and SNL explosives testing. Additionally, as a result of the site's proximity to the KAFB EOD site (SWMU 6-19), it is believed there is potential for unexploded ordnance to be present at the site. ?

### 3.0 RCRA FACILITY INVESTIGATION (RFI) SAMPLING PLAN

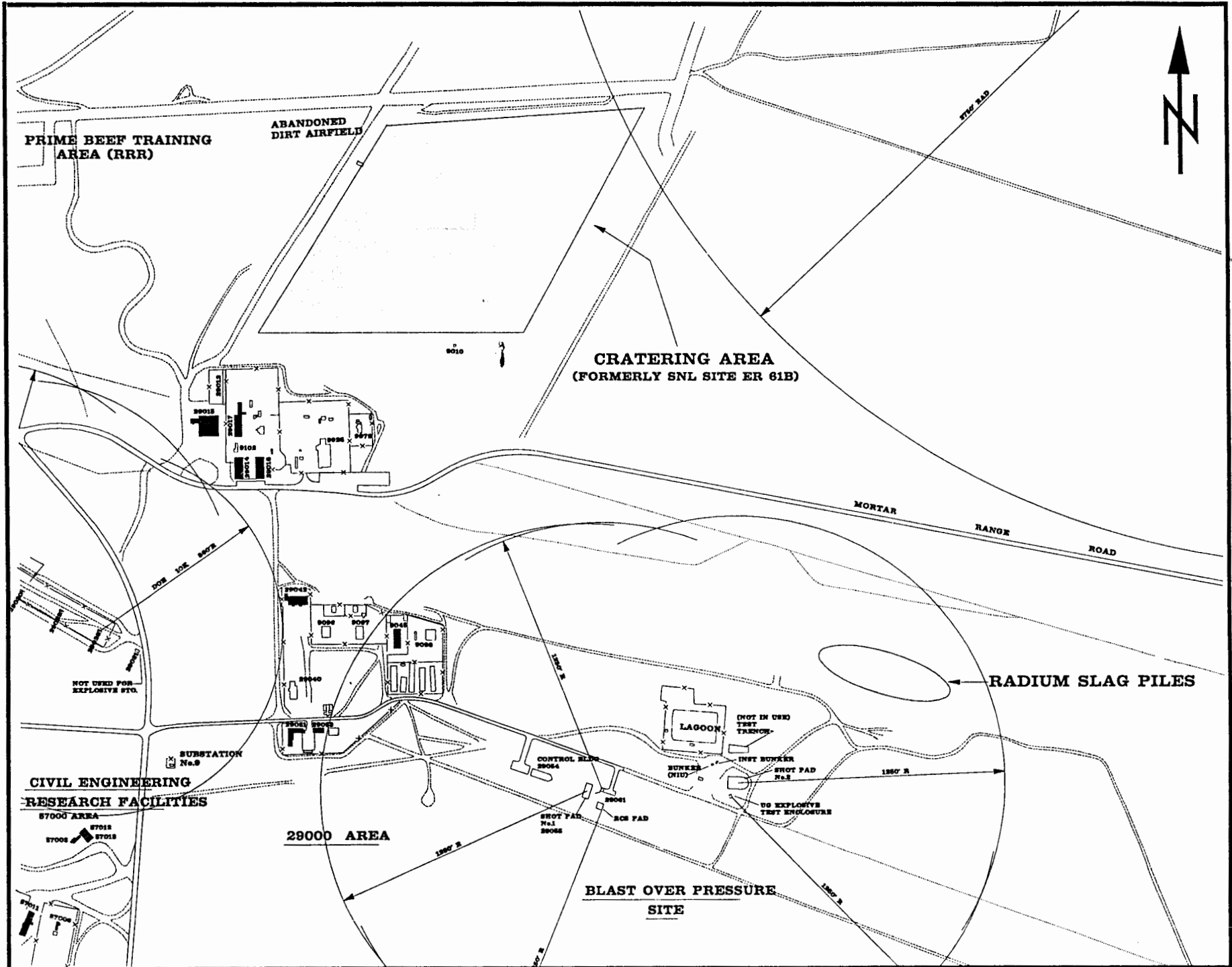
The objective of the RFI will be to perform a Phase II study to determine the extent of contamination associated with the slag piles and the Cratering Area. The RFI will be conducted in accordance with the Stage 2C, Appendix III, Health and Safety Plan, Project Management Plan, and Data Collection Quality Assurance Plan, approved on 7 April 1994 by the U.S. EPA or the Base Wide Generic Plan submitted to the EPA March 1995. The site specific sampling plan will consist of the following:

a. Slag Piles: The sampling plan will consist of collecting samples from each of the 10 slag piles and subsurface samples from the 2.5-, 5-, and 10-ft depths directly below each pile. Field screening for VOCs will be done and the 10-foot depth will be extended in 10-ft increments if there are indications that VOC contaminants are present. All samples will be analyzed for metals (Method 6010), gross alpha/beta (Method 9310), and radium 226 (Method 9315). If field screening indicates the presence of VOCs, lab Method 8240 will be performed to quantify the contamination.

b. Cratering Area: The sampling plan will consist of collecting samples from the surface, 5-ft, and 10-ft depths of the five largest detonation pits on the site. In addition, five grab samples will be collected from other disturbed areas on the site as well as one background sample from off-site. If field screening indicates the presence of VOC contaminants, the boreholes will be extended in 10-ft increments until contamination is no longer indicated. All samples will be analyzed for metals (Method 6010), gross alpha/beta (Method 9310), and explosives residue (Method 8330). Analysis for VOCs (Method 8240) will be performed if the field screening indicates VOC contamination is present.

- Any effort to 10 ULO.

# RW-68 SAMPLING AND ANALYSIS PLAN



**SITE SS-69, DRUM STORAGE AREA**  
**RCRA FACILITY INVESTIGATION SAMPLING PLAN**

**1.0 LOCATION**

Drum Storage Area (SWMU SS-69) is located in the southeast area of KAFB within the Interservice Nuclear Weapons School (INWS) Training Site (TS) No. 6, which is one of the eight sites comprising IRP Site RW-10. The area is fenced with barbed wire and overgrown with natural vegetation.

**2.0 SOURCE CHARACTERIZATION**

The storage area is approximately 50 ft x 50 ft and was used to store thorium oxide sludge in drums. The sludge was raked and dispersed into the soil of the training site in order to provide instruction in the detection, assessment and decontamination of radiation resulting from a nuclear accident. Training was last conducted at TS-6 in about 1990; the site and storage area have been inactive since that time. The Drum Storage Area was a segregated area within TS No. 6 which had been used by INWS personnel as a storage area for thorium oxide sludge and contaminated soil. Over time, other unknown sources were also utilizing the site to dispose of unwanted drums and, approximately 90 drums accumulated at the site. Most of the drums were empty; the remainder (+\ -35) contained solid material (cardboard, plastic, dirt, and other) and liquid materials (quantities ranged from 1/4 inch to full). Sixteen drums were determined to require laboratory analysis. Analysis found four drums contained radiological waste, and four drums were found to be characteristic waste by virtue of TCLP benzene levels in excess of 0.5 ppm. The remaining eight drums contained watered-down diesel fuels with drum rust, and thick oil/sludge with gasoline and or solvent additions. At the time of discovery, a number of these drums were deteriorated, and releases into the environment had occurred. The Compliance Branch treated the site as a spill, and the wastes were re-packed as necessary and properly disposed; however, soil staining is evident at the site, and no soil sampling has been conducted to delineate the extent of contamination that remains.

### 3.0 RCRA FACILITY INVESTIGATION (RFI) SAMPLING PLAN

The objective of the RFI will be to determine the presence and extent of contamination in the fenced area that served as the drum storage area. The RFI will be conducted in accordance with the Stage 2C, Appendix III, Health and Safety Plan, Project Management Plan, and Data Collection Quality Assurance Plan, approved on 7 April 1994 by the U.S. EPA or the Base Wide Generic Plans submitted to the EPA March 1995. The site specific sampling plan will consist of the following:

a. Four boreholes located inside the fenced drum storage area (see attached site diagram) will be driven using direct push methods. Samples will be collected at the ground surface (0 - 1 ft depth), and at 5-ft intervals until field screening indicates no contamination.

↳ WHAT FIELD SCREENING  
RAD MEASUREMENTS

b. Three samples, one upgradient and two downgradient, will be collected using direct push methods (see attached site diagram). Samples will be collected at the ground surface (0 - 1 ft depth), and at 5-ft intervals until field screening indicates no contamination.

- WHAT DOES  
UPGRADIENT  
HAVE TO DO  
WITH  
ANYTHING

c. One background sample will be collected well away from the drum storage area and TS No. 6.

All samples will be analyzed for VOCs (Method 8240), SVOCs (Method 8270), metals (Method 6010) and gross alpha/beta (Method 9310).

- ANY STATISTICAL RATIONALE FOR  
DETERMINING EXTENT.

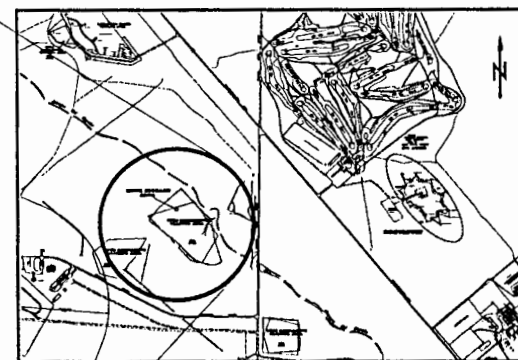
**DRUM STORAGE  
AREA**

**INWS RADIOACTIVE  
TRAINING AREA**

TS-6  
27930

**INWS RADIOACTIVE  
TRAINING AREA**

TS-5  
27929



*only two faucets!*

**DRUM STORAGE AREA  
SAMPLING AND ANALYSIS PLAN**

• PROPOSED BOREHOLE