

# START

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WHC-SD-EN-TI-284  
Revision 0

# Hanford Patrol Academy Demolition Site Sampling Analysis Plan

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9413288-0992

Prepared for the U.S. Department of Energy  
Office of Environmental Restoration and  
Waste Mangement



**Westinghouse**  
**Hanford Company** Richland, Washington

Hanford Operations and Engineering Contractor for the  
U.S. Department of Energy under Contract DE-AC06-87RL10930



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~~HANFORD PATROL ACADEMY DEMOLITION SITES SAMPLING ANALYSIS PLAN~~

## 1.0 PURPOSE

This document provides guidance for sampling and analysis activities associated with the proposed *Resource Conservation and Recovery Act of 1976* (RCRA) clean closure of the Hanford Patrol Academy Demolition Sites (HPADS) (Figure 1). This document is a supplement to *Hanford Patrol Academy Demolition Sites Closure Plan* (DOE-RL 1992), and should be used in conjunction with the *Environmental Investigations and Site Characterization Manual* (WHC 1988) for specific procedures. The samples will be collected by environmental field services and shipped offsite for analysis.

A metric conversion chart is provided as a tool to aid in conversion (Attachment 1).

## 2.0 OBJECTIVE

Several soil samples will be taken from specific locations in Closure Areas No. 1 and 2 (Figure 1). The objective of this soil sampling event is to facilitate a RCRA clean closure of the HPADS by verifying that the concentrations of all detonation activity contaminants are below action levels. Action levels are defined as levels above the Hanford Site soil background levels identified in *Hanford Site Background: Part 1, Soil Background for Nonradioactive Analytes* (DOE-RL 1993) and *Model Toxic Control Act* (WAC 173-340) residential levels. If analysis determines that levels are above both guidelines, a phase two investigation will be developed. This is not anticipated because of the efficiency of detonation reactions and exposure to the environment.

## 2.1 CLOSURE AREA NO. 1

Twelve soil samples will be taken from specific locations (Figure 2) within Closure Area No. 1. Closure Area No. 1 is immediately south of the known distance target range at the bottom of the slope and measures approximately 35 by 114 feet. Closure Area No. 1 consists of two distinct regions, A and B. Region A is where the actual detonation events occurred. Five soil samples will be collected in Region A (Figure 2). Region B is where any explosive chemical products would have been dispersed after subsequent grading activities. Seven samples will be collected in Region B (Figure 2).

## 2.2 CLOSURE AREA NO. 2

Closure Area No. 2 consists of a detonation pit measuring approximately 10 feet in diameter and 1.5 feet deep. Fifteen soil samples will be taken from specific locations (Figure 3) within a 15-foot radius centered about the detonation pit.

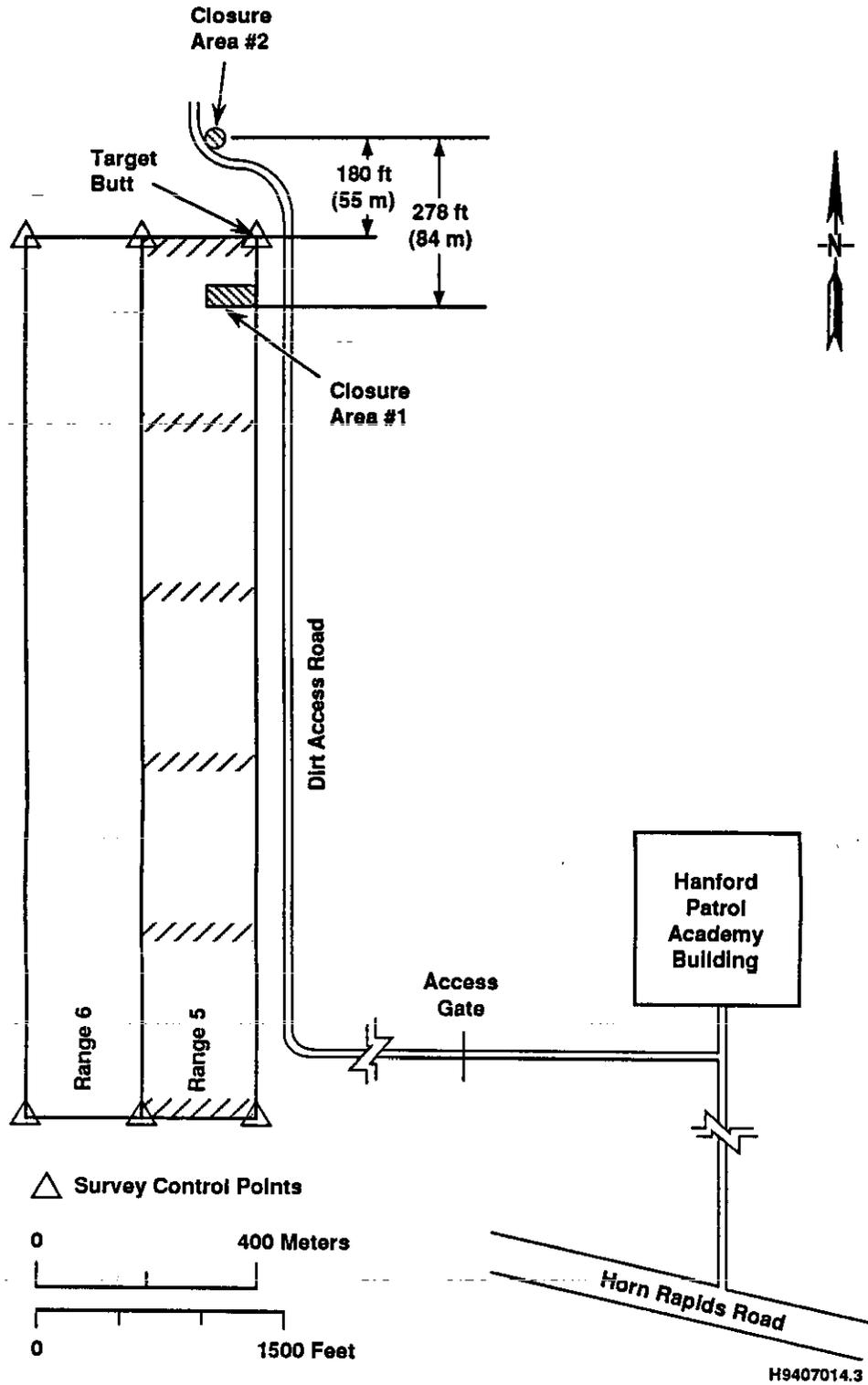
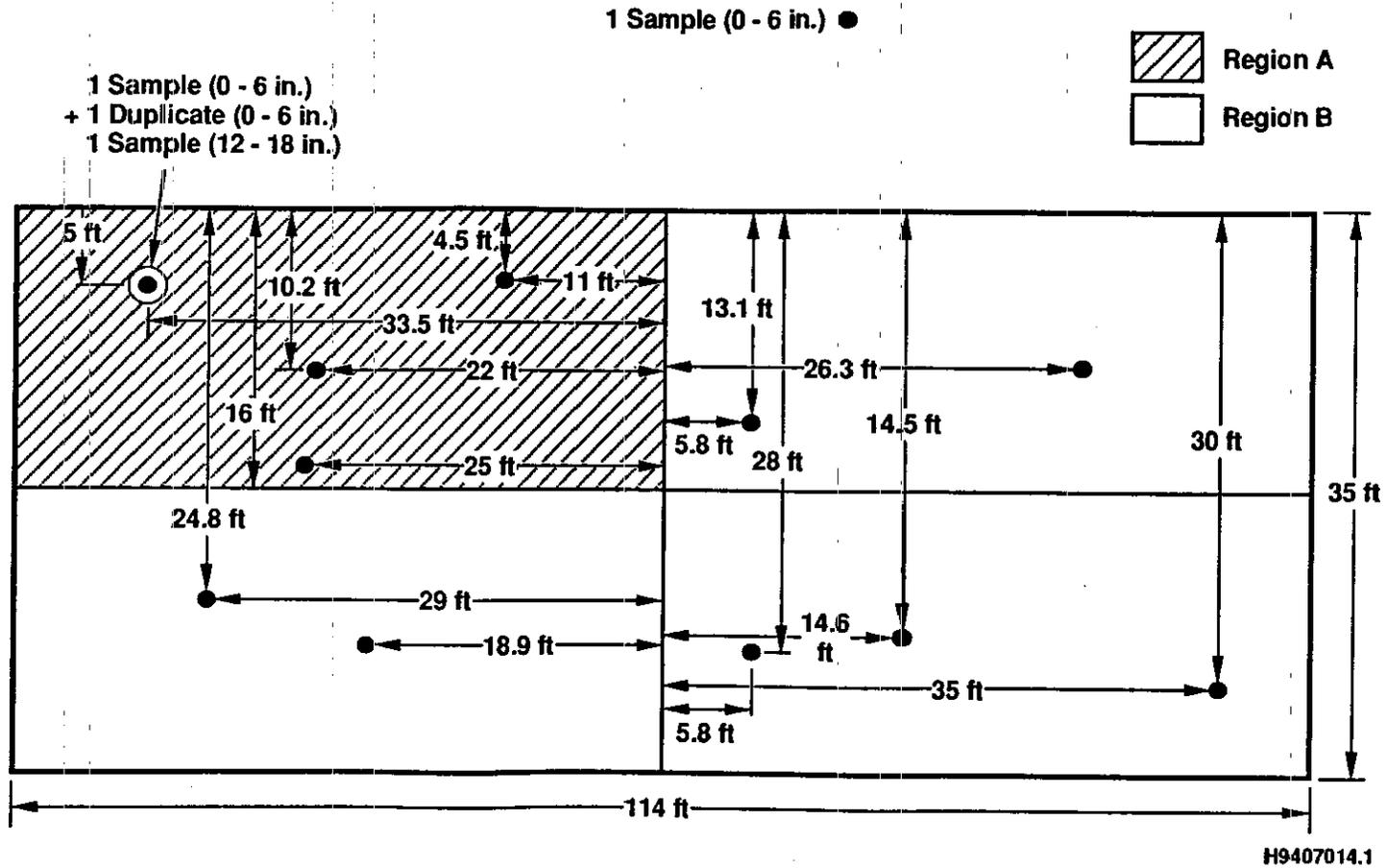


Figure 1. Hanford Patrol Academy Demolition Sites.

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Figure 2. Soil Sampling Locations/Depth Closure Area No. 1.





### 3.0 SITE DESCRIPTION/BACKGROUND

The HPADS are about 2 miles southwest of the 300 Area and about 0.5 mile north of Horn Rapids Road. The HPADS consist of Closure Areas No. 1 and 2, which were used for the demolition of discarded explosive and shock-sensitive chemicals. Closure Area No. 1 was used from 1975 through 1984 and Closure Area No. 2 was used from 1984 through 1991. During the detonation events at Closure Area No. 1, the individual chemical containers were placed on the ground near the invert of the target butt. The containers were then detonated using M14 rifle fire. Closure Area No. 2 is a crater 10 feet in diameter and approximately 1.5 feet deep. Onsite personnel placed the individual containers in the detonation pit. The City of Richland Bomb Squad then wrapped detonation cord around the containers and initiated the detonation with electric blasting caps. Both closure areas are currently roped off and marked with signs that read "dangerous waste".

### 4.0 SCOPE OF WORK

Twenty-seven soil characterization samples will be taken by hand from locations at the HPADS (Figures 2 and 3).

All sampling activities will be conducted in accordance with the following environmental investigations instructions (EII) procedures (WHC 1988):

- EII 1.1, Hazardous Waste Site Entry Requirements
- EII 1.13, Environmental Readiness Review
- EII 1.5, Field Logbooks
- EII 5.1, Chain of Custody
- EII 5.2, Soil and Sediment Sampling
- EII 5.5, 1706 KE Laboratory Decontamination of RCRA/CERCLA Sampling Equipment
- EII 5.10, Obtaining Sample Identification Numbers and Accessing HEIS Data
- EII 5.11, Sample Packaging and Shipping
- EII 14.1, Analytical Laboratory Data Management.

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## 5.0 SAMPLING AND FIELD ACTIVITIES

This section discusses Task 1, Sampling of the HPADS.

### 5.1 SUBTASK 1A - SAMPLE LOCATION DETERMINATIONS

#### 5.1.1 Closure Area No. 1

The sampling surface in Closure Area No. 1 will be cleaned of windblown sand and foreign debris. The 12 sampling locations in Closure Area No. 1 will be appropriately marked (Figure 2).

#### 5.1.2 Closure Area No. 2

The blasting surface in Closure Area No. 2 will be reconstructed by removing windblown sand and foreign debris. The 17 sampling locations will be appropriately marked (Figure 3). Sample depths within Closure Area No. 2 (Figure 3, shaded area) are based upon the reconstructed crater.

### 5.2 SUBTASK 1B - SAMPLING

Engineering support personnel will use hand tools to obtain soil samples in accordance with information provided in Figures 2 and 3. All samples will be packaged, handled, and shipped in accordance with WHC (1988).

## 6.0 LABORATORY ANALYSIS

Samples collected for chemical analysis will be analyzed using SW-846 methods (EPA 1986) and approved U.S. Environmental Protection Agency (EPA) 300 series methods (EPA 1983). The contaminants of concern and the methods used for testing are:

- Volatile organic analysis, EPA Method 8240
- Semivolatile organic analysis, EPA Method 8270
- Detonation residue, EPA Method 8330
- Anions, EPA Method 300.0
- Metals, EPA Method 6010
- Total nitrogen, EPA Method 353.1-2.

## 7.0 REGULATORY AND HANFORD SITE COMPLIANCE

Field quality control samples will be collected by the sampling scientist and documented in the sampling logbook in accordance with EII 1.5, "Field Logbooks" (WHC 1988). The following are the field quality control samples to be collected:

- One duplicate sample in Region A of Closure Area No. 1 (0 to 6-inch depth) for full analysis
- One duplicate sample at center of pit in Closure Area No. 2 (0 to 6-inch depth) for full analysis
- One equipment blank (clean silica sand) for full analysis
- One trip blank (clean silica sand) for volatile organic analysis only.

## 8.0 REFERENCES

DOE-RL, 1992, *Hanford Patrol Academy Demolition Sites Closure Plan*, DOE/RL-92-39, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE-RL, 1993, *Hanford Site Background: Part 1, Soil Background for Nonradioactive Analytes*, DOE/RL-92-24, Rev. 1, U. S. Department of Energy, Richland Operations Office, Richland, Washington.

EPA, 1983, *Methods for Chemical Analysis of Water and Waste*, 600/4-79-020, U.S. Environmental Protection Agency, Washington, D.C.

EPA, 1986, as amended, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*, SW-846, 3rd Edition, U.S. Environmental Protection Agency, Washington, D.C.

WHC, 1988, *Environmental Investigations and Site Characterization Manual*, WHC-CM-7-7, Westinghouse Hanford Company, Richland, Washington.

WAC 173-340, *Model Toxics Control Act Cleanup Regulations*, as amended, Washington State Department of Ecology, Olympia, Washington.

*Resource Conservation and Recovery Act of 1976*, 42 USC 6901 et seq.

*Comprehensive Environmental Response, Compensation, and Recovery Act of 1980*, 42 USC 9601 et seq.

**METRIC CONVERSION CHART**

----- Into metric units

Out of metric units -----

If you know	Multiply by	To get	If you know	Multiply by	To get
<b>Length</b>			<b>Length</b>		
inches	25.40	millimeters	millimeters	0.0393	inches
inches	2.54	centimeters	centimeters	0.393	inches
feet	0.3048	meters	meters	3.2808	feet
yards	0.914	meters	meters	1.09	yards
miles	1.609	kilometers	kilometers	0.62	miles
<b>Area</b>			<b>Area</b>		
square inches	6.4516	square centimeters	square centimeters	0.155	square inches
square feet	0.092	square meters	square meters	10.7639	square feet
square yards	0.836	square meters	square meters	1.20	square yards
square miles	2.59	square kilometers	square kilometers	0.39	square miles
acres	0.404	hectares	hectares	2.471	acres
<b>Mass (weight)</b>			<b>Mass (weight)</b>		
ounces	28.35	grams	grams	0.0352	ounces
pounds	0.453	kilograms	kilograms	2.2046	pounds
short ton	0.907	metric ton	metric ton	1.10	short ton
<b>Volume</b>			<b>Volume</b>		
fluid ounces	29.57	milliliters	milliliters	0.03	fluid ounces
quarts	0.95	liters	liters	1.057	quarts
gallons	3.79	liters	liters	0.26	gallons
cubic feet	0.03	cubic meters	cubic meters	35.3147	cubic feet
cubic yards	0.76	cubic meters	cubic meters	1.308	cubic yards
<b>Temperature</b>			<b>Temperature</b>		
Fahrenheit	subtract 32 then multiply by 5/9ths	Celsius	Celsius	multiply by 9/5ths, then add 32	Fahrenheit

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Source: *Engineering Unit Conversions*, M. R. Lindeburg, PE., Second Ed., 1990, Professional Publications, Inc., Belmont, California.

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