

U.S. AIR FORCE  
INSTALLATION RESTORATION PROGRAM

WILLOW GROVE ARF, PA

DECISION DOCUMENT

HEATING PLANT (SITE OT06)

JUNE 1990

HEADQUARTERS, U.S. AIR FORCE RESERVE  
ROBINS AIR FORCE BASE, GEORGIA 31098-6001

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## INTRODUCTION

The objective of this decision document is to describe the setting, present the technical findings of previous studies, evaluate potential remedial alternatives, and ultimately document the Air Force Reserve (AFRES) position on the final status of the Heating Plant (Installation Restoration Program Site OT06) at the Willow Grove AFRES facility, Pennsylvania.

## SITE IDENTIFICATION

The Willow Grove AFRES facility consists of approximately 162 acres located 23 miles north of Philadelphia in southeast Montgomery County and northeast of Willow Grove Naval Air Station (Fig 1). The IRP site described in this decision document consists of suspected small spills occurring at the installation heating plant (Fig 2).

## BACKGROUND

### Site Description

The Heating Plant utilizes two boilers to supply steam and hot water to fourteen buildings at the AFRES facility. The boilers are fueled primarily by #6 fuel oil, although a small amount of #2 fuel oil is utilized during start-up procedures and to purge the fuel lines. Fuel oils are stored in adjacent aboveground storage tanks (#221 and #212) which have spill containment walls but no bottom liners. Chemicals used at the plant include small amounts (approximately 20 gallons per year) of solvents, corrosion inhibitors, and water softening agents.

In early 1984, a 50 gallon spill of #6 fuel oil is known to have occurred due to overfilling of tank #221. The entire discharge was located within the spill containment walls associated with the tank. Due to the storage and handling of chemicals in miscellaneous drums in and around the Heating Plant, various other small spills may have occurred within the area.

### Previous Investigations

An IRP Records Search for Willow Grove ARF was completed by Roy F. Weston Inc. in November 1984. The purpose of the records search was to identify the potential for environmental contamination due to past waste disposal practices and to assess the probability for contamination migration. A total of seven sites were initially identified at the AFRES installation.

In 1989 and 1990 EA Engineering, Science, and Technology, Inc. (EA) conducted a Site Inspection (SI) at four sites at the Willow Grove AFRES facility in order to define the type and extent of contamination and determine the potential need for remedial action. At the Heating Plant the field investigation consisted of a soil gas survey conducted in and around the spill containment walls surrounding tanks #221 and #212.

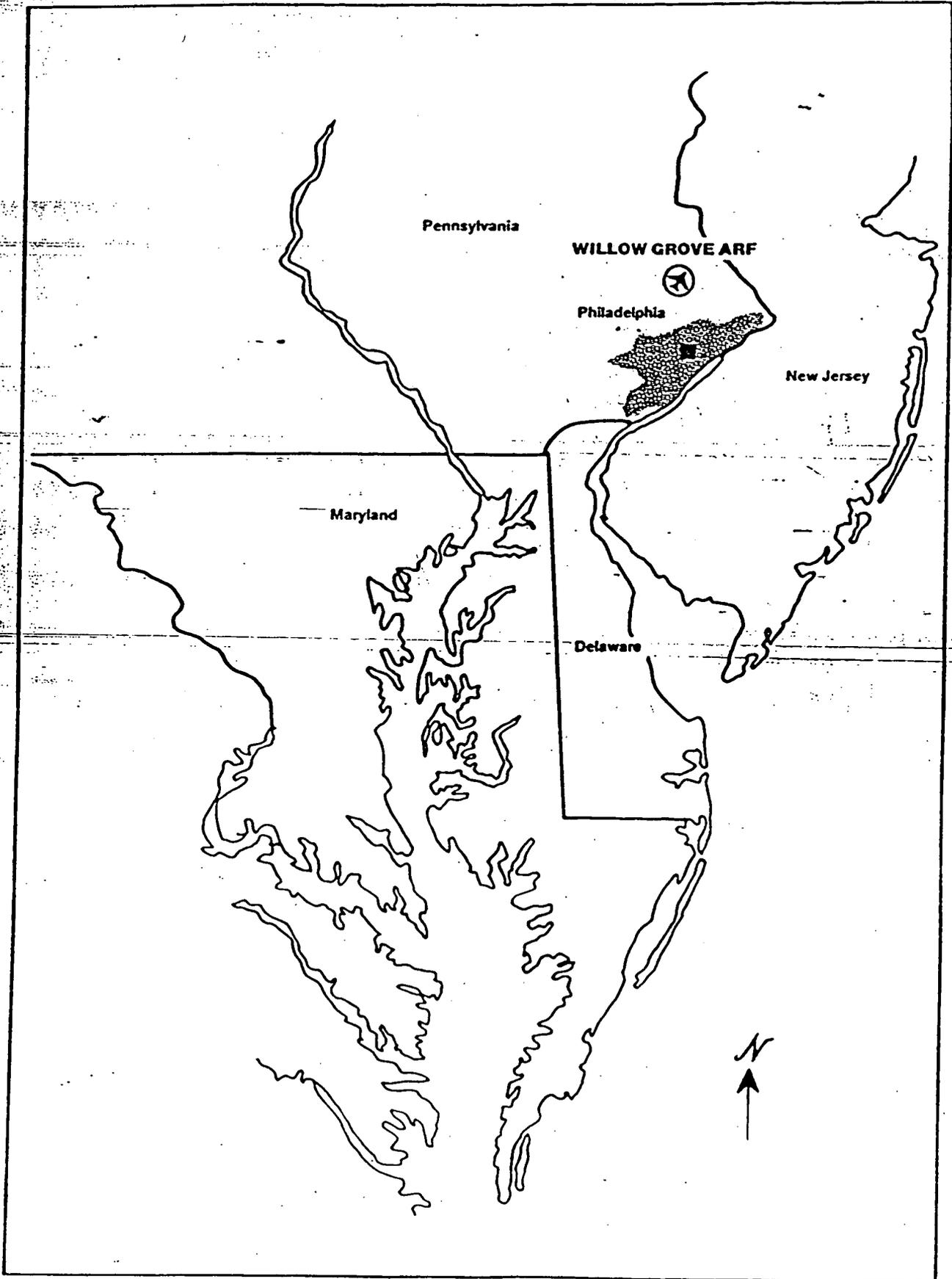


Figure 1: LOCATION OF WILLOW GROVE ARF

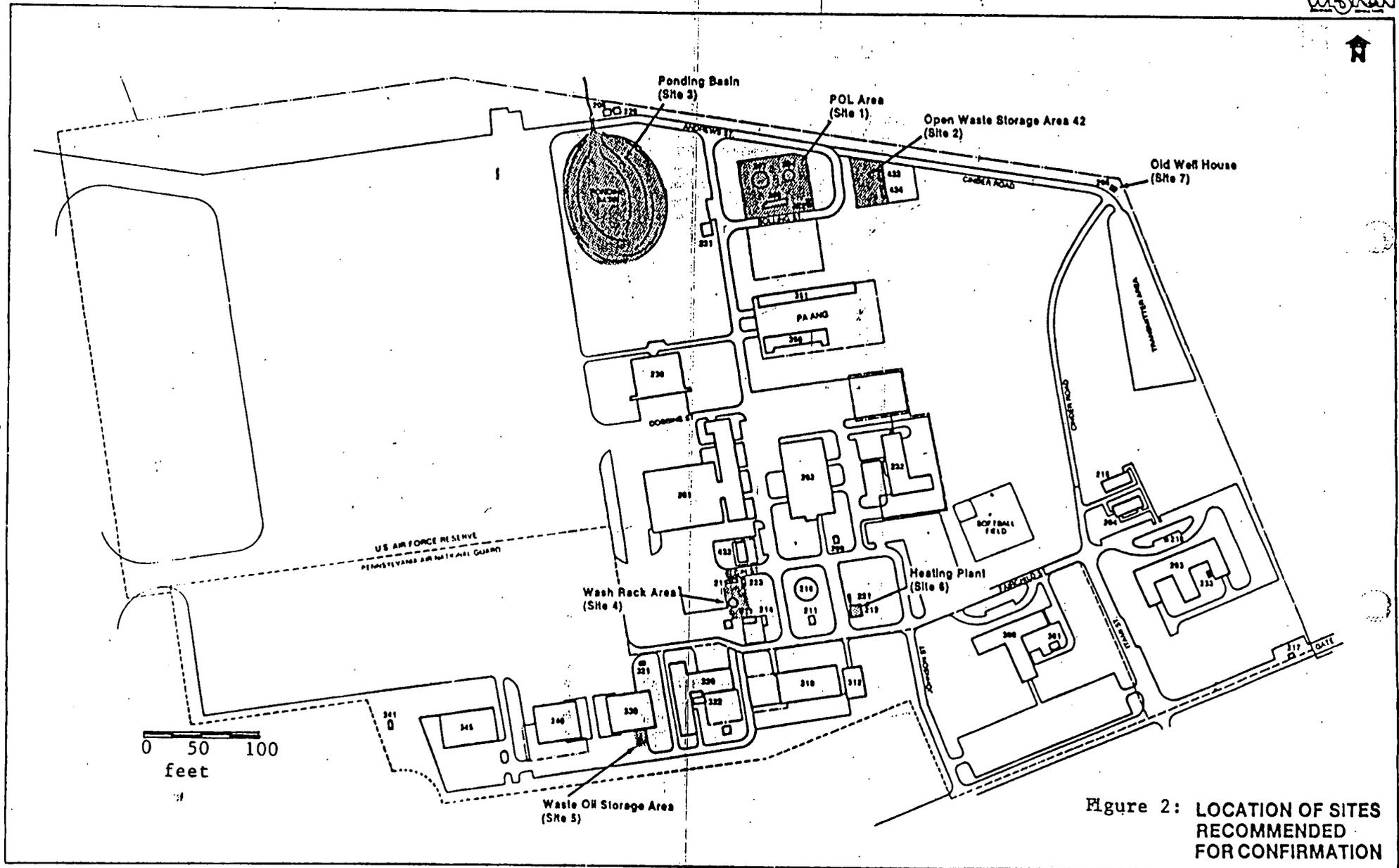


Figure 2: LOCATION OF SITES RECOMMENDED FOR CONFIRMATION

## ENVIRONMENTAL SETTING

Willow Grove ARF is located in the Southeastern Coastal Plain/Allegheny Plateau physiographic province. The topography consists of gently northwestwardly sloping hills and nearly level plains. Elevations range from 264 to 315 feet above mean sea level.

Willow Grove receives an average annual precipitation of approximately 41 inches with an average annual net precipitation of 18 inches. Maximum rainfall occurs in late summer in connection with local thunderstorms. The one-year, 24-hour rainfall in the vicinity of Willow Grove is about 2.7 inches.

The predominant bedrock at Willow Grove consists of the sandstones and shales of the Stockton Formation. The Stockton Formation is overlain by a thin (2 to 15 feet) cover of soil and unconsolidated sediments. Bedrock in the area dips generally to the northwest and contains zones of well developed vertical jointing.

Groundwater beneath the facility occurs within the Stockton Formation and is strongly influenced by the size, frequency, distribution, and orientation of fractures within this formation. The surficial sediments are generally in good hydrologic connection with the underlying bedrock and act as a storage medium for seasonal infiltration which is slowly transmitted as recharge to the bedrock aquifer. All groundwater within the surficial sediments and the Stockton Formation flow generally to the northwest below Willow Grove. The Stockton Formation is the major water producing aquifer for private and industrial applications in the area of Willow Grove.

Surface water runoff from the Base is collected through a series of manmade ditches, culverts, and storm sewers which discharge into a local ponding basin. Discharge from the basin flows northward into Little Neshaminy Creek and then into the Delaware River.

## RESULTS AND SIGNIFICANCE OF PREVIOUS INVESTIGATIONS

### Results and Significance of Soil Gas Survey

In 1989, as part of the SI field investigation at the Heating Plant, a soil gas survey was conducted by EA Inc. The survey consisted of analyzing the soil gas from a total of six sample points in and around the spill containment walls surrounding aboveground tanks #221 and #212 (Fig 3). Analysis of the samples revealed no volatile organic compounds to be present in the soils of the area.

## CONTAMINATION ASSESSMENT

Sampling of soil gas obtained adjacent to the aboveground fuel oil tanks - associated with the Heating Plant revealed no evidence of contamination due to past operations at the site. All available evidence demonstrates that contamination of the environment has not occurred at this site.

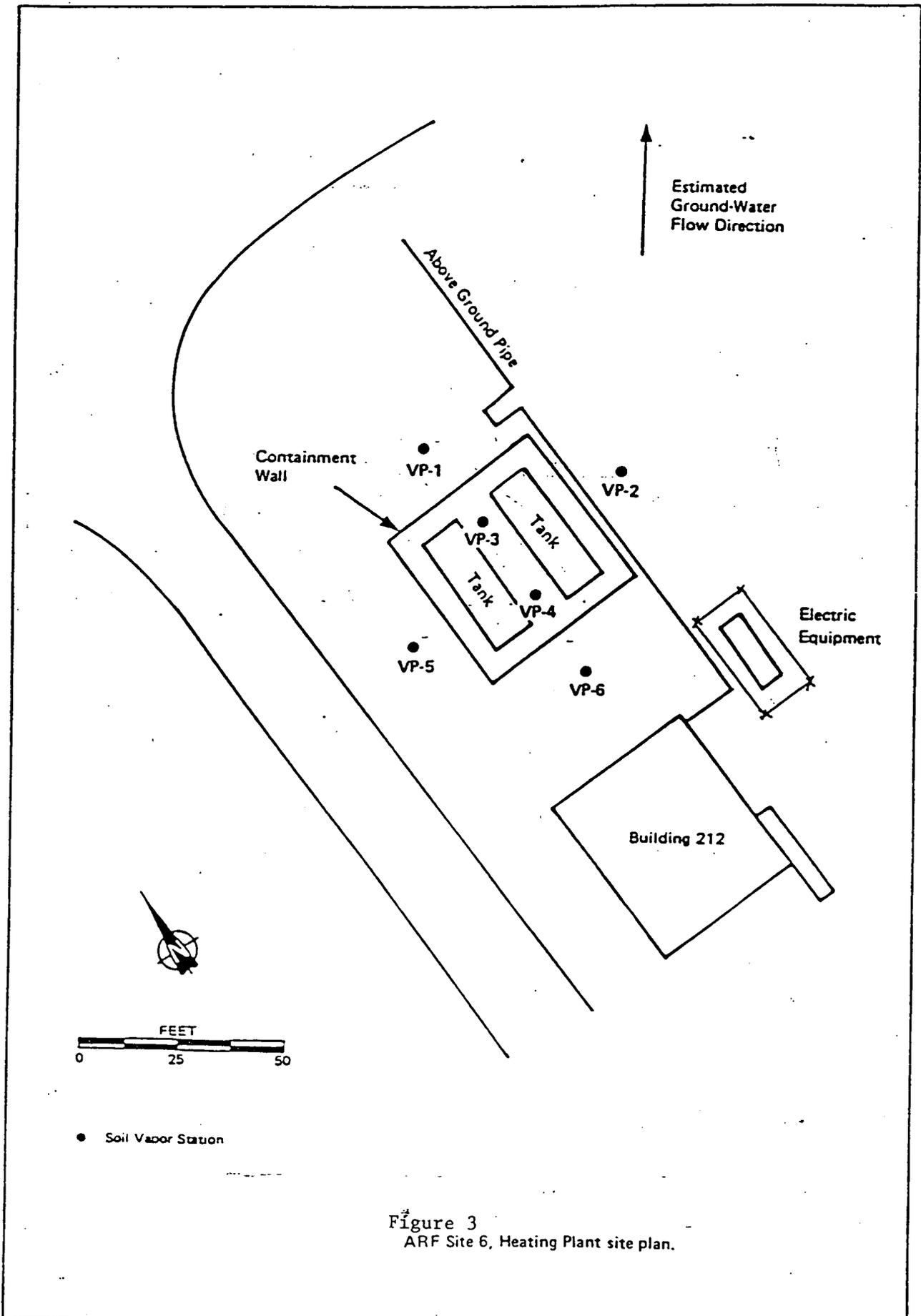


Figure 3  
ARF Site 6, Heating Plant site plan.

## CONTROL MEASURES

Due to the extremely small quantities of material known to have been spilled within the engineered spill containment area at this site and the absence of any detected contamination, no control measures or remediation efforts are necessary or justified.

## RECOMMENDATIONS

No contamination associated with past activity at the Heating Plant has been detected and no significant discharge is known to have occurred at the site. Due to the absence of detected contamination, this site is judged to pose no threat to public health or the environment of the Willow Grove area. Based on the findings of the most recent investigation, AFRES recommends that no further action be taken at the Heating Plant (Site OT06) at the Willow Grove AFRES facility.

## REFERENCES

Roy F. Weston, Inc. 1984. INSTALLATION RESTORATION PROGRAM PHASE I - RECORDS SEARCH, WILLOW GROVE AIR RESERVE FACILITY, WILLOW GROVE, PENNSYLVANIA, prepared for United States Air Force Reserve, Robins AFB, Georgia 31098.

EA Engineering, Science, and Technology, Inc. 1990. DRAFT REPORT, SITE INSPECTION STUDIES AT NAS WILLOW GROVE, HORSHAM TOWNSHIP, PENNSYLVANIA, prepared for United States Navy Northern Division, Naval Facilities Engineering Command, Philadelphia, Pennsylvania 19142.